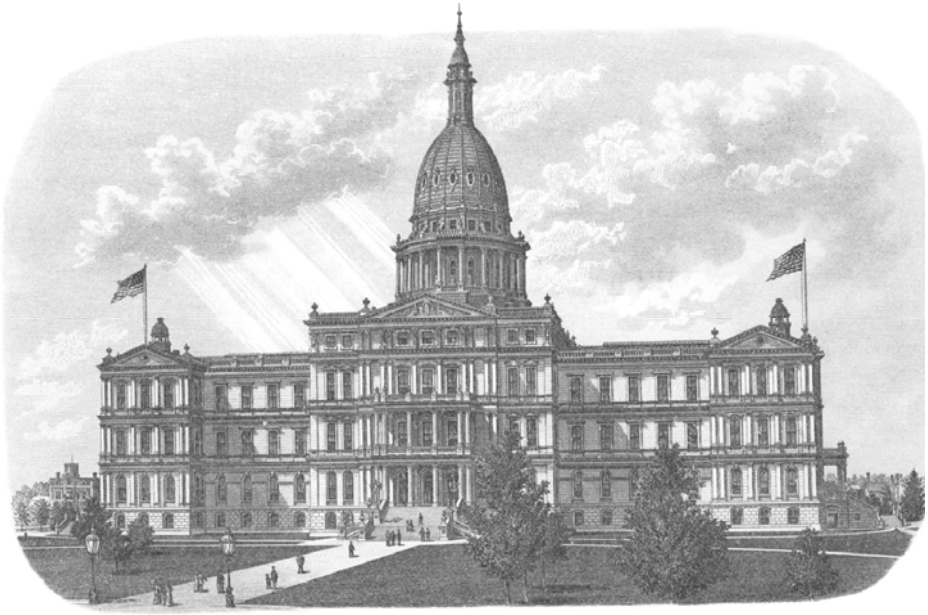
Michigan Register

Issue No. 19– 2015 (Published November 1, 2015)



GRAPHIC IMAGES IN THE

MICHIGAN REGISTER

COVER DRAWING

Michigan State Capitol:

This image, with flags flying to indicate that both chambers of the legislature are in session, may have originated as an etching based on a drawing or a photograph. The artist is unknown. The drawing predates the placement of the statue of Austin T. Blair on the capitol grounds in 1898.

(Michigan State Archives)

PAGE GRAPHICS

Capitol Dome:

The architectural rendering of the Michigan State Capitol's dome is the work of Elijah E. Myers, the building's renowned architect. Myers inked the rendering on linen in late 1871 or early 1872. Myers' fine draftsmanship, the hallmark of his work, is clearly evident.

Because of their size, few architectural renderings of the 19th century have survived. Michigan is fortunate that many of Myers' designs for the Capitol were found in the building's attic in the 1950's. As part of the state's 1987 sesquicentennial celebration, they were conserved and deposited in the Michigan State Archives.

(Michigan State Archives)

East Elevation of the Michigan State Capitol:

When Myers' drawings were discovered in the 1950's, this view of the Capitol – the one most familiar to Michigan citizens – was missing. During the building's recent restoration (1989-1992), this drawing was commissioned to recreate the architect's original rendering of the east (front) elevation.

(Michigan Capitol Committee)

Michigan Register

Published pursuant to § 24.208 of
The Michigan Compiled Laws

Issue No. 19— 2015
(This issue, published November 1, 2015, contains
documents filed from October 1, 2015 to October 15, 2015)

Compiled and Published by the
Office of Regulatory Reinvention

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Michigan Register (ISSN 0892-3124). Published twice per month, with a cumulative index, by the Office of Regulatory Reinvention, pursuant to §24.208 of the Michigan Compiled Laws. Subscription $400.00 per year, postpaid to points in the U.S. First class postage paid at Lansing, Michigan. Direct all mail concerning subscriptions to Office of Regulatory Reinvention, Romney Building – Second Floor, 611 W. Ottawa, Lansing, MI 48909

Mike Zimmer, Director, Licensing and Regulatory Affairs; **Deidre O'Berry**, Administrative Rules Specialist for Operations and Publications.

Rick Snyder, Governor

Brian Calley, Lieutenant Governor

PREFACE

PUBLICATION AND CONTENTS OF THE MICHIGAN REGISTER

The Office of Regulatory Reform publishes the *Michigan Register*.

While several statutory provisions address the publication and contents of the *Michigan Register*, two are of particular importance.

24.208 Michigan register; publication; cumulative index; contents; public subscription; fee; synopsis of proposed rule or guideline; transmitting copies to office of regulatory reform.

Sec. 8.

(1) The office of regulatory reform shall publish the Michigan register at least once each month. The Michigan register shall contain all of the following:

(a) Executive orders and executive reorganization orders.

(b) On a cumulative basis, the numbers and subject matter of the enrolled senate and house bills signed into law by the governor during the calendar year and the corresponding public act numbers.

(c) On a cumulative basis, the numbers and subject matter of the enrolled senate and house bills vetoed by the governor during the calendar year.

(d) Proposed administrative rules.

(e) Notices of public hearings on proposed administrative rules.

(f) Administrative rules filed with the secretary of state.

(g) Emergency rules filed with the secretary of state.

(h) Notice of proposed and adopted agency guidelines.

(i) Other official information considered necessary or appropriate by the office of regulatory reform.

(j) Attorney general opinions.

(k) All of the items listed in section 7(m) after final approval by the certificate of need commission under section 22215 of the public health code, 1978 PA 368, MCL 333.22215.

(2) The office of regulatory reform shall publish a cumulative index for the Michigan register.

(3) The Michigan register shall be available for public subscription at a fee reasonably calculated to cover publication and distribution costs.

(4) If publication of an agency's proposed rule or guideline or an item described in subsection (1)(k) would be unreasonably expensive or lengthy, the office of regulatory reform may publish a brief synopsis of the proposed rule or guideline or item described in subsection (1)(k), including information on how to obtain a complete copy of the proposed rule or guideline or item described in subsection (1)(k) from the agency at no cost.

(5) An agency shall electronically transmit a copy of the proposed rules and notice of public hearing to the office of regulatory reform for publication in the Michigan register.

4.1203 Michigan register fund; creation; administration; expenditures; disposition of money received from sale of Michigan register and amounts paid by state agencies; use of fund; price of Michigan register; availability of text on internet; copyright or other proprietary interest; fee prohibited; definition.

Sec. 203.

(1) The Michigan register fund is created in the state treasury and shall be administered by the office of regulatory reform. The fund shall be expended only as provided in this section.

(2) The money received from the sale of the Michigan register, along with those amounts paid by state agencies pursuant to section 57 of the administrative procedures act of 1969, 1969 PA 306, MCL 24.257, shall be deposited with the state treasurer and credited to the Michigan register fund.

(3) The Michigan register fund shall be used to pay the costs of preparing, printing, and distributing the Michigan register.

(4) The department of management and budget shall sell copies of the Michigan register at a price determined by the office of regulatory reform not to exceed the cost of preparation, printing, and distribution.

(5) Notwithstanding section 204, beginning January 1, 2001, the office of regulatory reform shall make the text of the Michigan register available to the public on the internet.

(6) The information described in subsection (5) that is maintained by the office of regulatory reform shall be made available in the shortest feasible time after the information is available. The information described in subsection (5) that is not maintained by the office of regulatory reform shall be made available in the shortest feasible time after it is made available to the office of regulatory reform.

(7) Subsection (5) does not alter or relinquish any copyright or other proprietary interest or entitlement of this state relating to any of the information made available under subsection (5).

(8) The office of regulatory reform shall not charge a fee for providing the Michigan register on the internet as provided in subsection (5).

(9) As used in this section, "Michigan register" means that term as defined in section 5 of the administrative procedures act of 1969, 1969 PA 306, MCL 24.205.

CITATION TO THE MICHIGAN REGISTER

The *Michigan Register* is cited by year and issue number. For example, 2001 MR 1 refers to the year of issue (2001) and the issue number (1).

CLOSING DATES AND PUBLICATION SCHEDULE

The deadlines for submitting documents to the Office of Regulatory Reinvention for publication in the *Michigan Register* are the first and fifteenth days of each calendar month, unless the submission day falls on a Saturday, Sunday, or legal holiday, in which event the deadline is extended to include the next day which is not a Saturday, Sunday, or legal holiday. Documents filed or received after 5:00 p.m. on the closing date of a filing period will appear in the succeeding issue of the *Michigan Register*.

The Office of Regulatory Reinvention is not responsible for the editing and proofreading of documents submitted for publication.

Documents submitted for publication should be delivered or mailed in an electronic format to the following address: MICHIGAN REGISTER, Office of Regulatory Reinvention, Ottawa Building – Second Floor, 611 W. Ottawa Street, Lansing, MI 48909.

RELATIONSHIP TO THE MICHIGAN ADMINISTRATIVE CODE

The *Michigan Administrative Code* (1979 edition), which contains all permanent administrative rules in effect as of December 1979, was, during the period 1980-83, updated each calendar quarter with the publication of a paperback supplement. An annual supplement contained those permanent rules, which had appeared in the 4 quarterly supplements covering that year.

Quarterly supplements to the Code were discontinued in January 1984, and replaced by the monthly publication of permanent rules and emergency rules in the *Michigan Register*. Annual supplements have included the full text of those permanent rules that appear in the twelve monthly issues of the *Register* during a given calendar year. Emergency rules published in an issue of the *Register* are noted in the annual supplement to the Code.

SUBSCRIPTIONS AND DISTRIBUTION

The *Michigan Register*, a publication of the State of Michigan, is available for public subscription at a cost of $400.00 per year. Submit subscription requests to: Office of Regulatory Reinvention, Ottawa Building – Second Floor, 611 W. Ottawa Street, Lansing, MI 48909. Checks Payable: State of Michigan. Any questions should be directed to the Office of Regulatory Reinvention (517) 335-8658.

INTERNET ACCESS

The *Michigan Register* can be viewed free of charge on the Internet web site of the Office of Regulatory Reinvention: www.michigan.gov/orr.

Issue 2000-3 and all subsequent editions of the *Michigan Register* can be viewed on the Office of Regulatory Reinvention Internet web site. The electronic version of the *Register* can be navigated using the blue highlighted links found in the Contents section. Clicking on a highlighted title will take the reader to related text, clicking on a highlighted header above the text will return the reader to the Contents section.

Mike Zimmer, Director
Licensing and Regulatory Affairs

2015 PUBLICATION SCHEDULE

Issue No.	Closing Date for Filing or Submission Of Documents (5 p.m.)	Publication Date
1	January 15, 2015	February 1, 2015
2	February 1, 2015	February 15, 2015
3	February 15, 2015	March 1, 2015
4	March 1, 2015	March 15, 2015
5	March 15, 2015	April 1, 2015
6	April 1, 2015	April 15, 2015
7	April 15, 2015	May 1, 2015
8	May 1, 2015	May 15, 2015
9	May 15, 2015	June 1, 2015
10	June 1, 2015	June 15, 2015
11	June 15, 2015	July 1, 2015
12	July 1, 2015	July 15, 2015
13	July 15, 2015	August 1, 2015
14	August 1, 2015	August 15, 2015
15	August 15, 2015	September 1, 2015
16	September 1, 2015	September 15, 2015
17	September 15, 2015	October 1, 2015
18	October 1, 2015	October 15, 2015
19	October 15, 2015	November 1, 2015
20	November 1, 2015	November 15, 2015
21	November 15, 2015	December 1, 2015
22	December 1, 2015	December 15, 2015
23	December 15, 2015	January 1, 2016
24	January 1, 2016	January 15, 2016

CONTENTS

ADMINISTRATIVE RULES FILED WITH SECRETARY OF STATE

Department of Licensing and Regulatory Affairs
Director's Office (2013-022)
Part 5. Residential Code....2-55

Department of Licensing and Regulatory Affairs
Corporations, Securities, and Commercial Licensing (2013-093)
Cemetery Commissioner – General Rules....56-63

Department of Licensing and Regulatory Affairs
Director's Office (2013-095)
Part 10. Michigan Energy Code....64-76

PROPOSED ADMINISTRATIVE RULES, NOTICES OF PUBLIC HEARINGS

Department of Licensing and Regulatory Affairs
Liquor Control Commission (2013-097)
General Rules....78-88
Public Hearing....89-90

Department of Licensing and Regulatory Affairs
Director's Office (2015-012)
Task Force on Physicians Assistants General Rules....91-92
Public Hearing....93-94

Department of Licensing and Regulatory Affairs
Director's Office (2015-013)
Acupuncture General Rules....95-96
Public Hearing....97-98

Department of Licensing and Regulatory Affairs
Director's Office (2015-014)
Athletic Training General Rules....99-100
Public Hearing....101-102

Department of Licensing and Regulatory Affairs
Director's Office (2015-015)
Audiology General Rules....103-104
Public Hearing....105-106

Department of Licensing and Regulatory Affairs
Director's Office (2015-016)
Chiropractic General Rules 107-108
Public Hearing 109-110

Department of Licensing and Regulatory Affairs
Director's Office (2015-017)
Counseling General Rules 111-112
Public Hearing 113-114

Department of Licensing and Regulatory Affairs
Director's Office (2015-018)
Board of Marriage and Family Therapy General Rules 115-116
Public Hearing 117-118

Department of Licensing and Regulatory Affairs
Director's Office (2015-019)
Nursing Home Administrators 119-120
Public Hearing 121-122

Department of Licensing and Regulatory Affairs
Director's Office (2015-020)
Respiratory Care General Rules 123-124
Public Hearing 125-126

Department of Licensing and Regulatory Affairs
Director's Office (2015-021)
Sanitarians Registration 127-128
Public Hearing 129-130

Department of Licensing and Regulatory Affairs
Director's Office (2015-038)
Part 10. Cranes and Derricks - CS 131-326

Department of Licensing and Regulatory Affairs
Public Service Commission (2015-048)
Basic Local Exchange Service Customer Migration 327-334
Public Hearing 335-336

Department of Licensing and Regulatory Affairs
Director's Office (2015-055)
Part 523 Abrasive Blasting- OH 337-343

Department of Licensing and Regulatory Affairs
Director's Office (2015-056)
Part 85 The Control of Hazardous Energy Sources- GI 344-345

Department of Licensing and Regulatory Affairs
Director's Office (2015-057)
Part 7. Guards for Power Transmission- GI 346-351

OTHER OFFICAL INFORMATION

Department of Education
Repeal PA 336 of 1993 353-353

MICHIGAN ADMINISTRATIVE CODE TABLE

Table (2015 Session) 355-370

CUMULATIVE INDEX

Cumulative Index (2015) 371-376

BILLS SIGNED INTO LAW OR VETOED

Appendix Table 1 (2015 Session) (Legislative Service Bureau Pages (1-15).....377-377

ADMINISTRATIVE RULES
FILED WITH THE SECRETARY OF STATE

MCL 24.208 states in part:

"Sec. 8. (1) The Office of Regulatory Reinvention shall publish the Michigan register at least once each month. The Michigan register shall contain all of the following:

* * *

(f) Administrative rules filed with the secretary of state."

ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

CONSTRUCTION CODE

Filed with the Secretary of State on October 9, 2015

These rules take effect 120 days after filing with the Secretary of State

(By authority conferred on the director of the department of licensing and regulatory affairs by section 4 of 1972 PA 230, MCL 125.1504, and Executive Reorganization Order Nos. 2003-1, 2008-4, 2011-4, MCL 445.201,1 445.2025, and 445.2030)

R 408.30501, R 408.30505, R 408.30506, R 408.30507, R 408.30510, R 408.30512, R 408.30513, R 408.30514, R 408.30518, R 408.30520, R 408.30522, R 408.30522a, R 408.30527, R 408.30528a, R 408.30529, R 408.30536, 408.30536a, R 408.30537, R 408.30537a, R 408.30537b, R 408.30537c, R 408.30541, R 408.30542, R 408.30544, R 408.30545, R 408.30545a, and R 408.30546 of the Michigan Administrative Code are amended and R 408.30500, R 408.30501a, R 408.30509a, R 408.30510a, R 408.30521a, R 408.30523, R 408.30523a, R 408.30525a, R 408.30533a, R 408.30533b, R 408.30537d, R 408.30541a, R 408.30544b, R 408.30544c, R 408.30547a, R 408.30547b, R 408.30547c, R 408.30547d, R 408.30547e, R 408.30547f and R 408.30547g are added and, R 408.30526, R 408.30531, R 408.30543, and R 408.30547 are rescinded as follows:

PART 5. RESIDENTIAL CODE

R 408.30500 Applicable code.

Rule 500. The provisions of the international residential code, 2015 edition, including appendices A, B, C, D, E, F, G, J, K, N, O, P, R, and S except for Sections R103.2, R103.3, R104.8, R104.8.1, R108.2, R108.3, R108.4, R108.5, R108.6, R313.1.1 to R313.2.1, R602.11, R602.12, N1102.3.2, tables R507.2.3, N1101.12.3(3) and figure R507.2.1(2), R507.2.3(1), R507.2.3(2), and 507.2.4, sections M1411.8, G2411.1.1.1 to G2411.1.1.5, G2439.7.2, P2503.9, P2709.2.3, P2904.1.1 to P2904.8.2, P2905.1, P2905.2, figure P2904.2.4.2, table P2904.2.2, tables P2904.6.2(1) to P2904.6.2(9), P3009.1 to P3009.11.1, E3902.15, E3902.16, E3902.17, and AJ102.4. The IBC-2015, IECC-2015, IMC-2015, IPC-2015, NFPA 70-2014 listed in chapter 44 govern the construction, alteration, relocation, demolition, use, and occupancy of buildings and structures, and, with exceptions noted, the international residential code is adopted by reference in these rules. All references to the International Building Code, International Residential Code, International Energy Conservation Code, National Electrical Code, International Existing Building Code, International Mechanical Code, and International Plumbing Code mean the Michigan Building Code, Michigan Residential Code, Michigan Energy Code, Michigan Electrical Code, Michigan Rehabilitation Code for Existing Buildings, Michigan Mechanical Code, and Michigan Plumbing Code respectively. The codes are available for inspection at the

Okemos office of the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes. The codes may be purchased from the International Code Council, 500 New Jersey Avenue, N.W., 6th Floor, Washington, D.C. 20001, or from the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 2501 Woodlake Circle, Okemos, Michigan 48864, at a cost as of the time of adoption of these amendatory rules of $118.00.

R 408.30501 Title.
Rule 501. Section R101.1 of the code is amended to read as follows:
R101.1. Title. These provisions shall be known and cited as the Michigan residential code for 1-and 2-family dwellings and will be referred to as "the code."

R 408.30501a Scope.
Rule 501a. Section R101.2 of the code is amended to read as follows:
R101.2. Scope. The provisions of the Michigan residential code for 1- and 2-family dwellings shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached 1- and 2-family dwellings and townhouses not more than 3 stories above grade plane in height with a separate means of egress and their accessory structures.
Exceptions:
1. Live/work units complying with the requirements of Section 419 of the Michigan building code may be built as 1- and 2-family dwellings or townhouses. Fire suppression required by Section 419.5 of the Michigan building code when constructed under the Michigan residential code for 1- and 2-family dwellings shall conform to Section P2904.
2. Owner-occupied bed and breakfast and board and room facilities may be constructed in accordance with sections 4b and 13c of the Stille-DeRossett-Hale single state construction code act, 1972 PA 230, MCL 125.1504b and MCL 125.1513c.

R 408.30505 Work exempt from permit.
Rule 505. Section R105.2 of the code is amended to read as follows:
R105.2. Work exempt from permit. Exemption from the permit requirements of the code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of the code or any other laws or ordinances of this jurisdiction. Permits are not required for any of the following:
(a) Building permits shall not be required for any of the following:
(i) One-story detached accessory structures, if the floor area does not exceed 200 square feet (18.58 m^2).
(ii) A fence that is not more than 7 feet (2 134 mm) high.
(iii) A retaining wall that is not more than 4 feet (1 219 mm) in height measured from the bottom of the footing to the top of the wall, unless supporting a surcharge.
(iv) A water tank supported directly upon grade if the capacity is not more than 5,000 gallons (18 927 L) and the ratio of height to diameter or width is not greater than 2 to 1.
(v) A sidewalk and driveway not more than 30 inches (762 mm) above adjacent grade and not over any basement or story below and are not part of an accessible route.
(vi) Painting, papering, tiling, carpeting, cabinets, counter tops, and similar finish work.
(vii) A prefabricated swimming pool that is less than 24 inches (610 mm) deep, and not greater than 5,000 gallons (18 925 L), and is installed entirely above ground.
(viii) Swings and other playground equipment accessory to detached 1- or 2-family dwellings.

(ix) Window awnings in group R-3 and U occupancies, supported by an exterior wall that do not project more than 54 inches (1 372 mm) from the exterior wall and do not require additional support, as applicable in Section 101.2 and group U occupancies.

(x) Decks not exceeding 200 square feet (18.58 m^2) in area, that are not more than 30 inches (762 mm) above grade at any point as prescribed by Section R312.1.1, are not attached to a dwelling or its accessory structures, are not within 36 inches (914 mm) of a dwelling or its accessory structures, and do not serve any ingress or egress door of the dwelling or its accessory structures.

(b) Electrical permits shall not be required, as in accordance with the Michigan electrical code, R 408.30801 to R 408.30880, for any of the following:

(i) Repairs and maintenance: Minor repair work, including the replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles.

(ii) Radio and television transmitting stations: The provisions of the code do not apply to electrical equipment used for radio and television transmissions, but do apply to equipment and wiring for power supply and to the installation of towers and antennas.

(iii) Temporary testing systems: A permit is not required for the installation of any temporary system required for the testing or servicing of electrical equipment or apparatus.

(c) Mechanical permits shall not be required for any of the following:

(i) A portable heating or gas appliance that has inputs of less than 30,000 BTU's per hour.

(ii) Portable ventilation appliances and equipment.

(iii) A portable cooling unit.

(iv) Steam, hot water, or chilled water piping within any heating or cooling equipment or appliances regulated by this code.

(v) Replacement of any minor part that does not alter the approval of equipment or an appliance or make such equipment or appliance unsafe.

(vi) A portable evaporative cooler.

(vii) Self-contained refrigeration systems that contain 10 pounds (4.5 kg) or less of refrigerant, or that are actuated by motors of 1 horsepower (0.75kW) or less.

(viii) Portable fuel cell appliances that are not connected to a fixed piping system and are not interconnected to a power grid.

(ix) An oil burner that does not require connection to a flue, such as an oil stove and a heater equipped with a wick.

(x) A portable gas burner that has inputs of less than 30,000 BTU's per hour.

(xi) When changing or relocating a gas meter or regulator, a permit is not required when installing gas piping which shall be limited to 10 feet (3 005 mm) in length and not more than 6 fittings.

(xii) When installing geothermal vertical closed loops under the supervision of a mechanical contractor licensed in HVAC as long as the company meets both the following:

(A) Has obtained a certificate of registration as a well drilling contractor pursuant to part 127 of the public health code, 1978 PA 368, MCL 333.12701 to 333.12771.

(B) Has installed the geothermal vertical closed loops in accordance with the department of environmental quality's best practices regarding geothermal heat pump closed loops. Exemption from the permit requirements of this code shall not be deemed to grant authorization for work to be done in violation of the provisions of this code or other laws or ordinances of this jurisdiction.

(d) Plumbing permits shall not be required for either of the following:

(i) The stopping of leaks in drains, water, soil, waste or vent pipe. If any concealed trap, drainpipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove

and replace the same with new material, then the work is considered as new work and a permit shall be obtained and inspection made as provided in the code.

(ii) The clearing of stoppages or the repairing of leaks in pipes, valves, or fixtures, and the removal and reinstallation of water closets, if the repairs do not involve or require the replacement or rearrangement of valves, pipes, or fixtures.

R 408.30506 Submittal documents.

Rule 506. Sections R106.1, R106.1.1, and R802.10.1 of the code are amended and Section R106.1.4 and figure 802.10.1 are added to the code to read as follows:

R106.1. Submittal documents. Construction documents, special inspection and structural program and other data shall be submitted in 1 or more sets with each application for a permit. The construction documents shall be prepared by or under the direct supervision of a registered design professional when required by 1980 PA 299, MCL 339.101 to 339.2919, and known as the Michigan occupational code. Where special conditions exist, the building official may require additional construction documents to be prepared by a registered design professional.

R106.1.1. Information on construction documents. Construction documents shall be drawn upon suitable material. Electronic media documents may be submitted when approved by the building official. Construction documents shall be of sufficient clarity to indicate the location, nature, and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, and rules and regulations, as determined by the building official.

R106.1.4. Truss design data. As an alternative to the submission of truss design drawings, figure R802.10.1, the truss design data sheet, may be provided to the building official as part of the construction documents at the time of application. Truss design drawings shall be submitted to the building official prior to truss installation as required by Section R802.10.1.

R802.10.1 Truss design drawings. Truss design drawings, prepared in conformance with Section R802.10.1, shall be provided to the building official and approved prior to installation. The truss design data sheet, figure R802.10.1, may be provided to the building official at the time of permit application, as an alternative to design drawings as permitted in Section R106.1.4. Truss design drawings shall include, at a minimum, the information specified below. Truss design drawings shall be provided with the shipment of trusses delivered to the jobsite.

(1) Slope or depth, span, and spacing.

(2) Location of all joints.

(3) Required bearing widths.

(4) Design loads as applicable.

(a) Top chord live load (including snow loads).

(b) Top chord dead load.

(c) Bottom chord live load.

(d) Bottom chord dead load.

(e) Concentrated loads and their points of application.

(f) Controlling wind and earthquake loads.

(5) Adjustments to lumber and joint connector design values for conditions of use.

(6) Each reaction force and direction.

(7) Joint connector type and description (e.g., size, thickness, or gauge) and the dimensioned location of each joint connector except where symmetrically located relative to the joint interface.

(8) Lumber size, species, and grade for each member.

(9) Connection requirements for the following:

(a) Truss to truss girder.
(b) Truss ply to ply.
(c) Field splices.
(10) Calculated deflection ratio and/or maximum description for live and total load.
(11) Maximum axial compression forces in the truss members to enable the building designer to design the size, connections, and anchorage of the permanent continuous lateral bracing. Forces shall be shown on the truss design drawing or on supplemental documents.
(12) Required permanent truss member bracing location.

Roof Loading Data Sheet

Authority: 1972 PA 230 Completion: This form is to be completed and given to the building official with the application for plan review and building permit. The applicant shall give a copy of the completed form to the truss manufacturer.

Jurisdictional information should be included in this space	
Township	County

Applicant's Name:		Date:
Applicant's Address:		Permit Number:
City:	State:	Zip:
Applicant's Signature:		
Job Location:		
Address:		
Township/Village/City:	County:	

Where prescriptive design is used, the ground snow load, P_g, from Table R301.2(1) shall be used as the design roof snow except, where section R802.10.2.1 applies the design roof snow load shall be $.7P_g$. Additional unbalanced loads for drifting across the ridge are not required. Where engineered design is used, this form is to be completed by the permit applicant or design professional. The flat roof snow load, Pf is defined as: Pf=.7Pg(Ce)(Ct)(I). For factors Ce, Ct, and I, place an "X" in the appropriate box below that best describes the structure and the particular jobsite and substitute the corresponding values in the formula above. The result is the flat roof snow load and is applied as the truss top chord live load, TCLL1. All live loads and snow loads, including unbalanced loads and minimum loads, are to be applied per ASCE 7, chapters 4 and 7 and this code.

Ground Snow Load, P_g = _____ From Figure R301.2(5) or MRC Table R301.2(5)

Exposure Factor C_e

Exposure		Fully Exposed[1]		Partially Exposed[2]		Sheltered[3]	
A	Urban and suburban areas, wooded areas or other terrain with closely spaced objects having the size of single-family dwellings or larger.						
B	Open terrain with scattered obstructions having heights less than 30 ft. (flat open country)						
C	Flat unobstructed areas exposed to wind flowing over open water for a distance of at least 1 mile. (i.e. Great Lakes.)						

Mark only one of the 9 boxes under the exposure factor with an "X".

[1]Fully Exposed: Roofs exposed on all sides with no shelter by terrain, higher structures, or trees.

[2]Partially Exposed: All roofs except those designated as "fully exposed" or "sheltered."

[3]Sheltered: Roofs located tight among conifers that qualify as obstructions.

Thermal Factor C_t

Thermal Condition[4]		
All structures except as listed below		
Structures kept just above freezing and those with cold, ventilated roofs with an R factor of 25 or greater between the ventilated and heated spaces, such as attics		
Unheated structures and those intentionally kept below freezing, such as seasonal building or storage buildings		
Continuously heated greenhouse with a roof R Value less than 2 and having an interior temperature maintained at about 50 degrees 3 ft above the floor during winter months and a temperature alarm system or an attendant to warn of a heating failure.		

Mark only 1 of the 4 boxes under the Thermal Factor with an "X".

Importance Factor (I)

Category			
I	Building and other structures representing low hazard to human life, i.e.: Agricultural, Temporary, and Minor Storage Facilities.		
II	All buildings except those listed in Categories III and IV.		
III	Building and other structures representing substantial hazard to human life in the event of failure.		
IV	Buildings and other structures designated as essential facilities.		

Mark only 1 of the 4 boxes under the Importance Factor with an "X"

Note: All roof trusses have additional live (storage) loads applied to the bottom chord where required per Table R301.5.

R 408.30507 Duct termination.
Rule 507. Section M1502.3 of the code is amended to read as follows:
M1502.3. Exhaust ducts shall terminate on the outside of the building. Exhaust duct terminations shall be in accordance with the dryer manufacturer's installation instructions. If the manufacturer's instructions do not specify a termination location, the exhaust duct shall terminate no less than 3 feet (914 mm) in any direction from openings into buildings or ventilated section in a soffit. Exhaust duct terminations shall be equipped with a backdraft damper. Screens shall not be installed at the duct termination.

R 408.30509a Approval required.
Rule 509a. Section R109.4 of the code is amended to read as follows:
R109.4. Approval required. Work shall not be done beyond the point indicated in each successive inspection without first obtaining the approval of the building official. The building official upon notification shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or shall notify the permit holder or agent of the permit holder wherein portion of the construction fails to comply with this code. The notification shall include specific reference to the code chapter and section numbers in violation in writing. Any portions that do not comply shall be corrected and such portion shall not be covered or concealed until authorized by the building official.

R 408.30510 Use and occupancy.
Rule 510. Sections R110.1, R110.2, and R110.3 of the code are amended to read as follows:
R110.1. Use and occupancy. A building or structure shall not be used or occupied, and a change in the existing occupancy classification of a building or structure or portion thereof shall not be made, until a certificate of occupancy has been issued in accordance with the act.
R110.2. Change in use. A change in the character or use of an existing structure shall not be made, except as specified in the Michigan building code, R 408.30401 to R 408.30499.
R110.3 Certificate issued. After the building official inspects the building or structure and finds no violations of the provisions of this code or other laws that are enforced by the department of building safety, the building official shall issue a certificate of occupancy which shall contain the following:
(a) The building permit number.
(b) The address of the structure.
(c) A description of that portion of the structure for which the certificate is issued.
(d) A statement that the described portion of the structure has been inspected for compliance with the requirements of this code.
(e) The name of the building official.
(f) The edition of the code under which the permit was issued.
(g) Any special stipulations and conditions of the building permit.

R408.30510a Fire classification.
Rule 510a. Section R902.1 is amended and Sections R902.3 and R902.4 of the code are added to read as follows:
R902.1. Roof covering materials. Roofs shall be covered with materials as set forth in Sections R904 and R905. Class A, B, or C roofing shall be installed in jurisdictions designated by law as requiring their use or where the edge of the roof is less than 3 feet (914 mm) from a lot line.

Classes A, B, and C roofing required by this section to be listed shall be tested in accordance with UL 790 or ASTM E 108.

Exceptions:

1. Class A roof assemblies include those with coverings of brick, masonry, and exposed concrete roof deck.
2. Class A roof assemblies also include ferrous or copper shingles or sheets, metal sheets and shingles, clay or concrete roof tile, or slate installed on noncombustible decks.
3. Class A roof assemblies include minimum 16 ounces per square foot copper sheets installed over combustible decks.
4. Class A roof assemblies include slate installed over underlayment over combustible decks.

R 408.30512 Notice to owner.

Rule 512. Section R114.1 of the code is amended to read as follows:

R114.1. Notice to owner. The notice shall be in accordance with the act. Any person who is served with a stop work order, except for work that the person is directed to perform to remove a violation or unsafe condition, is subject to the penalty provisions in the act.

R 408.30513 Definitions.

Rule 513. The definitions of agricultural or agricultural purposes and building inspector are added to the code and the definitions of building, building official, registered design professional, and sunroom addition in Section R202 of the code are amended, the definition of residential building type is deleted, and the definition of structure is added to Section R202 to read as follows:

R202. Definitions.

“Agricultural or agricultural purposes” means of, or pertaining to, or connected with, or engaged in agriculture or tillage which is characterized by the act or business of cultivating or using land and soil for the production of crops for the use of animals or humans, and includes, but is not limited to, purposes related to agriculture, farming, dairying, pasturage, horticulture, floriculture, viticulture, and animal and poultry husbandry.

“Attic, uninhabitable with limited storage” means uninhabitable attics with limited storage where the minimum clear height between joists and rafters is 42 inches (1 063 mm) or greater or where there are not 2 or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches (1 063 mm) high by 24 inches (610 mm) in width, or greater, within the plane of the trusses.

“Attic, uninhabitable without storage” means uninhabitable attics without storage where the maximum clear height between joists and rafters is less than 42 inches (1 063 mm), or where there are not 2 or more adjacent trusses with web configurations capable of accommodating an assumed rectangle 42 inches (1 063 mm) high by 24 inches (610 mm) in width, or greater, within the plane of the trusses.

"Building" means a combination of materials, whether portable or fixed, forming a structure affording a facility or shelter for use or occupancy by persons, animals, or property. The term does not include a building incidental to the use for agricultural purposes of the land on which the building is located if it is not used in the business of retail trade. The term shall be construed as though followed by the words "or part or parts of the building and all equipment in the building" unless the context clearly requires a different meaning.

"Building inspector" means the person who is appointed and employed by a governmental subdivision, who is charged with the administration and enforcement of the state codes specified

in R 408.30499, and who is registered in compliance with 1986 PA 54, MCL 338.2301 to 338.2313.

"Building official" means the person who is appointed and employed by a governmental subdivision, who is charged with the administration and enforcement of the state codes specified in R 408.30499, and who is registered in compliance with 1986 PA 54, MCL 338.2301 to 338.2313.

"Registered design professional" means an individual who is licensed under the occupational code, 1980 PA 299, MCL 339.101 to 339.2919.

"Structure" means that which is built or constructed, an edifice or building of any kind, or a piece of work artificially built up or composed of parts joined together in some definite manner. Structure does not include a structure incident to the use for agricultural purposes of the land on which the structure is located and does not include works of heavy civil construction including, without limitation, any of the following:

(a) A highway.
(b) A bridge.
(c) A dam.
(d) A reservoir.
(e) A lock.
(f) A mine.
(g) A harbor.
(h) A dockside port facility.
(i) An airport landing facility.
(j) A facility for the generation, or transmission, or distribution of electricity.

Structure shall be construed as though followed by the word "or part or parts of the structure and all equipment in the structure," unless the context clearly indicates otherwise.

"Sunroom addition" means a new structure with glazing in excess of 40% of the gross area of the structure's exterior walls and roof added to an existing dwelling.

R 408.30514 Means of appeal.

Rule 514. Sections R112.1 and R112.3 of the code are amended to read as follows:

R112.1 Means of appeal. An interested person has the right to appeal a decision of the enforcing agency to the board of appeals in accordance with the act. An application for appeal shall be based on a claim that the true intent of the code or the rules governing construction have been incorrectly interpreted, the provisions of the code do not apply, or an equal or better form of construction is proposed. The decision of a local board of appeals may be appealed to the construction code commission in accordance with the act and time frames.

Exception: Requests for barrier free design exception shall be in accordance with 1966 PA 1, MCL 125.1351 to 125.1356.

112.3 Qualifications. The board of appeals shall consist of members who are qualified in accordance with the act and are not employees of the governmental subdivision or the agency enforcing the code

R 408.30516 Design criteria.

Rule 516. Table R301.2(1) of the code is amended and figures R301.2(7) and R301.2(8) are added to the code to read as follows:

TABLE R 301.2(1)
CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA

Ground Snow Load	Wind Speed[d] (mph)	Seismic Design Category[f]	Subject to Damage From			Winter Design Temp[e]	Ice Barrier Underlayment Required[h]	Flood Hazards[g]	Air Freezing Index[i]	Mean Annual Temp[j]
			Weathering[a]	Frostline depth[b]	Termite[c]					
Table R301.2(5)	90	See Sec.R301.2 .2.1 & Figure R301.2(2)	Severe	42" See Note b	Figure R301.2(6)	See Note e	Yes	See Note g	Figure R403.3(2)	See footnote J

For SI: 1 pound per square foot = 0.0479 kN/m2, 1 mile per hour = 1.609 km/h.

(a) Weathering may require a higher strength concrete or grade of masonry than necessary to satisfy the structural requirements of this code. The weathering column shall be filled in with the weathering index (i.e., "negligible", "moderate," or "severe") for concrete as determined from the weathering probability map [figure R301.2(3)]. The grade of masonry units shall be determined from ASTM C 34, C 55, C 62, C 73, C 90, C 129, C 145, C 216 or C 652 as listed in chapter 44.

(b) The frost line depth may be modified as provided in section R403.1.4 of the code.

(c) The jurisdiction shall fill in this part of the table to indicate the need for protection depending on whether there has been a history of local damage.

(d) The jurisdiction shall fill in this part of the table with the wind speed from the basic wind speed map [figure R301.2(4)]. Wind exposure category shall be determined on a site-specific basis in accordance with section R301.2.1.4 of the code.

(e) The winter design temperature criteria shall be taken from appendix D of the Michigan plumbing code, R 408.30701 to R 408.30796.

(f) Design category determined from section R301.2.2.1 of the code.

(g) The jurisdiction shall fill in this part of the table with both of the following:

(i) The date of the jurisdiction's entry into the national flood insurance program (date of adoption of the first code or ordinance for management of flood hazard areas).

(ii) The date(s) of the currently effective FIRM and FBFM or other flood hazard map adopted by the community, as may be amended. Absent (i) or (ii), flood hazard areas as determined by the state under its administration of the Part 31, floodplain regulatory

authority of the natural resources and environmental protection act, 1994 PA 451, MCL 324.101 to 324.90106, shall become the basis for regulation of floodplain development within the community and section R408.7 of the code shall apply to buildings and structures within those areas.

(h) In accordance with sections R905.2.7, R905.4.3.1, R905.5.3.1, R905.6.3.1, R905.7.3.1 and R905.8.3.1 of the code, for areas where the average daily temperature in January is 25 degrees Fahrenheit (-4 degrees Celsius) or less, or where there has been a history of local damage from the effects of ice damming, the jurisdiction shall fill in this part of the table with "YES". Otherwise, the jurisdiction shall fill in this part of the table with "NO".

(i) The jurisdiction shall fill in this part of the table with the 100-year return period air freezing index (bf-days) from figure R403.3(2) or from the 100-year (99%) value on the national climatic data center data table "air freezing index-USA method (base 32 degrees Fahrenheit)".

(j) The jurisdiction shall fill in this part of the table with the mean annual temperature from the national climatic data center data table "air freezing index-USA method (base 32 degrees Fahrenheit)" at www.ncdc.noaa.gov/fpsf.html.

R 408.30518 Means of egress.
Rule 518. Sections R311.6.4 and R311.2.1 are added to the code and R311.2 of the code is amended to read as follows:
R311.6.4 Modular ramps. Modular ramp systems approved pursuant to the act are not required to comply with the requirements of section R403.1.4 of the code.
R311.2. Door type and size. The required exit door shall be a side-hinged door not less than 3 feet (914 mm) in width and 6 feet, 8 inches (2 032 mm) in height. Other exterior hinged or sliding doors shall not be less than 24 inches (6096 mm) in width and 6 feet, 6 inches (1 981 mm) in height.
R311.2.1. Interior doors. Interior doors shall be not less than 24 inches (6096 mm) in width and 6 feet, 6 inches (1524 mm) in height.
Exception: Doors to areas less than 10 square feet of floor area.

R 408.30520 Where required in existing dwellings.
Rule 520. Section R315.3 of the code is amended to read as follows:
R315.3. Where required in existing dwellings. Where work requiring a building permit occurs in existing dwellings that have attached garages or in existing dwellings within which fuel-fired appliances exist, carbon monoxide alarms shall be provided in accordance with Section R315.1.

R 408.30521a Rooftop mounted photovoltaic panel systems.
Rule 521a. Sections R909.1, R909.2, and R909.3 of the code are added to read as follows:
R909.1. General. The installation of photovoltaic panel systems that are mounted on or above the roof covering shall comply with the provisions of this code, Section R324, and NFPA 70.
R909.2. Structural requirements. Rooftop mounted photovoltaic panel systems shall be designed to structurally support the system and withstand gravity loads in accordance with chapter 3. The roof upon which these systems are installed shall be designed and constructed to support the loads imposed by such systems in accordance with chapter 8.
R909.3. Installation. Rooftop mounted photovoltaic systems shall be installed in accordance with the manufacturer's instructions. Roof penetrations shall be flashed and sealed in accordance with this chapter.

R 408.30522 Minimum depth.
Rule 522. Section R403.1.4 of the code is amended to read as follows:
R403.1.4. Minimum depth. All exterior footings and foundation systems shall extend 42 inches below actual grade. Where applicable, the depth of the footings shall also conform to section R403.1.4.1 of the code.
Exception:
Upon evidence of the existence of any of the following conditions, the building official may modify the footing depth accordingly:
(a) Freezing temperatures (freezing degree days).
(b) Soil type.
(c) Ground water conditions.
(d) Snow depth experience.
(e) Exposure to the elements.
(f) Other specific conditions identified by the building official that may affect the foundation system.

R 408.30522a Vapor retarders.

Rule 522a. Section R601.3 of the code is amended to read as follows:

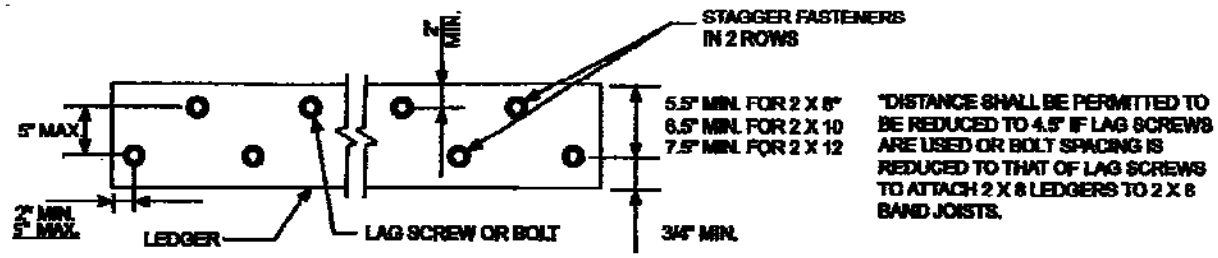
R601.3. Vapor retarders. Class I or II vapor retarders shall be provided on the interior side of frame walls in zones 5, 6, 7, 8, and marine 4.

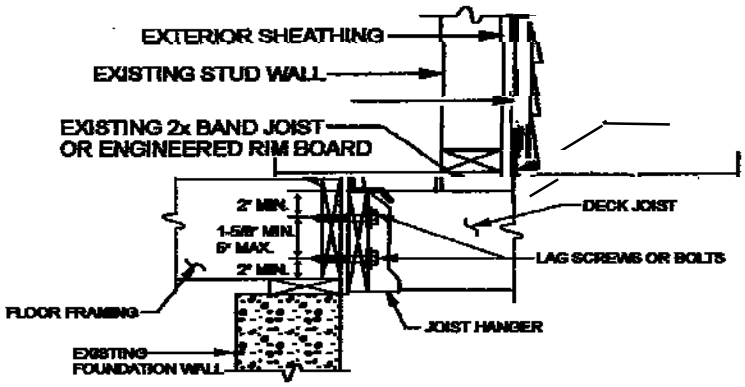
Exceptions:

1. As permitted in table R702.7.1.
2. Class III or no vapor retarder shall be permitted on the interior side of below grade wall assemblies. Class I or II vapor retarders shall be permitted on the interior side of the wall assembly when no air permeable insulation is installed in the below grade wall assemblies.
3. Construction where moisture or its freezing will not damage the materials.

R 408.30523 Placement of lag screws or bolts in deck ledgers and band joists.

Rule 523. Figure R507.2.1(1) of the code is amended to read as follows:





For SI: 1 inch = 25.4 mm.

FIGURE R507.2.1(2)
PLACEMENT OF LAG SCREWS AND BOLTS IN BAND JOISTS

R 408.30525a Simplified wall bracing.
Rule 525a. Section R 602.10.9 is amended to read as follows:
R602.10.9. Braced wall panel support. Braced wall panel support shall be provided as follows:
1. Cantilevered floor joists complying with section R502.3.3 shall be permitted to support braced wall panels.
2. Raised floor system post or pier foundations supporting braced wall panels shall be designed in accordance with accepted engineering practice.
3. Masonry stem walls with a length of 48 inches (1 219 mm) or less supporting braced wall panels shall be reinforced in accordance with figure R602.10.9. Masonry stem walls with a length greater than 48 inches (1 219 mm) supporting braced wall panels shall be constructed in accordance with section R403.1. Methods ABW and PFH shall not be permitted to attach to masonry stem walls.
4. Concrete stem walls with a length of 48 inches (1 219 mm) or less, greater than 12 inches (305 mm) tall shall have reinforcement sized and located in accordance with figure R602.10.9.

R 408.30526 Rescinded.

R 408.30527 Standards.
Rule 527. Section M2001.1.1 of the code is amended to read as follows:
M2001.1.1. Standards. Oil-fired boilers and their control systems shall be listed and labeled in accordance with UL 726. Electric boilers and their control systems shall be listed in accordance with UL 834. Solid-fuel-fired boilers shall be listed and labeled in accordance with UL 2523. Boilers shall be designed, constructed, installed, and maintained in accordance with the requirements of ASME CSD-1 and ASME boiler and pressure vessel code, Sections I and IV, except part CE-110(a) of the CSD-1. Gas-fired boilers shall conform to the requirements listed in chapter 24. It shall be the homeowner's responsibility to maintain and operate the boiler in accordance with ASME CSD-1.

R 408.30528a CSST.
Rule 528a. Section G2411.1.1 (310.1.1) of the code is amended to read as follows:
G2411.1.1. CSST. Corrugated stainless steel tubing (CSST) gas piping systems shall be bonded to the electrical service grounding electrode system or where provided, lightening protection electrode system. The bonding jumper shall connect to a metallic pipe, pipe fitting, or CSST fitting between the point of delivery and the CSST utilizing a device listed for the application. The bonding jumper shall be not smaller than 6 AWG copper wire or equivalent, not longer than 75 feet and accessible. Gas piping systems that are bonded in accordance with this section shall be considered effectively bonded regardless of the amount of CSST in the system. Any additional grounding electrodes used shall be bonded to the electrical service grounding electrode system, or where provided, the lighting protection grounding electrode system.
Exception: CSST piping systems tested and listed by the manufacturer for installation without additional bonding when installed in accordance with the listing.

R 408.30529 Lining required.
Rule 529. Section P2709.2 of the code is amended to read as follows:
P2709.2. Lining required. The adjoining walls and floor framing enclosing on-site built-up shower receptors shall be lined with 1 of the following:
1. Sheet lead.

2. Sheet copper.
3. Plastic liner material that complies with ASTM D 4068 or ASTM D 4551.
4. Sheet-applied load-bearing, bonded waterproof membranes that comply with ANSI A118.10.

The lining material shall extend not less than 3 inches (76 mm) beyond or around the rough jambs and not less than 3 inches (76 mm) above finished thresholds. Sheet-applied load bearing, bonded waterproof membranes shall be applied in accordance with the manufacturer's instructions.

R 408.30531 Rescinded.

R 408.30533a Rough plumbing.

Rule 533a. Section P2503.5.1 of the code is amended to read as follows:

P2503.5.1. Rough plumbing. DWV systems shall be tested on completion of the rough piping installation by water or air with no evidence of leakage. Either test shall be applied to the drainage system in its entirety or in sections after rough piping has been installed, as follows:

1. Water test. Each section shall be filled with water to a point not less than 10 feet (3 048 mm) above the highest fitting connection in that section, or to the highest point in the completed system. Water shall be held in the section under test for a period of 15 minutes. The system shall prove leak free by visual inspection.
2. Air test. The portion under test shall be maintained at a gauge pressure of 5 pounds per square inch (psi) (34 kPa) or 10 inches (254 mm) of mercury column (34 kPa). This pressure shall be held without introduction of additional air for a period of 15 minutes.

R 408.30533b Sewer depth.

Rule 533b. Section P2603.5.1 of the code is amended to read as follows:

P2603.5.1. Sewer depth. A building sewer that connects to a private disposal system shall be a minimum of 8 inches (203 mm) to the top of the pipe below finished grade at the point of septic tank connection. Building sewers shall be installed a minimum of 42 inches (1 067 mm) below grade.

Exception: When permitted by the code official.

R 408.30536 Electrical; general; electrical conductors; connections and electrical grounding.

Rule 536. Sections E3401.1, E3401.2, E3401.3, E3705.4.1, E3908.8.1, and E3908.8.2 of the code are amended and E3401.5, E3401.6, E3401.6.1, E3401.6.2, E3401.6.3, E3401.7, and E3401.8 are added to read as follows:

E3401.1. Applicability. The provisions of chapters 34 to 43 of the code shall establish the general scope of the electrical system and equipment requirements of the code. Chapters 34 to 43 of the code cover those wiring methods and materials most commonly encountered in the construction of 1- and 2-family dwellings and structures regulated by the code. Other wiring methods, materials, and subject matter covered in the Michigan electrical code, R 408.30801 to R 408.30880 are also allowed by the code.

E3401.2. Scope. Chapters 34 to 43 of the code shall cover the installation of electrical systems, equipment, and components indoors and outdoors that are within the scope of the code, including services, power distribution systems, fixtures, appliances, devices, and appurtenances. Services within the scope of the code shall be limited to 120/240 volt, 0- to 400- ampere, single-phase systems. These chapters specifically cover the equipment, fixtures, appliances, wiring methods, and materials that are most commonly used in the construction or alteration of 1- and

2-family dwellings and accessory structures regulated by the code. The omission from these chapters of any material or method of construction provided by the Michigan electrical code, R 408.30801 to R 408.30880, shall not be construed as prohibiting the use of such material or method of construction. Electrical systems, equipment, or components not specifically covered in these chapters shall comply with the applicable provisions of the Michigan electrical code, R 408.30801 to R 408.30880.

E3401.3. Not covered. Chapters 34 to 43 do not cover the following:

(1) Installations under the exclusive control of communications utilities and electric utilities.

(2) Services over 400 amperes.

E3401.5. General. This section provides for the design, construction, installation, alteration, and repair of photovoltaic equipment and systems. [690.1]

E3401.6. Requirements. The installation, inspection, maintenance, repair, and replacement of photovoltaic systems and all system components shall comply with the manufacturer's instructions, Sections E3401.6.1 through E3401.6.3 and NFPA 70. [690.3]

E3401.6.1. Roof-mounted panels and modules. Where photovoltaic panels and modules are installed on roofs, the roof shall be constructed to support the loads imposed by such modules. Roof-mounted photovoltaic panels and modules that serve as roof covering shall conform to the requirements for roof coverings in chapter 9. Where mounted on or above the roof coverings, the photovoltaic panels and modules and supporting structure shall be constructed of noncombustible materials or fire-retardant treated wood equivalent to that required for the roof construction.

E3401.6.2. Roof and wall penetrations. Roof and wall penetrations shall be flashed and sealed in accordance with chapter 9 to prevent entry of water, rodents, and insects.

E3401.6.3. Ground-mounted panels and modules. Ground-mounted panels and modules shall be installed in accordance with the manufacturer's instructions. [110.3(B)]

E3401.7. Photovoltaic panels and modules. Photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703. [690.4(B)]

E3401.8. Inverters. Inverters shall be listed and labeled in accordance with UL 1741. Systems connected to the utility grid shall use inverters listed for utility interaction. [690.4(B)]

E3705.4.1. Conductors rated 60°C. Except where the equipment is marked otherwise, termination provisions of equipment for circuits rated 100 amperes or less, or marked for 14 AWG through 1 AWG conductors, shall be used only for 1 of the following:

1. Conductors rated 60°C (140°F).

2. Conductors with higher temperature ratings, provided that the ampacity of such conductors is determined based on the 60°C (140°F) ampacity of the conductor size used.

3. Conductors with higher temperature ratings where the equipment is listed and identified for use with such conductors. [110.14(C)(1)(a)]

E3908.8.1. Grounding of flexible metal conduit. Flexible metal conduit shall not be permitted as an equipment grounding conductor. [Michigan Electrical Code Rules Part 8 250.118 amended]

E3908.8.2. Grounding of liquid-tight flexible metal conduit. Liquid-tight flexible metal conduit shall not be permitted as an equipment grounding conductor. [Michigan Electrical Code Rules Part 8 250.118 amended]

R 408.30536a General requirements.

Rule 536a. Sections E3402.2, E3405.2 and E3407.5 are amended to read as follows:

E3402.2. Penetrations of fire-resistance-rated assemblies. Electrical installations in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible

spread of fire or products of combustion will not be substantially increased. Electrical penetrations through fire-resistance-rated walls, partitions, floors, or ceilings shall be protected by approved methods to maintain the fire-resistance-rating of the element penetrated. Penetrations of fire-resistance-rated walls shall be limited as specified in Section R302.4.

E3405.2. Working clearances for energized equipment and panelboards. Except as otherwise specified in chapters 34 through 43, the dimension of the working space in the direction of access to panelboards and live parts likely to require examination, adjustment, servicing, or maintenance while energized shall be not less than 36 inches (914 mm) in depth. Distances shall be measured from the energized parts where such parts are exposed or from the enclosure front or opening where such parts are enclosed. In addition to the 36-inch dimension (914 mm), the work space shall not be less than 30 inches (762 mm) wide in front of the electrical equipment and not less than the width of such equipment. The work space shall be clear and shall extend from the floor or platform to a height of 6.5 feet (1 981 mm) or the height of the equipment, whichever is greater. In all cases, the work space shall allow at least a 90-degree (1.57 rad) opening of equipment doors or hinged panels. Equipment associated with the electrical installation located above or below the electrical equipment shall be permitted to extend not more than 6 inches (152 mm) beyond the front of the electrical equipment. [110.26(A)]

Exception:

1. In existing dwelling units, service equipment, and panelboards that are not rated in excess of 200 amperes may be in spaces where the height of the working space is less than 6.5 feet (1 981 mm), but greater than 5 feet (1 524 mm). [110.26(A)(3) Exception 1 amended]

2. Meters that are installed in meter sockets may extend beyond the other equipment. Meter sockets shall not be exempt from the requirements of this section. [110.26(A)(3) Exception 2]

E3407.5. Polarity of connections. No grounded conductor shall be attached to any terminal or lead so as to reverse the designated polarity.

R 408.30537 Separate outdoor electric space conditioning equipment.

Rule 537. Section E3601.6.3, E3601.6.4, and E3608.1.2.1 are added to the code and Sections E3604.2.1, and E3609.7.1 are amended to read as follows:

E3601.6.3. Separate outdoor electric space conditioning equipment. A service disconnect for separately metered outdoor electric space conditioning equipment shall be grouped with the service disconnecting means for the structure or immediately adjacent to the outdoor meter cabinet. A permanent plaque or directory shall be installed at each service disconnect location denoting the other services, feeders, and branch circuits supplying a building or structure and area served by each service, feeder, and branch circuit. Grounding shall be in accordance with Sections E3607 and E3608.

E3601.6.4. Electric vehicle charging system service disconnect. A service disconnect for electric vehicle charging systems shall be grouped with the service disconnecting means for the structure or immediately adjacent to the outdoor meter cabinet. A permanent plaque or directory shall be installed at each service disconnect location identifying the other services, feeders, and branch circuits supplying a building or structure and area served by each service, feeder, and branch circuit. Grounding shall be in accordance with Section E3607 and E3608.

E3604.2.1. Above roofs. Conductors shall have a vertical clearance of not less than 8 feet (2438 mm) above the roof surface. The vertical clearance above the roof level shall be maintained for a distance of not less than 3 feet (914 mm) in all directions from the edge of the roof. See figure E3604.2.1. [230.24(A)]

Exceptions:

1. Conductors above a roof surface subject to pedestrian traffic shall have a vertical clearance from the roof surface in accordance with Section E3604.2.2. [230.24(A) Exception 1]
2. Where the roof has a slope of 4 inches (102 mm) in 12 inches (305 mm) or greater and is not accessible from an operable window, the minimum clearance shall be 3 feet (914 mm). [230.24(A) Exception 2 amended]
3. The minimum clearance above only the overhanging portion of the roof shall not be less than 18 inches (457 mm) where not more than 6 feet (1 829 mm) of conductor length passes over 4 feet (1 219 mm) or less of roof surface measured horizontally and such conductors are terminated at a through-the-roof raceway or approved support. [230.24(A) Exception 3]
4. The requirement for maintaining the vertical clearance for a distance of 3 feet (914 mm) from the edge of the roof shall not apply to the final conductor span where the service drop is attached to the side of a building. [230.24(A) Exception 4]
5. Where the voltage between conductors does not exceed 300 and the roof area is guarded or isolated, a reduction in clearance to 3 feet (914 mm) shall be permitted. [230.24(A) Exception 5]

E3608.1.2.1. Verification of the installation of the concrete encased electrode specified for in E3608.1.2. The inspection of a concrete incased electrode meeting the requirements of E3608.1.2 except for the connection of the grounding electrode conductor to the electrode shall be completed by 1 of the following:

1. The electrical inspector for the enforcing agency.
2. The building inspector for the enforcing agency if all of the following conditions are met:

a. Both the electrical and building inspectors for the enforcing agency(s) shall sign a written agreement which shall remain on file with the enforcing agency that designates authority to the building inspector for that agency to inspect a concrete encased electrode.

b. Upon inspection and verification by the building inspector of a concrete encased electrode, the building inspector shall provide written documentation to the electrical inspector that the installation of the concrete encased electrode meets the requirements set forth in E3608.1.2. Electrode shall be ½" diameter (13mm) reinforcing bar or larger, a minimum of 20 feet (6 096 mm) long including usual tie wire connections, and encased in 2 inches (51 mm) of concrete except for the end of the electrode which shall be in an accessible location and not subject to deteriorating conditions (i.e. backfill).

c. Verification of approval of the concrete encased electrode shall be made at the construction site by signature of the field copy of the building permit noting that the concrete encased electrode was approved along with the footing inspection or by a readily available inspection tag attached to the accessible grounding electrode reinforcing bar.

d. The grounding electrode conductor connection to the concrete encased electrode shall be inspected by the electrical inspector for the enforcing agency.

E3609.7.1. Corrugated stainless steel tubing (CSST). Corrugated stainless steel tubing gas piping systems shall be bonded to the electrical service grounding electrode system or where provided, lightening protection electrode system. The bonding jumper shall connect to a metallic pipe, pipe fitting, or CSST fitting between the point of delivery and the CSST utilizing a device listed for the application. The bonding jumper shall be not smaller than 6 AWG copper wire or equivalent, not longer than 75 feet and accessible. Gas piping systems that are bonded in accordance with this section shall be considered effectively bonded regardless of the amount of CSST in the system. Any additional grounding electrodes used shall be bonded to the electrical service grounding electrode system, or where provided, the lighting protection grounding electrode system.

Exception: CSST piping systems tested and listed by the manufacturer for installation without additional bonding when installed in accordance with the listing.

R 408.30537a Wiring methods.

Rule 537a. Section E3803.6 and tables E3801.4, and E3802.1 are amended to read as follows:

E3803.6. Raceway seals. Conduits or raceways shall be sealed or plugged at either or both ends where moisture will enter and contact live parts. Sealants shall be identified for use with the cable insulation, shield, or other components.

TABLE E3802.1
GENERAL INSTALLATION AND SUPPORT REQUIREMENTS FOR WIRING METHODS[a, b, c, d, e, f, g, h, i, j, k]

INSTALLATION REQUIREMENTS (Requirement applicable only to wiring methods marked "A")	AC MC	EMT IMC RMC	ENT	FMC LFC	NM UF	PVC	SE	SR[a]
Where run parallel with the framing member or furring strip, the wiring shall be not less than 1 ¼ inches from the edge of a furring strip or a framing member such as a joist, rafter, or stud or shall be physically protected.	A	–	A	A	A	–	A	–
Bored holes in framing members for wiring shall be located not less than 1 ¼ inches from the edge of the framing member or shall be protected with a minimum 0.0625-inch steel plate or sleeve, a listed steel plate, or other physical protection.	A[k]	–	A[k]	A[k]	A[k]	–	A[k]	–
Where installed in grooves, to be covered by wallboard, siding, paneling, carpeting, or similar finish, wiring methods shall be protected by 0.0625-inch-thick steel plate, sleeve, or equivalent, a listed steel plate or by not less than 1 ¼-inch free space for the full length of the groove in which the cable or raceway is installed.	A	–	A	A	A	–	A	A
Securely fastened bushings or grommets shall be provided to protect wiring run through openings in metal framing members.	–	–	A[j]	–	A[j]	–	A[j]	–
The maximum number of 90-degree bends shall not exceed 4 between junction boxes.	–	A	A	A	–	A	–	–
Bushings shall be provided where entering a box, fitting, or enclosure unless the box or fitting is designed to afford equivalent protection.	A	A	A	A	–	A	–	A
Ends of raceways shall be reamed to remove rough edges.	–	A	A	A	–	A	–	A
Maximum allowable on center support spacing for the wiring method in feet.	4.5[b,c]	10[l]	3[b]	4.5[b]	4.5[i]	3[d, l]	2.5[e]	–
Maximum support distance in inches from box or other terminations.	12[b, f]	36	36	12[b, g]	12[h, i]	36	12	–

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.0175 rad.

a. Installed in accordance with listing requirements.
b. Supports not required in accessible ceiling spaces between light fixtures where lengths do not exceed 6 feet.
c. Six feet for MC cable.
d. Five feet for trade sizes greater than 1 inch.
e. Two and one-half feet where used for service or outdoor feeder and 4.5 feet where used for branch circuit or indoor feeder.
f. Twenty-four inches for Type AC cable and 36 inches for interlocking Type MC cable where flexibility is necessary.
g. Where flexibility after installation is necessary, lengths of flexible metal conduit and liquidtight flexible metal conduit measured from the last point where the raceway is securely fastened shall not exceed: 36 inches for trade sizes ½ through 1 ¼, 48 inches for trade sizes 1 ½ through 2 and 5 feet for trade sizes 2 ½ and larger.

h. Within 8 inches (203 mm) of boxes without cable clamps.
i. Flat cables shall not be stapled on edge.
j. Bushings and grommets shall remain in place and shall be listed for the purpose of cable protection.
k. See Section R502.8 and R802.7 for additional limitations on the location of bored holes in horizontal framing members.
l. Raceways may be unsupported where the raceway is not more than 900 millimeters (36 inches) long and remains in unbroken lengths (without coupling). Such raceways shall terminate in an outlet box, junction box, device box, cabinet, or other termination at each end of the raceway.

R 408.30537b Power and lighting distribution.

Rule 537b. Sections E3901.11, E3905.3.2, E3908.9, and E3908.10, are amended and E3908.9.1, E3908.9.1.1 and E3908.9.1.2 are added to read as follows:

E3901.11. Foyers. Foyers that are not part of a hallway in accordance with Section E3901.10 and that have an area that is greater than 100 feet^2 (9.2903 m^2) shall have a receptacle(s) located in each wall space that is 3 feet (914 mm) or more in width. Doorways, door-side windows that extend to the floor and similar openings shall not be considered as wall space. [210.52(I) amended]

E3905.3.2. Securing to box. All permitted wiring methods shall be secured to the boxes.

Exception: Where nonmetallic-sheathed cable is used with boxes not larger than a nominal size of 2 ¼ inches by 4 inches (57 mm by 102 mm) mounted in walls or ceilings, and where the cable is fastened within 8 inches (2 032 mm) of the box measured along the sheath, and where the sheath extends through a cable knockout not less than ¼ inch (6.4 mm), securing the cable to the box shall not be required. Multiple cable entries shall be permitted in a single cable knockout opening. [314.17(c) Exception amended]

E3908.9. Equipment fastened in place or connected by permanent wiring methods. Noncurrent-carrying metal parts of equipment, raceways, and other enclosures, where required to be grounded, shall be grounded by 1 of the following methods: [250.134]

(a) By any of the equipment grounding conductors permitted by Sections E3908.8 and E3908.8.3. [250.134(A)]

(b) By an equipment grounding conductor contained within the same raceway, cable, or cord, or otherwise run with the circuit conductors. Equipment grounding conductors shall be identified in accordance with Section E3407.2. [250.134(B) Exception]

E3908.9.1. Cord-and-plug-connected equipment. Non-current-carrying metal parts of the cord-and-plug-connected equipment, if grounded, shall be connected to an equipment grounding conductor by 1 of the methods in E3908.9.1.1 and E3908.9.1.2. [250.138]

E3908.9.1.1. By means of an equipment grounding conductor. By means of an equipment grounding conductor run with the power supply conductors in a cable assembly or flexible cord properly terminated in a grounding-type attachment plug with 1 fixed grounding contact. [250.138(A)]

Exception: The grounding contacting pole of grounding-type plug-in ground-fault circuit interrupters may be of the movable, self-restoring type on circuits operating at not over 150 volts between any 2 conductors or over 150 volts between any conductor and ground. [250.138(A) Exception]

E3908.9.1.2. By means of a separate flexible wire or strap. By means of a separate flexible wire or strap, insulated or bare, connected to an equipment grounding conductor, and protected as well as practicable against physical damage, where part of the equipment. [250.138(B)]

E3908.10. Methods of equipment grounding. Fixtures and equipment shall be considered grounded where mechanically connected to an equipment grounding conductor as specified in Sections E3908.8 and E3908.8.3. Wire type equipment grounding conductors shall be sized in accordance with Section E3908.12.

R 408.30537c Devices and luminaires.

Rule 537c. Sections - E4002.2, and E4002.16, are amended to read as follows:

E4002.2. Grounding type. Receptacles installed on 15- and 20-ampere-rated branch circuits shall be of the grounding type and connected to an equipment grounding conductor.

Exception: Replacement receptacles as permitted by Section E4002.16.

E4002.16. Replacements. Replacement of receptacles shall comply with the following as applicable. [406.4(D) amended]

(1) Grounding-type receptacles. Where a grounding means exists in the receptacle enclosure or an equipment grounding conductor is installed grounding type receptacles shall be used and shall be connected to the equipment grounding conductor. [406.4(D)(1) amended]

(2) Non-grounding-type receptacles. Where attachment to an equipment grounding conductor does not exist in the receptacle enclosure, the installation shall comply with 1 of the following: [406.4(D)(2) amended]

(a) A non-grounding-type receptacle may be replaced with another non-grounding-type receptacle. [406.4(D)(2)(a)]

(b) A non-grounding-type receptacle may be replaced with a ground-fault circuit interrupter-type of receptacle. These receptacles shall be marked "no equipment ground." An equipment grounding conductor shall not be connected from the ground-fault circuit-interrupter-type receptacle to any outlet supplied from the ground-fault circuit-interrupter receptacle. [406.4(D)(2)(b)]

(c) A non-grounding type receptacle may be replaced with a grounding-type receptacle where supplied through a ground-fault circuit interrupter. Grounding-type receptacles supplied through the ground-fault circuit interrupter shall be marked "GFCI protected" and "no equipment ground." An equipment grounding conductor shall not be connected between the grounding-type receptacles. [406.4(D)(2)(c)]

(3) Ground-fault circuit interrupters. Ground-fault circuit-interrupter protected receptacles shall be provided where replacements are made at receptacle outlets that are required to be so protected elsewhere in this code. [406.4(D)(3)]

Exception: Where replacement of the receptacle type is impracticable, such as where the outlet box size will not permit the installation of the GFCI receptacle, the receptacle may be replaced with a new receptacle of the existing type, where GFCI protection is provided and the receptacle is marked "GFCI protected" and "no equipment ground" in accordance with E4002.16 (2)(a), (b),or (c). [406.4(D)(3) Exception]

R 408.30537d Frames of ranges and clothes dryers.

Rule 537d. Section E4101.8 of the code is added to read as follows:

E4101.8. Frames of ranges and clothes dryers. Frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers, and outlet or junction boxes that are part of the circuit for these appliances shall be connected to the equipment grounding conductor in the manner specified in E3908.9. [250.140 amended]

Exception: For existing branch-circuit installations only where an equipment grounding conductor is not present in the outlet or junction box, the frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers, and outlet or junction boxes that are part of the circuit for these appliances may be connected to the grounded circuit conductor if all of the following conditions are met: [250.140 Exception]

1. The supply circuit is 120/240-volt single-phase, 3-wire connected system. [250.140 Exception (1)]

2. The grounded conductor is not smaller than 10 AWG copper or 8 AWG aluminum. [250.140 Exception (2)]

3. The grounded conductor is insulated, or the grounded conductor is uninsulated and part of a type SE service-entrance cable and the branch circuit originates at the service equipment. [250.140 Exception (3)]

4. Grounding contacts of the receptacles furnished as part of the equipment are bonded to the equipment. [250.140 Exception (4)]

R 408.30541 Solid fuel burning equipment.
Rule 541. Section M1905 is added to the code to read as follows:
M1905. General. Solid fuel burning equipment shall be listed and labeled in accordance with Section M1302.1, installed in accordance with the manufacturer's installation instructions, and NFPA 211-2010 requirements.

R 408.30541a Duct Installation.
Rule 541a. Section M1502.4.2 of the code is amended to read as follows:
M1502.4.2. Duct Installation. Dryer exhaust ducts shall be supported at 4 foot (1 219 mm) intervals and secured in place. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. Ducts shall not be joined with screws or similar fasteners that protrude into the inside of the duct.

R 408.30542 Floor register location.
Rule 542. Section M1601.4.10 is added to the code to read as follows:
M1601.4.10. Floor register location. Floor registers located in room or spaces containing water closets shall be located a minimum of 3 feet (914 mm) from the water closet.

R 408.30543 Rescinded.

R 408.30544 Light, ventilation, and heating.
Rule 544. Section R303.5.2 of the code is amended to read as follows:
R303.5.2. Exhaust openings. Outside exhaust openings shall be located as not to create a nuisance. Exhaust openings shall not be directed onto walkways. Exhaust openings shall not terminate within 3 feet of a ventilated section in a soffit.

R 408.30544b Exterior walls.
Rule 544b. Section R302.5.1 of the code is amended and table R302.1(1) is added to read as follows:
R302.5.1. Opening protection. Openings from a private garage directly into a room used for sleeping purposes shall not be permitted. Other openings between the garage and residence shall be equipped with solid wood doors not less than 1 3/8 inches (35 mm) in thickness, solid or honeycomb-core steel doors not less than 1 3/8 inches (35 mm) thick, or 20-minute fire-rated doors.

TABLE R302.1(1)
EXTERIOR WALLS

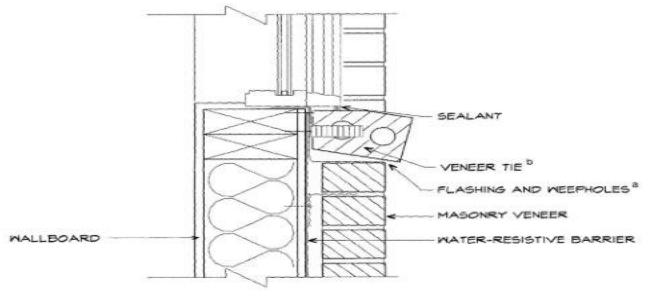
EXTERIOR WALL ELEMENT		MINIMUM FIRE-RESISTANCE RATING	MINIMUM FIRE SEPARATION DISTANCE
Walls	Fire-resistance rated	1 hour-tested in accordance with ASTM E 119 or UL 263 with exposure from both sides	< 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Projections	Not allowed[a]	NA	< 2 feet
	Fire-resistance rated	1 hour on the underside	≥ 2 feet to < 5 feet
	Not fire-resistance rated	0 hours	≥ 5 feet
Opening in walls	Not allowed	N/A	< 3 feet
	25% maximum of wall area	0 hours	3 feet
	Unlimited	0 hours	5 feet
Penetrations	All	Comply with Section R302.4	< 5 feet
		None required	5 feet

For SI: 1 foot = 304.8 mm
N/A = Not applicable
[a.] except as allowed as per Section R302.1 exceptions 3 and 4

R 408.30544c Polyethylene plastic.
Rule 544c. Sections P2906.3.1, P2906.10.1, P3003.11.1 and P3003.12.1 of the code are amended to read as follows:
P2906.3.1. Heat-fusion joints. Joint surfaces shall be clean and free from moisture. Joint surfaces shall be heated to melting temperature and joined. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM F 2620 and the manufacturer's instructions.
P2906.10.1. Heat-fusion joints. Heat fusion joints for polypropylene pipe and tubing joints shall be installed with socket-type heat-fused polypropylene fittings, butt-fusion polypropylene fittings, or electrofusion polypropylene fittings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM D 2657 and the manufacturer's instructions.
P3003.11.1. Heat-fusion joints. Heat-fusion joints for polyolefin pipe and tubing joints shall be installed with socket-type heat-fused polyolefin fittings or electrofusion polyolefin fittings. Joint surfaces shall be clean and free from moisture. The joint shall be undisturbed until cool. Joints shall be made in accordance with ASTM D 2657, ASTM F 1290, or CSA B181.3, and the manufacturer's instructions.
P3003.12.1. Heat-fusion joints. Joint surfaces shall be clean and free from moisture. All joint surfaces shall be cut, heated to melting temperature, and joined using tools specifically designed for the operation. Joints shall be undisturbed until cool. Joints shall be made in accordance with ASTM F 2620 and the manufacturer's instructions.

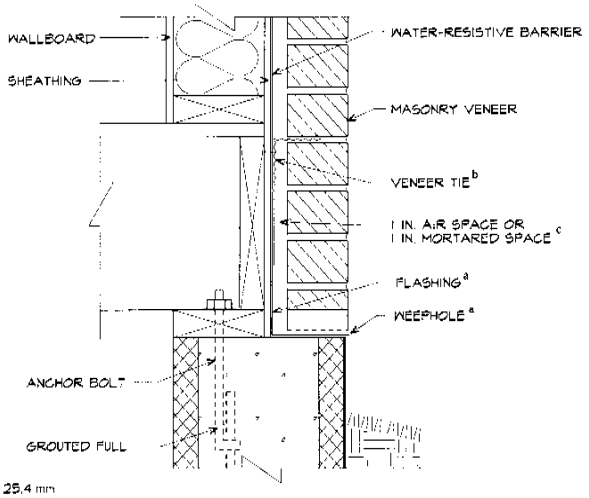
R 408.30545 Masonry veneer wall covering.

Rule 545. Figures R703.8, R703.8.2.1, and R703.8.2.2, of the code are amended to read as follows:



FOR SI: 1 INCH = 25.4 mm

FIGURE R 703.8
MASONRY VENEER WALL DETAILS
(CONTINUED)



FOR SI: 1 INCH = 25.4 mm

FIGURE R 703.8
MASONRY VENEER WALL DETAILS

(CONTINUED)

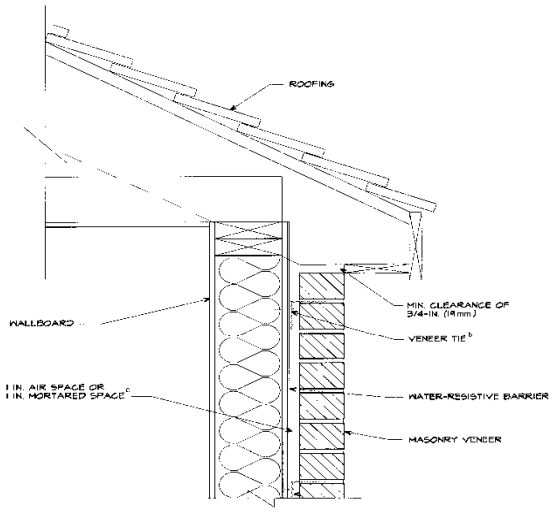


FIGURE **R 703.8 - continuted**
MASONRY VENEER WALL DETAILS

FOR SI: 1 INCH = 25.4 mm

a. SEE SECTIONS R703.7.5, R703.7.6 AND R703.8.
b. SEE SECTIONS R703.7.2 AND R703.7.4.
c. SEE SECTIONS R703.7.4.2 AND R703.7.4.3
d. SEE SECTION R703.7.3

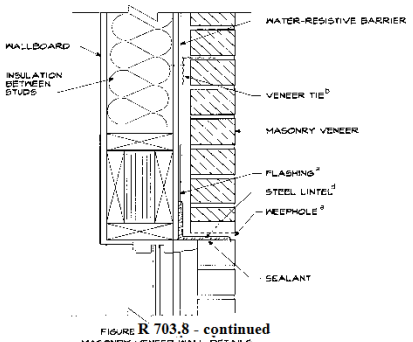
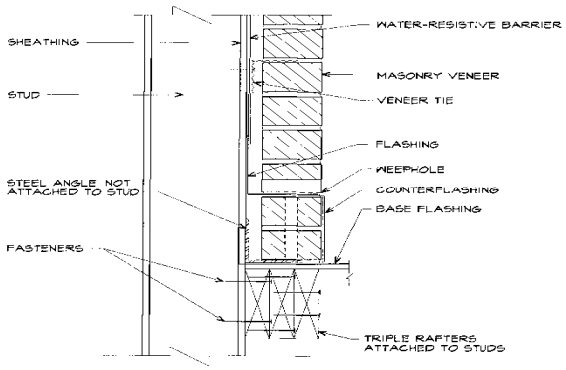


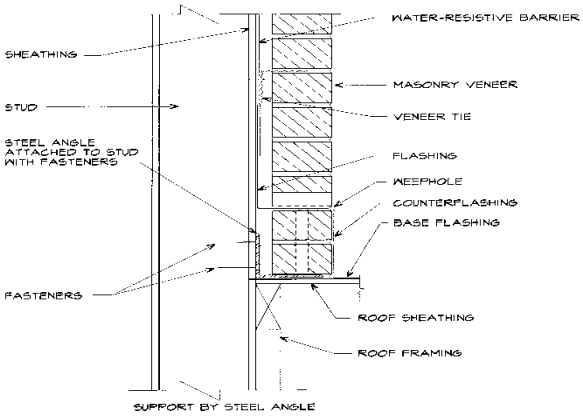
FIGURE **R 703.8 - continued**
MASONRY VENEER WALL DETAILS

FOR SI: 1 INCH = 25.4 mm

a. SEE SECTIONS R703.7.5, R703.7.6 AND R703.8.
b. SEE SECTIONS R703.7.2 AND R703.7.4.
c. SEE SECTIONS R703.7.4.2 AND R703.7.4.3
d. SEE SECTION R703.7.3



SUPPORT BY ROOF CONSTRUCTION
FIGURE **R 703.8.2.2**
EXTERIOR MASONRY VENEER SUPPORT BY ROOF CONSTRUCTION



SUPPORT BY STEEL ANGLE
FIGURE **R 703.8.2.1**
EXTERIOR MASONRY VENEER SUPPORT BY STEEL ANGLES

R 408.30545a Masonry heater clearance.

Rule 545a. Section R1002.5 of the code is amended to read as follows:

R1002.5. Masonry heater clearance. Combustible materials shall not be placed within 36 inches (914 mm) of the outside surface of a masonry heater unless installed in accordance with NFPA 211, and the required space between the heater and combustible material shall be fully vented to permit the free flow of air around all heater surfaces.

Exceptions:

1. When the masonry heater wall is at least 8 inches (203 mm) thick of solid masonry and the wall of the heat exchange channels is at least 5 inches (127 mm) thick of solid masonry, combustible materials shall not be placed within 4 inches (102 mm) of the outside surface of a masonry heater. A clearance of at least 8 inches (203 mm) shall be provided between the gas-tight capping slab of the heater and a combustible ceiling.

2. Masonry heaters listed and labeled in accordance with UL 1482 may be installed in accordance with the listing specifications and the manufacturer's written instructions.

R 408.30546 Smoke alarm locations for existing buildings.

Rule 546. Sections R314.2.2, R314.3, R314.3.2, and R314.3.3, R314.4, are amended to the code to read as follows: R314.2.2. Alterations, repairs, and additions. When alterations, repairs, or additions requiring a permit occur, or when 1 or more sleeping rooms are added or created in existing dwellings, the individual dwelling unit shall be equipped with smoke alarms located as required for new dwellings.

Exceptions:

1. Work involving the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck, are exempt from the requirements of this section.

2. Installations, alteration, or repairs of electrical, plumbing, or mechanical systems are exempt from the requirements of this section.

R314.3. Location. Smoke alarms shall be installed in the following locations:

1. In each sleeping room or in the immediate vicinity of the sleeping room.

2. On each additional story of the dwelling, including basements and habitable attics and not including crawl spaces and uninhabitable attics. In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than 1 full story below the upper level. R314.3.2. Smoke alarms in existing buildings constructed before November 6, 1974, not undergoing an alteration, addition, or change in occupancy requiring a building permit, shall be installed in the following locations in each dwelling unit or sleeping unit:

(1) In each sleeping room or immediate vicinity of the sleeping room.

(2) On each floor level including the basement level.

For sleeping units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than 1 full story below the upper level.

R314.3.3. Equipment requirements. The required equipment for smoke alarms required by R314.3.2 shall consist of the following:

(1) Installation. Smoke alarm devices shall be listed and installed in accordance with the manufacturer's installation requirements, the provisions of the code and the provisions of NFPA 72 as listed in chapter 44.

(2) Power Source. The equipment shall be operable by power from 1 of the following primary sources:

(a) The building wiring provided that such wiring is served from a commercial source and the smoke alarm is equipped with a battery backup. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection.

(b) A battery operated smoke alarm.

(c) A rechargeable battery operated smoke alarm shall be automatically recharged by an AC circuit of the commercial light and power source.

(d) A household use alarm system with battery backup listed and approved in accordance with the household fire warning equipment provisions of NFPA 72, as referenced in Section R314.1 of the code.

(3) Audible alarm notification. The activation of the alarm signal shall produce a sound that is audible in all occupiable dwelling areas.

(4) Testing and maintenance. The owner of a dwelling unit, in which required or optional fire detection or fire protection systems equipment is installed, shall be responsible for the proper operation, testing, and maintenance of the equipment in accordance with the manufacturer's instructions included with the equipment. The occupant of rental dwelling units shall be responsible for the periodic operational testing and periodic cleaning of the installed equipment within the rental unit in accordance with the testing instructions provided in the manufacturer's instructions for the equipment. If the system fails, breaks, or is out of service, it shall be repaired and functional within 30 days.

Exception: Smoke alarms and devices installed in buildings constructed before November 6, 1974, where an installation was approved by the appropriate enforcing agency under regulations in effect at the time of the installation shall be considered to comply with the provisions of the code.

R314.4. Interconnection. Where more than 1 smoke alarm is required to be installed within an individual dwelling unit in accordance with Section R314.3, the alarm devices shall be interconnected in such a manner that the actuation of 1 alarm will activate all of the alarms in the individual unit. Physical interconnection of smoke alarms shall not be required where listed wireless alarms are installed and all alarms sound upon activation of 1 alarm.

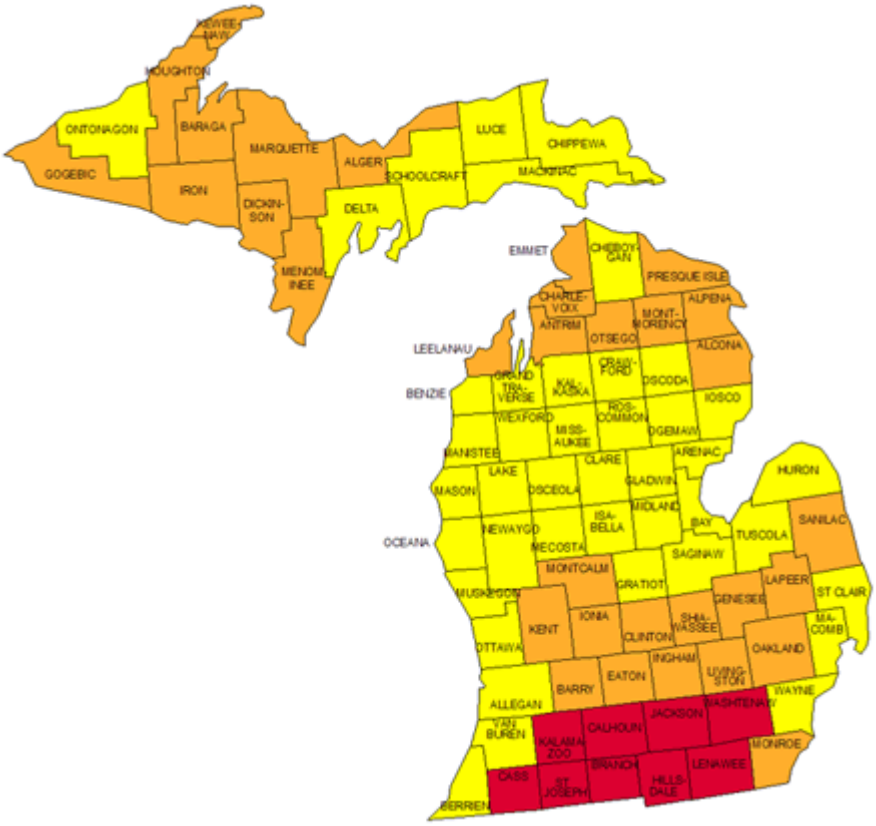
Exception: Interconnection of smoke alarms in existing areas shall not be required.

R 408.30547. Rescinded.

R 408.30547a Radon Control Methods.

Rule 547a. Figure AF101 and table AF101 are amended to read as follows:

Figure AF101. EPA map of radon zones.



Zone 1 High Potential (Greater than 4 pCi/L[a])

Zone 2 Moderate potential (From 2 to 4 pCi/L)

Zone 3 Low potential (Less than 2 pCi/L)

a. pCi/L standard for picocuries per liter of radon gas. The U.S. environmental protection agency (EPA) recommends that all homes that measure 4 pCi/L and greater be mitigated.
The EPA and the U.S. geological survey have evaluated the radon potential in the U.S. and have developed a map of radon zones designed to assist building officials in deciding whether radon resistant features are applicable in new construction.
The map assigns each of the 83 counties in Michigan to 1 of 3 zones based on radon potential. Each zone designation reflects the average short-term radon measurement that can be expected to be measured in a building without the implementation of radon-control methods. The radon zone designation of highest priority is zone 1. Table AF101 lists the zone 1 counties illustrated on the map. More detailed information can be obtained from state-specific booklets (EPA-402-R-93-021 through 070) available through state radon offices or from EPA regional offices.

Figure AF101
EPA Map of Radon Zones

Table AF101
High Radon-Potential (Zone 1) Counties[a]
Michigan Counties

Branch
Calhoun
Cass
Hillsdale
Jackson
Kalamazoo
Lenawee
St. Joseph
Washtenaw

a. The EPA recommends that this county listing be supplemented with other available state and local data to further understand the radon potential of a zone 1 area.

R 408.30547b Chimneys.

R547b. Sections R1003.9.1, R1005.4, Figure R1001.1, are amended and Figures R1003.9.1(1) and R1003.9.1(2) are added to read as follows:

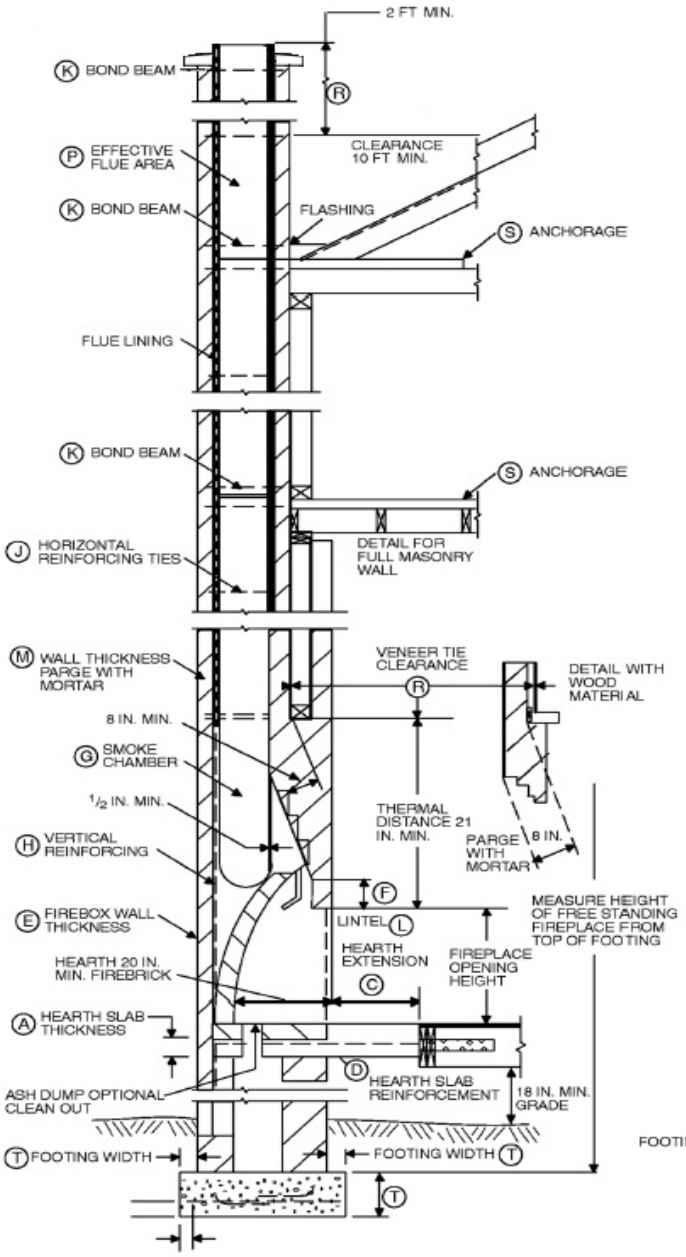
R1003.9.1. Chimney caps. Masonry chimneys shall have a concrete, metal, or stone cap sloped a minimum of 10 degrees to shed water, a drip edge or slot and shall be flashed in accordance with figure R1003.9.1(1). The joint space between the flue liner and the cap shall be filled with compressible filler and caulked with a suitable sealant to allow for expansion and contraction of the materials. All vertical joints in a chimney cap shall be caulked with a suitable sealant.

The cap shall be a minimum of 2" (51 mm) thick at the outer edge and overhang the outer wall of the chimney by a minimum of 2" (51 mm). The drip slot shall be located not less than 1-1/2" (38 mm) from the outer surface of the chimney. A bond break shall be installed between the concrete cap and the chimney masonry.

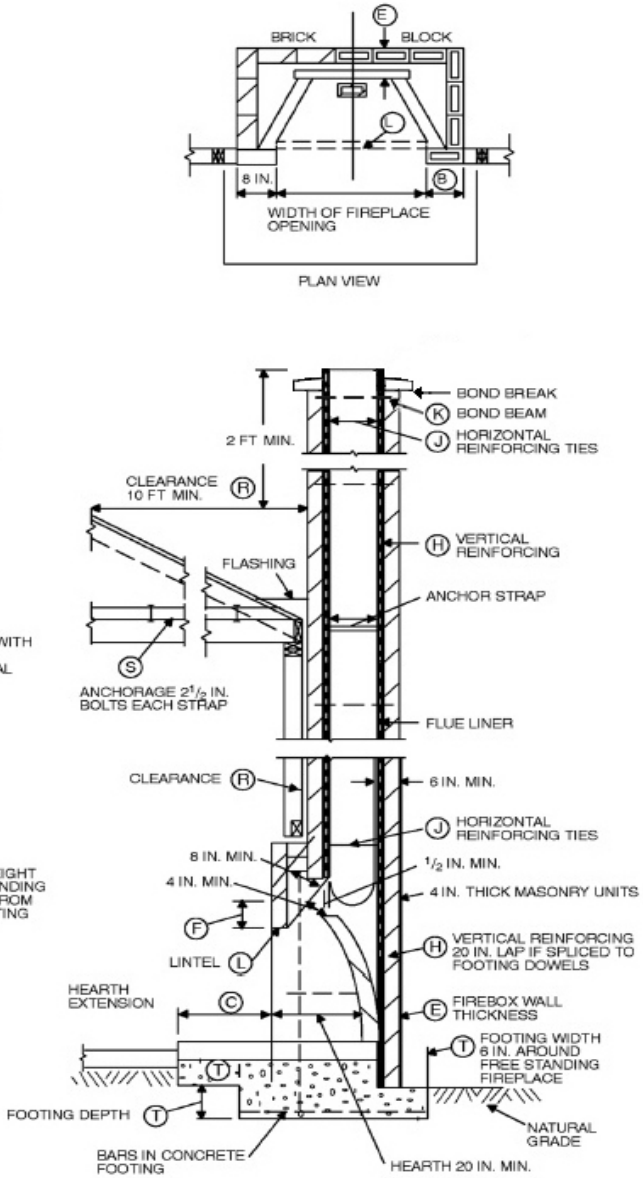
Metal caps shall lap down the chimney wall a minimum of 4" (102 mm) and be sealed with a suitable sealant.

Joint sealants shall meet ASTM C 920, type S or M, grade NS, class 25 and be installed in accordance with the manufacturer's installation instructions.

R1005.4. Factory-built chimneys. Chimneys for use with factory-built fireplaces shall comply with the requirements of UL 127. The metal chase cover shall be sloped a minimum of 10° to shed water. Metal chase cover shall lap down the chimney wall a minimum of 4" (102 mm) and be sealed with a suitable sealant. Exterior wall claddings shall be applied and flashed in accordance with Section R703 and manufacturer's installation instructions.



BRICK FIREBOX AND CHIMNEY—
SECTIONAL SIDE VIEW ON WOOD FLOOR



BRICK FIREBOX AND BLOCK CHIMNEY—
SECTIONAL SIDE VIEW ON CONCRETE SLAB

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

Figure R1001.1
Fireplace and Chimney Details

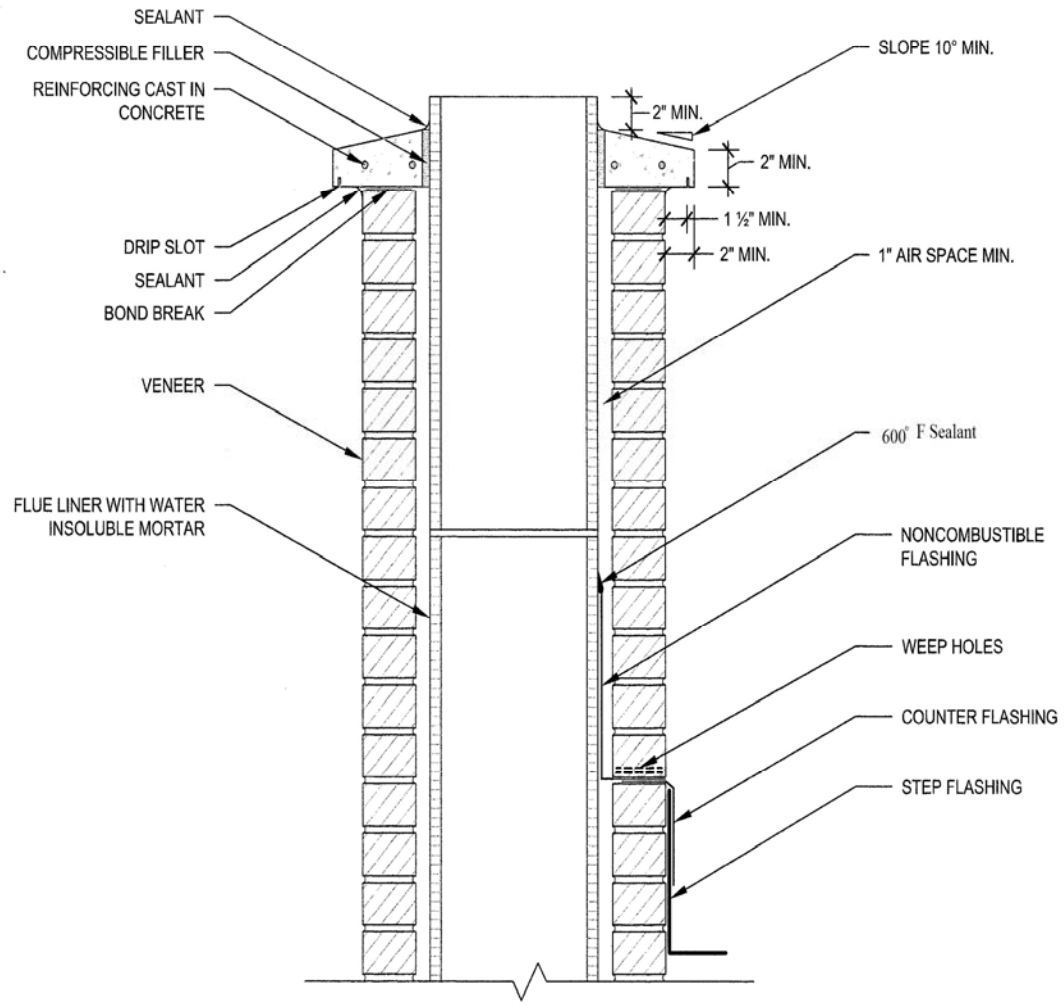


FIGURE R1003.9.1 (1)

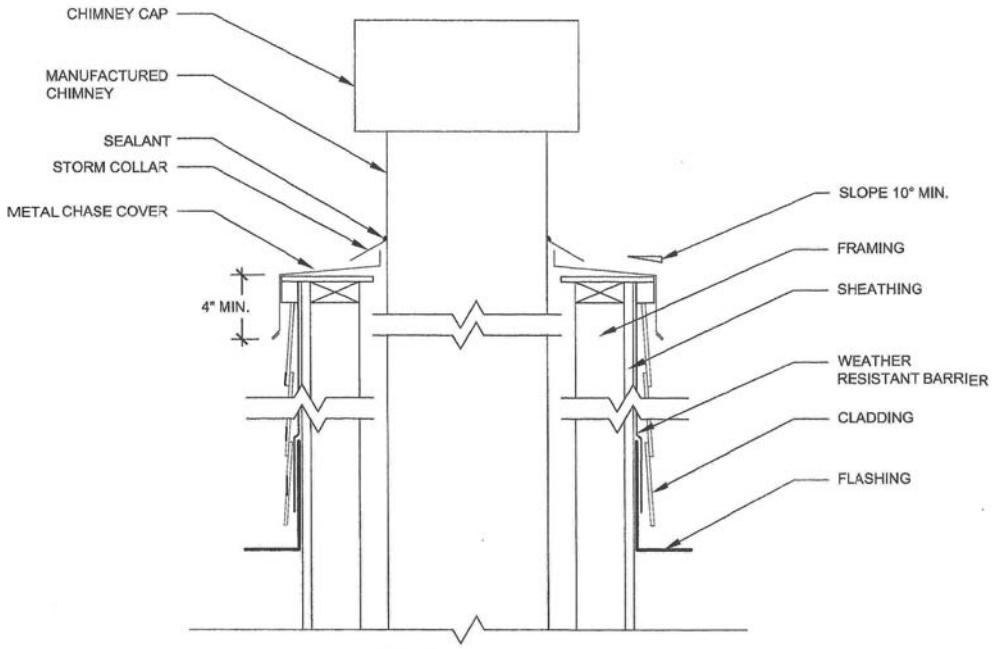


FIGURE R1003.9.1 (2)

R408.30547c General.

Rule 547c. Sections N1101.3.1, N1101.7, N1101.10, N1101.12.3, N1101.16, tables N1101.10, and N1101.10.2(2) are amended and figure N1101.10a of the code is added to read as follows:

N1101.3.1 (R101.4.3). Additions, alterations, renovations, or repairs. Additions, alterations, renovations, or repairs to an existing building, building system, or portion thereof shall conform to the provisions of this code as they relate to new construction without requiring the unaltered portion(s) of the existing building or building system to comply with this code. Additions, alterations, renovations, or repairs shall not create an unsafe or hazardous condition or overload existing building systems. An addition shall be deemed to comply with this code if the addition alone complies or if the existing building and addition comply with this code as a single building.

Exception: The following are exempt provided the energy use of the building is not increased:

1. Storm windows installed over existing fenestration.
2. Glass only replacements in an existing sash and frame.
3. Existing ceiling, wall, or floor cavities exposed during construction provided that these cavities are filled with insulation.
4. Construction where the existing roof, wall, or floor cavity is not exposed.
5. Reroofing where the roof is part of the thermal envelope, and where neither the roof sheathing nor the roof insulation is exposed.
6. Reroofing where the roof is not part of the thermal envelope.
7. Replacement of existing doors that separate conditioned space from the exterior shall not require the installation of a vestibule or revolving door, provided, however, that an existing vestibule that separates a conditioned space from the exterior shall not be removed.
8. Alterations that replace less than 50% of the luminaries in a space, provided that such alterations do not increase the installed interior lighting power.
9. Alterations that replace only the bulb and ballast within the existing luminaries in a space provided that the alteration does not increase the installed interior lighting power.

N1101.7 (R102.1.1). Above code programs. The state construction code commission may evaluate and approve a national, state, or local energy efficiency program to exceed the energy efficiency required by this code. Buildings approved in writing by such an energy efficiency program, such as ICC 700-2012 “silver” or energy star version 3 (rev. 07), shall be considered in compliance with this code. The requirements identified as “mandatory” in chapter 4 shall be met.

N1101.10 (R301.1). Climate zones. Climate zones from figures 301.1, 301.1a or table 301.1 shall be used in determining the applicable requirements of this code.

N1101.12.3. Fenestration product rating. U-factors of fenestration products (windows, doors, and skylights) shall be determined in accordance with NFRC 100 by an accredited, independent laboratory, and labeled and certified by the manufacturer. Products lacking such a labeled U-factor shall be assigned a default U-factor from table N1101.12.3(1) or N1101.12.3(2).

Exception: Computer simulations by independent NFRC certified laboratories or approval under section 21 of 1972 PA 230, MCL 125.1521 is considered in compliance with this section.

N1101.16 (R401.3). Certificate (mandatory). A permanent certificate shall be posted on or in the electrical distribution panel, and shall meet all of the following:

(a) Be affixed or attached so it does not cover or obstruct the visibility of the circuit directory label, service disconnect label, or other required labels.

(b) Be completed by the builder or registered design professional.

(c) List the predominant *R*-values of insulation installed in or on ceiling/roof, walls, foundation (slab, basement wall, crawlspace wall and/or floor) and ducts outside conditioned spaces and U-

factors for fenestration. If there is more than 1 value for each component, then the certificate shall list the value covering the largest area.

(d) List the types and efficiencies of heating, cooling, and service water heating equipment.

(e) If a gas-fired unvented room heater, electric furnace, or baseboard electric heater is installed in the residence, then the certificate shall list "gas-fired unvented room heater," as appropriate. An efficiency shall not be listed for gas-fired unvented room heaters, electric furnaces, or electric baseboard heaters.

Table N1101.10
Climate Zones by County

Zones		
5A	6A	7
Allegan	Alcona	Baraga
Barry	Alger	Chippewa
Bay	Alpena	Gogebic
Berrien	Antrim	Houghton
Branch	Arenac	Iron
Calhoun	Benzie	Keweenaw
Cass	Charlevoix	Luce
Clinton	Cheboygan	Mackinac
Eaton	Clare	Ontonagon
Genesee	Crawford	Schoolcraft
Gratiot	Delta	
Hillsdale	Dickinson	
Ingham	Emmet	
Ionia	Gladwin	
Jackson	Grand Traverse	
Kalamazoo	Huron	
Kent	Iosco	
Lapeer	Isabella	
Lenawee	Kalkaska	
Livingston	Lake	
Macomb	Leelanau	
Midland	Manistee	
Monroe	Marquette	
Montcalm	Mason	
Muskegon	Mecosta	
Oakland	Menominee	
Ottawa	Missaukee	
Saginaw	Montmorency	
Shiawassee	Newaygo	
St. Clair	Oceana	
St. Joseph	Ogemaw	
Tuscola	Osceola	
Van Buren	Oscoda	
Washtenaw	Otsego	
Wayne	Presque Isle	
	Roscommon	
	Sanilac	
	Wexford	

Key: A – Moist. Absence of moisture designation indicates moisture regime is irrelevant.

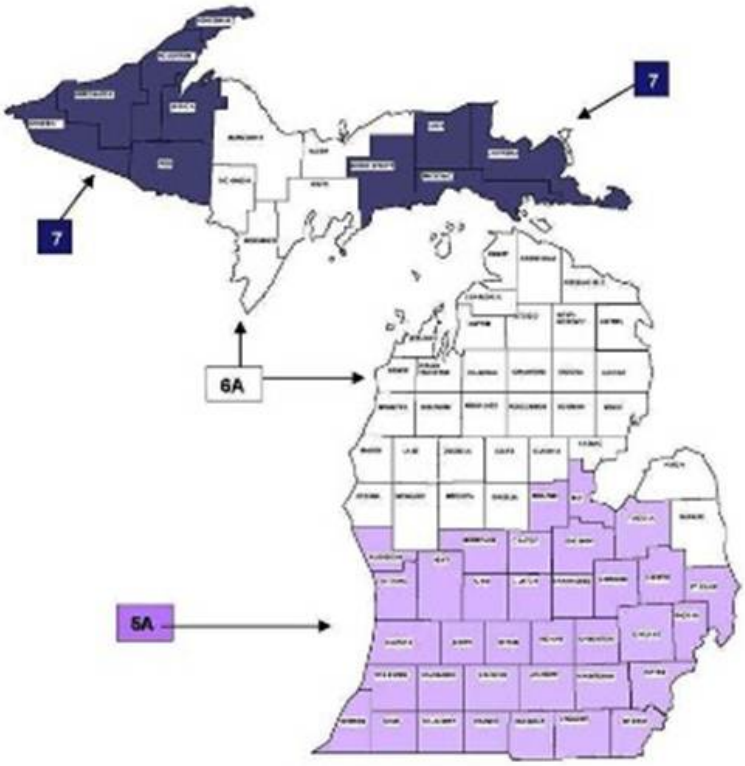
Table N1101.10.2(2)

Climate Zone Definitions

Zone Number	Thermal Criteria	
	IP Units	SI Units
5A	5400 < HDD65°F≤7200	3000 < HDD18°F≤4000
6A	7200 < HDD65°F≤9000	4000 < HDD18°F≤5000
7	9000 < HDD65°F≤12600	5000 < HDD18°F≤7000

For SI: ºC = [(ºF)-32]/1.8

FIGURE N1101.10a
CLIMATE ZONES



R408.30547d Building thermal envelope.

Rule 547d. Sections N1102.2.6, N1102.2.12, N1102.3.3, N1102.3.6, N1102.4, N1102.4.1.1, N1102.4.1.2, N1102.4.2, N1102.4.3, N1102.4.4, tables N1102.1.1, N1102.1.3, and N1102.4.1.1 of the code are amended to read as follows:

N1102.2.6 (R402.2.6). Steel-frame ceilings, walls, and floors. Steel-frame ceilings, walls, and floors shall meet the insulation requirements of table N1102.2.6 or shall meet the U-factor requirements in table N1102.1.3. The calculation of the U-factor for a steel-frame envelope assembly shall use a series-parallel path calculation method.

N1102.2.12 Thermally isolated sunroom insulation. The minimum ceiling insulation R-values shall be R-24 in zones 5 to 7. The minimum wall R-value shall be R-13 in all zones. New wall or walls separating a sunroom from conditioned space shall meet the building thermal envelope requirements.

N1102.3.3 (R402.3.3). Glazed fenestration exemption. Up to 15 square feet (1.4m^2) of glazed fenestration per dwelling unit may be exempt from U-factor requirements in section N1102.1.1. This exemption shall not apply to the U-factor alternative approach in section N1102.1.1 and the total UA alternative in section N1102.1.4.

N1102.3.6 (R402.3.6). Replacement fenestration. Where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for U-factor in table N1102.1.3. Where some or all of an existing fenestration unit is replaced with a new fenestration product, including sash and glazing, the replacement fenestration unit shall meet the applicable requirements for U-factor in table N1102.1.1.

N1102.4 (R402.4). Air leakage. The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of sections N1102.4.1 through N1102.4.4.

N1102.4.1 (R402.4.1). Building thermal envelope. The building thermal envelope shall comply with sections N1102.4.1.1 and N1102.4.1.2.

N1102.4.1.1 (R402.4.1.1). Installation (mandatory). The components of the building thermal envelope as listed in table N1102.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in table N1102.4.1.1, as applicable to the method of construction. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

N1102.4.1.2 (R402.4.1.2). Testing (prescriptive). The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 4 air changes per hour. Testing shall be conducted with a blower door at a pressure of 0.2" w.g. (50 pascals). Where required by the code official, testing shall be conducted by a certified independent third party. Certification programs shall be approved by the state construction code commission. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.

During testing all of the following apply:

1. Exterior windows and doors, fireplace, and stove doors shall be closed, but not sealed, beyond the intended weather stripping or other infiltration control measures.
2. Dampers including exhaust, intake, makeup air, backdraft, and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.
3. Interior doors, if installed at the time of the test, shall be open.
4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.
5. Heating and cooling systems, if installed at the time of the test, shall be turned off.
6. Supply and return registers, if installed at the time of the test, shall be fully open.

N1102.4.2 (R402.4.2). Fireplaces (mandatory). New wood-burning masonry fireplaces shall have tight-fitting flue dampers and outdoor combustion air.

N1102.4.3 (R402.4.3). Fenestration air leakage (mandatory). Windows, skylights, and sliding glass doors shall have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m^2), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/m^2), when tested according to NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled by the manufacturer.

Exception: Site-built windows, skylights, and doors.

N1102.4.4 (R402.4.4). Recessed lighting (mandatory). Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and labeled as having an air leakage rate not more than 2.0 cfm (0.944 L/s) when tested in accordance with ASTM E 283 at a 1.57 psf (75 Pa) pressure differential. All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

TABLE N1102.1.1 (R402.1.1)
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

Climate Zone	Fenestration U-Factor[b]	Skylight[b] U-Factor	Ceiling R-Value	Wood Frame Wall R-Value	Mass Wall R-Value[g]	Floor R-Value	Basement[c] Wall R-Value	Slab[d] R-Value & Depth	Crawl Space[c] Wall R-Value
5A	0.32	0.55	38	20 or 13 + 5[f]	13/17	30[e]	10/13	10, 2 ft	15/19
6A	0.32	0.55	49	20 or 13 + 5[f]	15/20	30[e]	15/19	10, 4 ft	15/19
7	0.32	0.55	49	20 or 13 + 5[f]	19/21	38[e]	15/19	10, 4 ft	15/19

a. R-values are minimums. U-factors are maximums. When insulation is installed in a cavity which is less than the label or design thickness of the insulation, the installed R-value of the insulation shall not be less than the R-values specified in the table.
b. The fenestration U-factor column excludes skylights.
c. "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" may be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home. "10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
d. R-5 shall be added to the required slab edge R-values for heated slabs.
e. Or insulation sufficient to fill the framing cavity, R-19 minimum.
f. First value is cavity insulation, second is continuous insulation or insulated siding, so "13 + 5" means R-13 cavity insulation plus R-5 continuous insulation or insulated siding. If structural sheathing covers 40% or less of the exterior, continuous insulation R-value may be reduced by no more than R-3 in the locations where structural sheathing is used – to maintain a consistent total sheathing thickness.
g. The second R-value applies when more than 1/2 the insulation is on the interior of the mass wall.

TABLE N1102.1.3 (R402.1.3)
EQUIVALENT U-FACTORS[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass Wall U-Factor[b]	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
5A	0.32	0.55	0.030	0.057	0.082	0.033	0.059	0.055
6A	0.32	0.55	0.026	0.057	0.060	0.033	0.050	0.055
7	0.32	0.55	0.026	0.057	0.057	0.028	0.050	0.055

a. Nonfenestration U-factors shall be obtained from measurement, calculation, or an approved source.
b. When more than half the insulation is on the interior, the mass wall U-factors shall be a maximum of 0.065 in zone 5 and marine 4, and 0.057 in zones 6 and 7.

TABLE N1102.4.1.1 (R402.4.1.1)
AIR BARRIER AND INSULATION INSTALLATION

COMPONENT	CRITERIA[a]
Air barrier and thermal barrier	A continuous air barrier shall be installed in the building envelope. Exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed. Air-permeable insulation shall not be used as a sealing material.
Ceiling/attic	The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier sealed. Access openings, drop down stair, or knee wall doors to unconditioned attic spaces shall be sealed.
Walls	Corners and headers shall be insulated and the junction of the foundation and sill plate shall be sealed. The junction of the top plate and top of exterior walls shall be sealed. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier. Knee walls shall be sealed.
Windows, skylights, and doors	The space between window/door jambs and framing, and skylights and framing shall be sealed.
Rim joists	Rim joists shall be insulated and include the air barrier.

Floors (including above-garage and cantilevered floors)	Insulation shall be installed to maintain permanent contact with underside of subfloor decking. The air barrier shall be installed at any exposed edge of insulation.
Crawl space walls	Where provided in lieu of floor insulation, insulation shall be permanently attached to the crawlspace walls. Exposed earth in unvented crawl spaces shall be covered with a class I vapor retarder with overlapping joints taped.
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.
Narrow cavities	Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation that on installation readily conforms to the available cavity space.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be air tight, IC rated, and sealed to the drywall.
Plumbing and wiring	Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.
Shower/tub on exterior wall	Exterior walls adjacent to showers and tubs shall be insulated and the air barrier installed separating them from the showers and tubs.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed.
HVAC register boots	HVAC register boots that penetrate the building thermal envelope shall be sealed to the subfloor or drywall.
Fireplace	An air barrier shall be installed on fireplace walls.

a. In addition, inspection of log walls shall be in accordance with the provisions of ICC-400.

R408.30547e Simulated performance alternative.

Rule 547e. Table N1105.5.2(1) [R405.5.2(1)] of the code is amended to read as follows:

TABLE N1105.5.2(1) [R405.5.2(1)]
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Above-grade walls	Type: mass wall if proposed wall is mass; otherwise wood frame. Gross area: same as proposed U-factor: from Table N1102.1.3 Solar absorptance = 0.75 Remittance = 0.90	As proposed As proposed As proposed As proposed As proposed
Basement and crawl space walls	Type: same as proposed Gross area: same as proposed U-factor: from Table N1102.1.3, with insulation layer on interior side of walls.	As proposed As proposed As proposed
Above-grade floors	Type: wood frame Gross area: same as proposed U-factor: from Table N1102.1.4	As proposed As proposed As proposed
Ceilings	Type: wood frame Gross area: same as proposed U-factor: from Table N1102.1.4	As proposed As proposed As proposed
Roofs	Type: composition shingle on wood sheathing Gross area: same as proposed Solar absorptance = 0.75 Emittance = 0.90	As proposed As proposed As proposed As proposed
Attics	Type: vented with aperture = 1 ft^2 per 300 ft^2 ceiling area	As proposed
Foundations	Type: same as proposed foundation wall area above and below grade and soil. Characteristics: same as proposed	As proposed As proposed
Doors	Area: 40 ft^2 Orientation: North U-factor: same as fenestration from Table N1102.1.3.	As proposed As proposed As proposed
Glazing	Total[b] = (a) The proposed glazing area: where proposed glazing area is less than 15% of the conditioned floor area. (b) 15% of the conditioned floor area; where the proposed glazing area is 15% or more of the conditioned floor area.	As proposed

	Orientation: equally distributed to four cardinal compass orientations (N, E, S & W). U-factor: from Table N1102.1.4 SHGC: From Table N1102.1.2 except that for climates with no requirement (NR) SHGC = 0.40 shall be used. Interior shade fraction: 0.92-(0.21 x SHGC for the standard reference design) External shading: none	As proposed As proposed As proposed 0.92-(0.21 x SHGC as proposed) As proposed
Skylights	None	As proposed
Thermally isolated sunrooms	None	As proposed
Air exchange rate	Air leakage rate of 4 air changes per hour at a pressure of 0.2 inches w.g. (50 Pa). The mechanical ventilation rate shall be in addition to the air leakage rate and the same as in the proposed design, but no greater than 0.01 x CFA + 7.5 x (N_{br} + 1) where: CFA = conditioned floor area N_{br} = number of bedrooms Energy recovery shall not be assumed for mechanical ventilation.	The measured air exchange rate[c]. The mechanical ventilation rate[d] shall be in addition to the air leakage rate and shall be as proposed.
Internal gains	IGain = 17,900 + 23.8 x CFA + 4104 x N_{br} (Btu/day per dwelling unit)	Same as standard reference design.
Internal mass	An internal mass for furniture and contents of 8 pounds per square foot of floor area.	Same as standard reference design, plus any additional mass specifically designed as a thermal storage element[c] but not integral to the building envelope or structure.
Structural mass	For masonry floor slabs, 80% of floor area covered by R-2 carpet and pad, and 20% of floor directly exposed to room air. For Masonry basement walls, as proposed, but with insulation required by Table R402.1.4 located on the interior side of the walls. For other walls, for ceilings, floors, and interior walls, wood frame construction.	As proposed As proposed As proposed
Heating systems[f,g]	As proposed for other than electric heating without a heat pump. Where the proposed design utilizes electric heating without a heat pump the standard reference design shall be an air source heat pump meeting the requirements of	

	the Michigan energy code-commercial provisions. Capacity: sized in accordance with Section N1103.7.	As proposed
Cooling systems[f,h]	As proposed Capacity: sized in accordance with Section N1103.7.	As proposed
Service water heating[f,g,h,i]	As proposed Use: same as proposed design	As proposed
Thermal distribution systems	Untested distribution systems: DSE = 0.88 Tested ducts: Leakage rate to outside conditioned space as specified Section N1103.3.2 Tested duct location: Unconditioned attic Tested duct insulation: in accordance with Section N1103.3.1	Untested distribution systems: DSE from Table N1105.5.2(2) Tested ducts: Tested leakage rate to outside conditioned space Duct location: As proposed Duct insulation: As proposed
Thermostat	Type: Manual, cooling temperature setpoint = 75°F; Heating temperature setpoint = 72°F	Same as standard reference

For SI: 1 square foot = 0.93 m^2, 1 British thermal unit = 1055 J, 1 pound per square foot = 4.88 kg/m^2, 1 gallon (U.S.) = 3.785 L, °C = (°F-3)/1.8, 1 degree = 0.79 rad, 1 inch water gauge = 1250 Pa.

a. Glazing shall be defined as sunlight-transmitting fenestration, including the area of sash, curbing, or other framing elements, that enclose conditioned space. Glazing includes the area of sunlight-transmitting fenestration assemblies in walls bounding conditioned basements. For doors where the sunlight-transmitting opening is less than 50% of the door area, the glazing area is the sunlight transmitting opening area. For all other doors, the glazing area is the rough frame opening area for the door including the door and the frame.

b. For residences with conditioned basements, R-2 and R-4 residences and townhouses, the following formula shall be used to determine glazing area:

$AF = A_s \times FA \times F$

where:

AF = Total glazing area.

A_s = Standard reference design total glazing area.

FA = (Above-grade thermal boundary gross wall area)/(above-grade boundary wall area + 0.5 x below-grade boundary wall area).

F = (Above-grade thermal boundary wall area)/(above-grade thermal boundary wall area + common wall area) or 0.56, whichever is greater.

and where:
Thermal boundary wall is any wall that separates conditioned space from unconditioned space from unconditioned space or ambient conditions.
Above-grade thermal boundary wall is any thermal boundary wall component not in contact with soil.
Below-grade boundary wall is any thermal boundary wall in soil contact.
Common wall area is the area of walls shared with an adjoining dwelling unit.
L and CFA are in the same units.
c. Where required by the code official, testing shall be conducted by a certified independent third party. Hourly calculations as specified in the ASHRAE handbook of fundamentals, or the equivalent shall be used to determine the energy loads resulting from infiltration.
d. The combined air exchange rate for infiltration and mechanical ventilation shall be determined in accordance with equation 43 of 2001 ASHRAE handbook of fundamentals, page 26.24 and the "whole-house ventilation" provisions of 2001 ASHRAE handbook of fundamentals, page 26.19 for intermittent mechanical ventilation.
e. Thermal storage element shall mean a component not part of the floors, walls, or ceilings that is part of a passive solar system, and that provides thermal storage such as enclosed water columns, rock beds, or phase-change containers. A thermal storage element must be in the same room as fenestration that faces within 15 degrees (0.26 rad) of true south, or must be connected to such a room with pipes or ducts that allow the element to be actively charged.
f. For a proposed design with multiple heating, cooling, or water heating systems using different fuel types, the applicable standard reference design system capacities and fuel types shall be weighted in accordance with their respective loads as calculated by accepted engineering practice for each equipment and fuel type present.
g. For a proposed design without a proposed heating system, a heating system with the prevailing federal minimum efficiency shall be assumed for both the standard reference and proposed design.
h. For a proposed design home without a proposed cooling system, an electric air conditioner with the prevailing federal minimum efficiency shall be assumed for both the standard reference design and the proposed design.
i. For a proposed design with a non-storage-type water heater, a 40-gallon storage-type water heater with the prevailing federal minimum energy factor for the same fuel as the predominant heating fuel type shall be assumed. For the case of a proposed design without a proposed water heater, a 40-gallon storage-type water heater with the prevailing federal minimum efficiency for the same fuel as the predominant heating fuel type shall be assumed for both the proposed design and standard reference design.

R408.30547f Systems.

Rule 547e. Sections N1103.2.1, N1103.2.2, and N1103.4.2 of the code are amended to read as follows:

N1103.2.1. Insulation (prescriptive). All portions of the air distribution system shall be installed in accordance with Section M1601 and be insulated to an installed R-6 when system components are located within the building but outside the conditioned space, and R-8 when located outside to the building thermal envelope. When located within a building envelope assembly, at least R-8 shall be applied between the duct and that portion of the assembly farthest from conditioned space.

Exception: Portions of the air distribution system within appliances or equipment.

N1103.2.2. Sealing (mandatory). Ducts, air handlers, and filter boxes shall be sealed. Joints and seams shall comply with either the international mechanical code or international residential code, as applicable.

Exceptions:

1. Air-impermeable spray foam products may be applied without additional joint seals.
2. Where a duct connection is made that is partially inaccessible, 3 screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
3. Continuously welded and locking-type longitudinal joints and seams in ducts operating at static pressures less than 2 inches (51 mm) of water column (500 Pa) pressure classification shall not require additional closure systems.

Duct tightness shall be verified by either of the following:

1. Postconstruction test: Total leakage to the outside of a conditioned space or total leakage shall be less than or equal to 4 cfm (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inches (2.54 mm) w. g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.
2. Rough-in test: Total leakage shall be less than or equal to 4 cfm (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inches (2.54 mm) w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure. All registers shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 3 cfm (85 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.

Exception: The total leakage test is not required for ducts and air handlers located entirely within the building thermal envelope.

N1103.4.2. Hot water pipe insulation (prescriptive). Insulation for hot water pipe with a minimum thermal resistance (R-value) of R-3 shall be applied to the following:

1. Piping larger than 3/4 inch nominal diameter.
2. Piping serving more than 1 dwelling unit.
3. Piping located outside the conditioned space.
4. Piping from the water heater to a distribution manifold.
5. Piping located under a floor slab.
6. Buried piping.
7. Supply and return piping in recirculation systems other than demand recirculation systems.

R408.30547g Energy rating index compliance alternative.

Rule 547f. Sections N1106.1, N1106.2, N1106.3, N1106.3.1, N1106.4, N1106.5, N1106.6, N1106.6.1, N1106.6.2, N1106.6.3, N1106.7, N1106.7.1, N1106.7.2, N1106.7.3, and table N1106.4 of the code are added to read as follows:

N1106.1 (R406.1). Scope. This section establishes criteria for compliance using an energy rating index (ERI) analysis.

N1106.2 (R406.2). Mandatory requirements. Compliance with this section requires that the mandatory provisions identified in sections N1101.2 and N1103.4.2 be met. The building thermal envelope shall be greater than or equal to levels of efficiency and solar heat gain coefficient in table 402.1.2 or 402.1.4 of the 2009 international energy conservation code.

Exception: Supply and return ducts not completely inside the building thermal envelope shall be insulated to a minimum of R-6.

N1106.3 (R406.3). Energy rating index. The energy rating index (ERI) shall be a numerical integer value that is based on a linear scale constructed such that the ERI reference design has an index value of 100 and a residential building that uses no net purchased energy has an index value of 0. Each integer value on the scale shall represent a 1% change in the total energy use of the rated design relative to the total energy use of the ERI reference design. The ERI shall consider all energy used in the residential building.

N1106.3.1 (R406.3.1). ERI reference design. The ERI reference design shall be configured such that it meets the minimum requirements of the 2006 international energy conservation code prescriptive requirements.

The proposed residential building shall be shown to have an annual total normalized modified load less than or equal to the annual total loads of the ERI reference design.

N1106.4 (R406.4). ERI-based compliance. Compliance based on an ERI analysis requires that the rated design be shown to have an ERI less than or equal to the appropriate value listed in table N1106.4 when compared to the ERI reference design.

N1106.5 (R406.5). Verification by approved agency. Verification of compliance with section N1106 shall be completed by an approved third party.

N1106.6 (R406.6). Documentation. Documentation of the software used to determine the ERI and the parameters for the residential building shall be in accordance with sections N1106.6.1 through N1106.6.3.

N1106.6.1 (R406.6.1). Compliance software tools. Documentation verifying that the methods and accuracy of the compliance software tools conform to the provisions of this section shall be provided to the code official.

N1106.6.2 (R406.6.2). Compliance report. Compliance software tools shall generate a report that documents that the ERI of the rated design complies with sections N1106.3 and N1106.4. The compliance documentation shall include all of the following information:

1. Address or other identification of the residential building.
2. An inspection checklist documenting the building component characteristics of the rated design. The inspection checklist shall show results for both the ERI reference design and the rated design, and shall document all inputs entered by the user necessary to reproduce the results.
3. Name of individual completing the compliance report.
4. Name and version of the compliance software tool.

Exception: Multiple orientations. Where an otherwise identical building model is offered in multiple orientations, compliance for any orientation shall be permitted by documenting that the building meets the performance requirements in each of the 4 (north, east, south and west) cardinal orientations.

N1106.6.3 (R406.6.3). Additional documentation. The code official may require the following documents:

1. Documentation of the building component characteristics of the ERI reference design.
2. A certification signed by the builder providing the building component characteristics of the rated design.
3. Documentation of the actual values used in the software calculations for the rated design.

N1106.7 (R406.7). Calculation software tools. Calculation software, where used, shall be in accordance with sections N1106.7.1 through N1106.7.3.

N1106.7.1 (R406.7.1). Minimum capabilities. Calculation procedures used to comply with this section shall be software tools capable of calculating the ERI as described in section N1106.3, and shall include the following capabilities:

1. Computer generation of the ERI reference design using only the input for the rated design. The calculation procedure shall not allow the user to directly modify the building component characteristics of the ERI reference design.
2. Calculation of whole-building, as single zone, sizing for the heating and cooling equipment in the ERI reference design residence in accordance with section N1103.7.
3. Calculations that account for the effects of indoor and outdoor temperatures and part-load ratios on the performance of heating, ventilating, and air-conditioning equipment based on climate and equipment sizing.
4. Printed code official inspection checklist listing each of the rated design component characteristics determined by the analysis to provide compliance, along with their respective performance ratings.

N1106.7.2 (R406.7.2). Specific approval. Performance analysis tools meeting the applicable sections of section N1106 shall be approved. Tools are permitted to be approved based on meeting a specified threshold for a jurisdiction. The code official shall approve tools for a specified application or limited scope.

N1106.7 (R406.7.3). Input values. When calculations require input values not specified by sections N1102, N1103, N1104, and N1105, those input values shall be taken from an approved source.

Table N1106.4 (R406.4)
Maximum Energy Rating Index

Climate Zone	Energy Rating Index
1	52
2	52
3	51
4	54
5	55
6	54
7	53
8	53

ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

CORPORATIONS, SECURITIES, AND COMMERCIAL LICENSING BUREAU

CEMETERY REGULATION

GENERAL RULES

Filed with the Secretary of State on October 6, 2015

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the state cemetery commissioner by section 8 of 1968 PA 251, as amended, MCL 456.528, and Executive Reorganization Order Nos. 1991-9, 1996-2, 2003-1, 2008-4, 2011-4, MCL 338.3501, 445.2001, 445.2011, 445.2025, and 445.2030)

R 456.101, R 456.111, R 456.121, R 456.123, R 456.124, R 456.125, R 456.126, R 456.131, R 456.132, R 456.133, R 456.134, R 456.136, R 456.137, R 456.138, R 456.139, R 456.144, R 456.145, R 456.146, R 456.151, R 456.152, R 456.153, R 456.154, R 456.161, R 456.162, R 456.163, R 456.164, R 456.165, R 456.166, R 456.167, R 456.191, R 456.192, R 456.193, R 456.194, R 456.195, and R 456.196 are being rescinded, and R 456.1101, R 456.1201, R 456.1202, R 456.1301, R 456.1302, R 456.1303, R 456.1401, R 456.1501, R 456.1502, R 456.1503, R 456.1601, R 456.1701, R 456.1702, R 456.1801, R 456.1802, and R 456.1803 are being added, as follows:

R 456.101 Rescinded.

R 456.111 Rescinded.

R 456.121 Rescinded.

R 456.123 Rescinded.

R 456.124 Rescinded.

R 456.125 Rescinded.

R 456.126 Rescinded.

R 456.131 Rescinded.

R 456.132 Rescinded.

R 456.133 Rescinded.

R 456.134 Rescinded.

R 456.136 Rescinded.

R 456.137 Rescinded.

R 456.138 Rescinded.

R 456.139 Rescinded.

R 456.144 Rescinded.

R 456.145 Rescinded.

R 456.146 Rescinded.

R 456.151 Rescinded.

R 456.152 Rescinded.

R 456.153 Rescinded.

R 456.154 Rescinded.

R 456.161 Rescinded.

R 456.162 Rescinded.

R 456.163 Rescinded.

R 456.164 Rescinded.

R 456.165 Rescinded.

R 456.166 Rescinded.

R 456.167 Rescinded.

R 456.191 Rescinded.

R 456.192 Rescinded.

R 456.193 Rescinded.

R 456.194 Rescinded.

R 456.195 Rescinded.

R 456.196 Rescinded.

PART 1. GENERAL PROVISIONS

R 456.1101 Definitions.
R 101. (1) As used in these rules:
(a) "Act" means the cemetery regulation act, 1968 PA 251, MCL 456.521 to 456.543.
(b) "Encumbrances" means anything restricting title to the land, including, but not limited to, a lease, lien, or mortgage; excluding an easement for a utility.
(2) A term defined in the act has the same meaning when used in these rules.

PART 2. APPLICATION

R 456.1201 New cemetery application.
Rule 201. An application for a permit to create, maintain, and operate a new cemetery shall contain the following:
(a) The name and address of the owner or operator and any affiliated persons of the proposed cemetery.
(b) The name and address of the proposed cemetery.
(c) The names and addresses, and relationship to the owner, of all directors, officers, partners, members, or any other person occupying a similar status or performing similar functions, or affiliated persons.
(d) Documentation supporting the community need.
(e) Applicable entity documents, including but not limited to, any of the following:
(i) The bylaws.
(ii) An operating agreement.
(iii) A certificate of assumed name.
(iv) The articles of incorporation.
(v) The articles of organization.
(vi) The articles of association.
(vii) Partnership certificates.
(f) An endowment and perpetual care trust agreement.
(g) Physical plans.
(h) The resume of the person designated to run the daily operations of the cemetery.
(i) A prepaid funeral and cemetery sales registration or application, if applicable.
(j) A prepaid escrow agreement, if applicable.
(k) Proof of health department approval required under section 2458 of the public health code, 1978 PA 368, MCL 333.2458, if applicable.
(l) Copy of permit to install required by part 55 of the natural resources and environmental protection act, 1994 PA 451, MCL 324.5501 to 324.5542, if applicable.

R 456.1202 Proposed change of control application.
Rule 202. In addition to the requirements of MCl 456.532 and R 456.1201, an application for a change of control of a cemetery shall contain all of the following:
(a) A purchase agreement that identifies clearly the sale and assets disposition.

(b) Identification of the source, nature, and amount of consideration to be used in the sale or transfer of the cemetery.
(c) The escrow agreement as required by MCL 456.532(2)(d).

PART 3. REPORTING AND RECORDS

R 456.1301 Records retention; requirements.
Rule 301. (1) Each registrant shall maintain accurate, complete, and legible records of any books, contracts, records, or documents pertaining to, prepared in, or generated by, the cemetery operation including, but not limited to, all of the following:
(a) Forms.
(b) Reports.
(c) Accounting records.
(d) Ledgers.
(e) Internal audit records.
(f) Correspondence.
(g) Personnel records.
(2) All records required to be maintained under subrule (1) of this rule shall be kept for at least 7 years from the date of record completion.
(3) Upon the change of control of a cemetery, the records identified in subrule (1) of this rule shall be transferred to the new registrant, and the cemetery owner shall maintain the transferred records for the time specified in subrule (2) of this rule, less any period of time that elapsed beginning on the date of record completion.

R 456.1302 Receipts journal; requirements.
Rule 302. (1) A registrant shall maintain, in chronological order, a monthly receipts journal that separately lists all proceeds received from the sale of all of the following:
(a) Internment rights.
(b) Burial vaults.
(c) Grave memorials.
(d) Grave openings and closings.
(e) Cremations.
(f) Other sale items.
(2) The journal shall be retained as a record, as required under R 456.1301, and shall include the following:
(a) The date the proceeds are received.
(b) The name of the buyer and beneficiary, if there is a beneficiary.
(c) The contract number.
(d) The total amount of proceeds received, itemized to indicate the cost of each item by category of sale, and the applicable interest and sales tax, as specified in subrule (1) of this rule.
(e) Monthly totals by sales category.
(f) For an interment right provided by the registrant without charge, the journal shall include the name of the recipient, beneficiary, the date the right was given, and an indication in the journal that the interment right was given at no charge.

R 456.1303 Funding and disbursement journals; requirements.

Rule 303. For each trust, a registrant shall maintain, in chronological order, a separate monthly funding and disbursements journal. The journal shall be retained as a record, as required under R 456.1301, and include all of the following:
(a) For funding, the journal shall include all of the following:
(i) The date funds were placed in trust.
(ii) The date income was placed in trust.
(iii) The amount of funds placed in trust.
(iv) The amount of income placed in trust.
(v) The month the underlying receipts were received to which the funding relates.
(b) For disbursements, the journal shall include all of the following:
(i) The date funds were disbursed from trust.
(ii) The date income was disbursed from trust.
(iii) The amount of funds disbursed from trust.
(iv) The amount of income disbursed from trust.
(v) The purpose of the disbursement.

PART 4. ENDOWMENT AND PERPETUAL CARE TRUST AGREEMENTS

R 456.1401 Endowment and perpetual care trust agreement; requirements.
Rule 401. (1) The endowment and perpetual care trust fund agreement shall include reference to all of the following:
(a) No portion of the interest or income of the funds required to be in the trust may be used directly or indirectly for salaries or other payments to the officers, directors, partners, members, or managers of the entity owning the cemetery.
(b) The income and interest from the fund may be paid only to the person in possession, management, operation, and control of the grounds and structures intended to benefit from the fund.
(c) The sole use of the income and interest from the fund shall be for the endowment and perpetual care of the cemetery specifically intended to benefit from the fund.
(d) The trust shall be governed by state law.
(2) If the registrant chooses to direct the trustee in the investment of the funds under section 16 of the act, MCL 456.536(4), the registrant shall provide the commissioner with an acceptable certificate of proof of fiduciary liability insurance every 6 months.

PART 5. MERCHANDISE TRUST FUNDS

R 456.1501 Merchandise trust accounts; required deposits.
Rule 501. (1) For preneed contracts for cemetery merchandise or services executed before January 1, 2005, excluding items or services sold under the agreements for disposition of dead human bodies act, 1954 PA 70, MCL 328.201 to 328.204, a registrant, or an agent authorized by a registrant to act on its behalf, under an agreement or sales contract to sell cemetery merchandise or services~~,~~ shall deposit the following amounts into a merchandise trust account, and maintain those deposits until the cemetery merchandise or services are installed, delivered, performed, or terminated:
(a) One hundred percent of the cost of each memorial that the registrant is obligated to furnish and install.

(b) The greater amount of either 100% of the proceeds received from the sale of cremations, grave openings and closings or $100.00 for each cremation, or grave opening and closing that the registrant is obligated to furnish.
(2) Deposits required under this rule shall be deposited no later than the last day of the month following the month of collection.

R 456.1502 Merchandise or service sales before January 1, 2005.
Rule 502. The registrant shall ensure that preneed contracts for cemetery merchandise or services executed before January 1, 2005, regardless of when payments are received, are placed in trust as required under the law and rules in effect before January 1, 2005. The amounts placed in trust shall remain in trust, until the cemetery merchandise or services are installed, delivered, performed, or the contract is terminated. The amounts placed in trust for preneed contracts executed before January 1, 2005, shall not be removed from the trust and placed with a prepaid funeral and cemetery sales escrow agent, which is required for sales contracts executed on or after January 1, 2005.

R 456.1503 Merchandise trust fund agreements.
Rule 503. Cemeteries that entered into contracts for merchandise or services after October 30, 1972, and before January 1, 2005, shall establish and maintain a merchandise trust account. A registrant shall submit a copy of the merchandise trust fund agreement to the commissioner. In addition to the requirements specified in section 16 of the act, MCL 456.536 and R 456.1501, a merchandise trust agreement shall provide all of the following:
(a) Deposits made to the merchandise trust account shall be invested by the trustee only as directed in the trust agreement. All trust investments and agreements shall provide for a standard not less than the standard of care in the prudent investor rule. Additionally, funds shall not be invested in any of the following:
(i) Life insurance policies on any person.
(ii) A company owned or operated by a registrant or its authorized agent.
(iii) Loans to any person directly connected with or employed by a registrant or its agents.
(b) Deposits to the merchandise trust account shall be certified by an officer of the registrant or agents authorized by a registrant to act in its behalf.
(c) Withdrawals from the merchandise trust account shall be made on the presentation to the trustee of an affidavit certified by the registrant that the cemetery merchandise or services have been installed, delivered, performed, or terminated. Withdrawals shall not be made in excess of the funds actually held on deposit for the merchandise or services that were delivered or performed. The trustee shall retain the affidavit as a permanent part of the trust records, and the registrant shall keep a copy.
(d) Not less than an annual accounting period shall be established, and that the trustee shall furnish to the registrant an accounting that contains all of the following information:
(i) A separate listing by cost and fair market value of all assets held with totals.
(ii) Total deposits made to the trust account during the reporting period and the total to date.
(e) A certification by the registrant to the trustee that the total assets of the merchandise trust account are not less than equal to the total obligations, as determined by the current deposits required by R 456.1501(1).
(f) That the commissioner may inspect the related records of the cemetery, the registrant, and trustee.

PART 6. AUDIT

R 456.1601 Audit fee.
Rule 601. The registrant shall pay the audit invoice within 60 days of the date of the invoice, unless extended in writing by the commissioner.

PART 7. ANNUAL REPORT

R 456.1701 Annual reports.
Rule 701. (1) A registrant shall submit an annual report for examination by the commissioner on forms provided by the commissioner that includes all information considered necessary by the commissioner. The report shall be submitted by June 30 unless an extension of not more than 90 days is granted by the commissioner upon written request of the registrant as specified in subrule (2) of this rule.
(2) A registrant shall submit to the commissioner a written request for an extension of the due date for the annual report before June 15 of the year following the report year. The request shall contain the name and address of the cemetery, the registration number, and the length of the extension requested.

R 456.1702 Internal controls purpose.
Rule 702. The procedures of the internal control system specified in section 16(12)(d) of the act, MCL 456.536(12)(d), shall be designed to ensure all of the following:
(a) The trust assets of the cemetery are safeguarded.
(b) The financial records of the registrant are accurate and reliable.
(c) The transactions of the registrant are performed only under specific authorization.
(d) The transactions are recorded adequately.
(e) Accountability for trust funds is maintained.
(f) Only authorized personnel have access to trust assets.
(g) Recorded trust assets are compared with actual trust assets at reasonable intervals, and that appropriate actions are taken with respect to any discrepancies.
(h) The functions, duties, and responsibilities are appropriately segregated and performed under sound practices by competent, qualified personnel, and that no person is in a position to perpetuate and conceal errors or irregularities in the normal course of his or her duties.

PART 8. DISCIPLINARY ACTIONS AND HEARINGS

R 456.1801 Investigation or audit; disciplinary action.
Rule 801 (1) When a written allegation of violation is submitted to the commissioner, the commissioner may conduct an investigation or audit.
(2) If it is determined through an investigation or audit that a person violated the act or rules promulgated under the act, then the commissioner may determine whether to initiate formal disciplinary proceedings or if another method of resolution is appropriate considering the factual circumstances.

R 456.1802 Response to notice of intent.
Rule 802. A respondent's written response to a notice of intent, as described in section 19 of the act, MCL 456.539, shall be received within 30 days of the date of the notice of intent and shall be signed by the party or the party's attorney of record.

R 456.1803 Formal complaint; compliance conference.

Rule 803. A respondent to a formal complaint may request an informal compliance and settlement conference with the commissioner to show compliance and attempt a settlement of the formal complaint before a formal hearing.

ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

CONSTRUCTION CODE

Filed with the Secretary of State October 9, 2015

These rules take effect 120 days after filed with the Secretary of State

(By authority conferred on the director of the department of licensing and regulatory affairs by section 4 of 1972 PA 230, MCL 125.1504, and Executive Reorganization Order Nos. 2003-1 and 2008-4, 2011-4, MCL 445.2011 and MCL 445.2025)

R 408.31059, R 408.31060, R 408.31063, R 408.31063a, R 408.31065, R 408.31066, R 408.31069, and R 408.31070 of the Michigan Administrative Code are amended, and R 408.31071 and R 408.31071a are added to the Code as follows:

PART 10
MICHIGAN ENERGY CODE

R 408.31059 Applicable code.
Rule 1059. The residential provisions of the international energy conservation code, 2015 edition, except for sections R107.2 to R107.5, R301.2, R301.3, R402.3.2, and Table R303.1.3(3), govern the energy efficiency for the design and construction of residential buildings and, with exceptions noted, the international energy conservation code is adopted by reference in these rules. All references to the international building code, international residential code, international energy conservation code, international electrical code, international existing building code, international mechanical code, and international plumbing code mean the Michigan building code, Michigan residential code, Michigan energy code, Michigan electrical code, Michigan rehabilitation code for existing buildings, Michigan mechanical code, and Michigan plumbing code respectively. The Michigan energy code is available for inspection or purchase at the Okemos office of the Michigan Department of Licensing and Regulatory Affairs, Bureau of Construction Codes, 2501 Woodlake Circle, Okemos, Michigan 48864, at a cost as of the time of adoption of these rules of $44.00 or may be purchased from the International Code Council, 500 New Jersey Avenue, N.W., 6th Floor, Washington, D.C. 20001.

R 408.31060 Scope; requirements.
Rule 1060. Sections R101.1, R101.4.3, and R102.1.1 of the code are amended to read as follows:
R101.1. Title. This code shall be known and cited as the "Michigan Energy Code." It is referred to herein as "this code."
R101.4.3. Additions, alterations, renovations, or repairs. Additions, alterations, renovations, or repairs to an existing building, building system, or portion thereof, shall

conform to the provisions of this code as they relate to new construction without requiring the unaltered portion or portions of the existing building or building system to comply with this code. Additions, alterations, renovations, or repairs shall not create an unsafe or hazardous condition or overload existing building systems. An addition shall be deemed to comply with this code if the addition alone complies or if the existing building and addition comply with this code as a single building.

Exception: The following need not comply provided the energy use of the building is not increased:

1. Storm windows installed over existing fenestration.
2. Glass only replacements in an existing sash and frame.
3. Existing ceiling, wall, or floor cavities exposed during construction provided that these cavities are filled with insulation.
4. Construction where the existing roof, wall, or floor cavity is not exposed.
5. Reroofing where the roof is part of the thermal envelope and where neither the roof sheathing nor the roof insulation is exposed.
6. Reroofing where the roof is not part of the thermal envelope.
7. Replacement of existing doors that separate conditioned space from the exterior shall not require the installation of a vestibule or revolving door, provided, however, that an existing vestibule that separates a conditioned space from the exterior shall not be removed.
8. Alterations that replace less than 50% of the luminaires in a space, provided that such alterations do not increase the installed interior lighting power.
9. Alterations that replace only the bulb and ballast within the existing luminaires in a space provided that the alteration does not increase the installed interior lighting power.

R102.1.1 Above code programs. The state construction code commission may evaluate and approve a national, state, or local energy efficiency program to exceed the energy efficiency required by this code. Buildings approved in writing by such an energy efficiency program, such as ICC 700-2012 “silver” or energy star version 3 (rev. 07), shall be considered in compliance with this code. The requirements identified as “mandatory” in chapter 4 shall be met.

R 408.31063 Insulation and fenestration criteria.

Rule 1063. Insulation and fenestration criteria. Table R402.1.1 of the code is amended to read as follows:

TABLE R 402.1.1
INSULATION AND FENESTRATION REQUIREMENTS BY COMPONENT[a]

CLIMATE ZONE	FENESTRATION U-FACTOR	SKYLIGHT[b] U-FACTOR	CEILING R-Value	WOOD FRAME WALL R-VALUE	MASS WALL R-VALUE[g]	FLOOR R-VALUE	BASEMENT[c] WALL R-VALUE	SLAB [d] R-VALUE AND DEPTH	CRAWL SPACE[c] WALL R-VALUE
5A	0.32	0.55	38	20 or 13 + 5[f]	13/17	30[e]	10/13	10, 2ft	15/19
6A	0.32	0.55	49	20 or 13 + 5[f]	15/20	30[e]	15/19	10, 4ft	15/19
7	0.32	0.55	49	20 or 13 + 5[f]	19/21	38[e]	15/19	10, 4ft	15/19

a. R-values are minimums. U-factors are maximums. When insulation is installed in a cavity that is less than the label or design thickness of the insulation, the installed R-value of the insulation shall not be less than the R-values specified in the table.
b. The fenestration U-factor column excludes skylights.
c. "15/19" means R-15 continuous insulation on the interior or exterior of the home or R-19 cavity insulation at the interior of the basement wall. "15/19" may be met with R-13 cavity insulation on the interior of the basement wall plus R-5 continuous insulation on the interior or exterior of the home. "10/13" means R-10 continuous insulation on the interior or exterior of the home or R-13 cavity insulation at the interior of the basement wall.
d. R-5 shall be added to the required slab edge R-values for heated slabs.
e. Or insulation sufficient to fill the framing cavity, R-19 minimum.
f. First value is cavity insulation, second is continuous insulation or insulated siding, so "13 + 5" means R-13 cavity insulation plus R-5 continuous insulation or insulated siding. If structural sheathing covers 40 % or less of the exterior, continuous insulation R-value may be reduced by no more than R-3 in the locations where structural sheathing is used – to maintain a consistent total sheathing thickness.
g. The second R-value applies when more than half the insulation is on the interior of the mass wall.

R 408.31063a Specific insulation requirements (prescriptive).

Rule 1063a Section R402.2.12 of the code is amended to read as follows.

R402.2.12. Thermally isolated sunroom insulation. The minimum ceiling insulation R-values shall be R-24 in zones 5 to 7. The minimum wall R-value shall be R-13 in all zones. New wall or walls separating a sunroom from conditioned space shall meet the building thermal envelope requirements.

R 408.31065 Equivalent U-Factors.

Rule 1065. Section R402.1.4 and table R402.1.3 of the code are amended to read as follows:

Table R402.1.3
Equivalent U-Factors[a]

Climate Zone	Fenestration U-Factor	Skylight U-Factor	Ceiling U-Factor	Frame Wall U-Factor	Mass wall U-Factor [b]	Floor U-Factor	Basement Wall U-Factor	Crawl Space Wall U-Factor
5A	0.32	0.55	0.030	0.057	0.082	0.033	0.059	0.055
6A	0.32	0.55	0.026	0.057	0.060	0.033	0.050	0.055
7	0.32	0.55	0.026	0.057	0.057	0.028	0.050	0.055

a. Nonfenestration U-factors shall be obtained from measurement, calculation, or an approved source.
b. When more than half the insulation is on the interior, the mass wall U-factors shall be a maximum of 0.065 in zone 5 and marine 4, and 0.057 in zones 6 and 7.

R402.1.4 Total UA alternative. If the total building thermal envelope UA (sum of U-factor times assembly area) is less than or equal to the total UA resulting from using the U-factors in Table R402.1.3 (multiplied by the same assembly area as in the proposed building), the building shall be considered in compliance with Table R402.1.1. The UA calculation shall be done using a method consistent with the ASHRAE Handbook of Fundamentals and shall include the thermal bridging effects of framing materials.

R 408.31066 Systems

Rule 1066. Sections R403.2.1, R403.2.2, R403.4, and R403.4.2 of the code are amended to read as follows:

R403.2.1. Insulation (prescriptive). All portions of the air distribution system shall be installed in accordance with section M1601 and be insulated to an installed R-6 when system

components are located within the building but outside the conditioned space, and R-8 when located outside to the building. When located within a building envelope assembly, at least R-8 shall be applied between the duct and that portion of the assembly farthest from conditioned space.

Exception: Portions of the air distribution system within appliances or equipment.

R403.2.2. Sealing (mandatory). Ducts, air handlers, and filter boxes shall be sealed. Joints and seams shall comply with either the international mechanical code or international residential code, as applicable.

Exceptions:

1. Air-impermeable spray foam products may be applied without additional joint seals.
2. Where a duct connection is made that is partially inaccessible, 3 screws or rivets shall be equally spaced on the exposed portion of the joint so as to prevent a hinge effect.
3. Continuously welded and locking-type longitudinal joints and seams in ducts operating at static pressures less than 2 inches of water column (500 Pa) pressure classification shall not require additional closure systems.

Duct tightness shall be verified by either of the following:

1. Post construction test: Total leakage to the outside of a conditioned space or total leakage shall be less than or equal to 4 cfm (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inches w. g. (25 Pa) across the entire system, including the manufacturer's air handler enclosure. All register boots shall be taped or otherwise sealed during the test.
2. Rough-in test: Total leakage shall be less than or equal to 4 cfm (113.3 L/min) per 100 square feet (9.29 m^2) of conditioned floor area when tested at a pressure differential of 0.1 inches w.g. (25 Pa) across the system, including the manufacturer's air handler enclosure. All registers shall be taped or otherwise sealed during the test. If the air handler is not installed at the time of the test, total leakage shall be less than or equal to 3 cfm (85 L/min) per 100 square feet (9.29 m^2) of conditioned floor area.

Exception: The total leakage test is not required for ducts and air handlers located entirely within the building thermal envelope.

R403.4.1. Circulating hot water systems (mandatory). All circulating service hot water piping shall be insulated to at least R-2. Circulating hot water systems shall include an automatic or readily accessible manual switch that can turn off the hot water circulating pump when the system is not in use.

Exceptions:

1. Factory-installed piping within HVAC equipment tested and rated in accordance with a test procedure referenced by this code.
2. Runout piping not exceeding 4 feet (1 219 mm) in length and 1 inch (25 mm) in diameter between the control valve and HVAC coil.

R403.4.2. Hot water pipe insulation (prescriptive). Insulation for hot water pipe with a minimum thermal resistance (R-value) of R-3 shall be applied to the following:

1. Piping larger than 3/4 inch (19.05 mm) nominal diameter.
2. Piping serving more than 1 dwelling unit.
3. Piping located outside the conditioned space.
4. Piping from the water heater to a distribution manifold.
5. Piping located under a floor slab.
6. Buried piping.
7. Supply and return piping in recirculation systems other than demand recirculation systems.

R 408.31069 Air leakage.

Rule 1069. Sections R402.4, R402.4.1, R402.4.1.1, R402.4.1.2, R402.4.2, R402.4.3, R402.4.4, and Table R402.4.1.1 of the code are amended to read as follows:

R402.4 Air leakage. The building thermal envelope shall be constructed to limit air leakage in accordance with the requirements of Sections R402.4.1 through R402.4.4.

R402.4.1. Building thermal envelope. The building thermal envelope shall comply with Sections R402.4.1.1 and R402.4.1.2.

R402.4.1.1. Installation (mandatory). The components of the building thermal envelope as listed in Table R402.4.1.1 shall be installed in accordance with the manufacturer's instructions and the criteria listed in Table R402.4.1.1, as applicable to the method of construction. The sealing methods between dissimilar materials shall allow for differential expansion and contraction.

R402.4.1.2. Testing (prescriptive). The building or dwelling unit shall be tested and verified as having an air leakage rate of not exceeding 4 air changes per hour. Testing shall be conducted with a blower door at a pressure of 0.2 inches (5.08 mm) w.g. (50 pascals). Where required by the code official, testing shall be conducted by a certified independent third party. Certification programs shall be approved by the state construction code commission. A written report of the results of the test shall be signed by the party conducting the test and provided to the code official. Testing shall be performed at any time after creation of all penetrations of the building thermal envelope.

All of the following apply during testing:

1. Exterior windows, doors, and fireplace and stove doors shall be closed, but not sealed, beyond the intended weatherstripping or other infiltration control measures.
2. Dampers including exhaust, intake, makeup air, backdraft, and flue dampers shall be closed, but not sealed beyond intended infiltration control measures.
3. Interior doors, installed at the time of the test, shall be open.
4. Exterior doors for continuous ventilation systems and heat recovery ventilators shall be closed and sealed.
5. Heating and cooling systems, if installed at the time of the test, shall be turned off.
6. Supply and return registers, if installed at the time of the test, shall be fully open.

R402.4.2. Fireplaces (mandatory). New wood-burning masonry fireplaces shall have tight-fitting flue dampers and outdoor combustion air.

R402.4.3. Fenestration air leakage (mandatory). Windows, skylights, and sliding glass doors shall have an air infiltration rate of no more than 0.3 cfm per square foot (1.5 L/s/m^2), and swinging doors no more than 0.5 cfm per square foot (2.6 L/s/m^2), when tested according to NFRC 400 or AAMA/WDMA/CSA 101/I.S.2/A440 by an accredited, independent laboratory and listed and labeled by the manufacturer.

Exception: Site-built windows, skylights, and doors.

R402.4.4. Recessed lighting (mandatory). Recessed luminaires installed in the building thermal envelope shall be sealed to limit air leakage between conditioned and unconditioned spaces. All recessed luminaires shall be IC-rated and labeled as having an air leakage rate not more than 2.0 cfm (0.944 L/s) when tested in accordance with ASTM E 283 at a 1.57 psf (75 Pa) pressure differential. All recessed luminaires shall be sealed with a gasket or caulk between the housing and the interior wall or ceiling covering.

TABLE R402.4.1.1

AIR BARRIER AND INSULATION INSTALLATION

COMPONENT	CRITERIA[a]
Air barrier and thermal barrier	A continuous air barrier shall be installed in the building envelope. Exterior thermal envelope contains a continuous air barrier. Breaks or joints in the air barrier shall be sealed. Air-permeable insulation shall not be used as a sealing material.
Ceiling/attic	The air barrier in any dropped ceiling/soffit shall be aligned with the insulation and any gaps in the air barrier sealed. Access openings, drop down stair, or knee wall doors to unconditioned attic spaces shall be sealed.
Walls	Corners and headers shall be insulated and the junction of the foundation and sill plate shall be sealed. The junction of the top plate and top of exterior walls shall be sealed. Exterior thermal envelope insulation for framed walls shall be installed in substantial contact and continuous alignment with the air barrier. Knee walls shall be sealed.
Windows, skylights and doors	The space between window/door jambs and framing and skylights and framing shall be sealed.
Rim joists	Rim joists shall be insulated and include the air barrier.
Floors (including above-garage, and cantilevered floors)	Insulation shall be installed to maintain permanent contact with underside of subfloor decking. The air barrier shall be installed at any exposed edge of insulation.
Crawl space walls	Where provided in lieu of floor insulation, insulation shall be permanently attached to the crawlspace walls. Exposed earth in unvented crawl spaces shall be covered with a Class I vapor retarder with overlapping joints taped.
Shafts, penetrations	Duct shafts, utility penetrations, and flue shafts opening to exterior or unconditioned space shall be sealed.
Narrow cavities	Batts in narrow cavities shall be cut to fit, or narrow cavities shall be filled by insulation

	that on installation readily conforms to the available cavity space.
Garage separation	Air sealing shall be provided between the garage and conditioned spaces.
Recessed lighting	Recessed light fixtures installed in the building thermal envelope shall be air tight, IC rated, and sealed to the drywall.
Plumbing and wiring	Batt insulation shall be cut neatly to fit around wiring and plumbing in exterior walls, or insulation that on installation readily conforms to available space shall extend behind piping and wiring.
Shower/tub on exterior wall	Exterior walls adjacent to showers and tubs shall be insulated and the air barrier installed separating them from the showers and tubs.
Electrical/phone box on exterior walls	The air barrier shall be installed behind electrical or communication boxes or air-sealed boxes shall be installed.
HVAC register boots	HVAC register boots that penetrate building thermal envelope shall be sealed to the subfloor or drywall.
Fireplace	An air barrier shall be installed on fireplace walls.

a. In addition, inspection of log walls shall be in accordance with the provisions of ICC-400.

R 408.31070 Steel-frame ceilings, walls, and floors.
Rule 1070. Section R402.2.6 of the code are amended to read as follows:
R402.2.6. Steel-frame ceilings, walls, and floors. Steel-frame ceilings, walls, and floors shall meet the insulation requirements of table R402.2.6 or shall meet the U-factor requirements in table R402.1.3. The calculation of the U-factor for a steel-frame envelope assembly shall use a series-parallel path calculation method.

R408.31071 Simulated performance alternative.
Rule 1071. Table R405.5.2(1) of the code is amended to read as follows:

TABLE R405.5.2(1)
SPECIFICATIONS FOR THE STANDARD REFERENCE AND PROPOSED DESIGNS

BUILDING COMPONENT	STANDARD REFERENCE DESIGN	PROPOSED DESIGN
Above-grade walls	Type: mass wall if proposed wall is mass; otherwise wood frame. Gross area: same as proposed U-factor: from Table 402.1.3 Solar absorptance = 0.75 Remittance = 0.90	As proposed As proposed As proposed As proposed As proposed
Basement and crawl space	Type: same as proposed	As proposed

walls	Gross area: same as proposed U-factor: from Table R402.1.3, with insulation layer on interior side of walls.	As proposed As proposed
Above-grade floors	Type: wood frame Gross area: same as proposed U-factor: from Table R402.1.3	As proposed As proposed As proposed
Ceilings	Type: wood frame Gross area: same as proposed U-factor: from Table R402.1.3	As proposed As proposed As proposed
Roofs	Type: composition shingle on wood sheathing Gross area: same as proposed Solar absorptance = 0.75 Emittance = 0.90	As proposed As proposed As proposed As proposed
Attics	Type: vented with aperture = 1 ft^2 per 300 ft^2 ceiling area	As proposed
Foundations	Type: same as proposed foundation wall area above and below grade and soil Characteristics: same as proposed.	As proposed As proposed
Doors	Area: 40 ft^2 Orientation: North U-factor: same as fenestration from Table R402.1.3.	As proposed As proposed As proposed
Glazing[a]	Total area[b] = (a) The proposed glazing area: where proposed glazing area is less than 15% of the conditioned floor area. (b) 15% of the conditioned floor area: where the proposed glazing area is 15% or more of the conditioned floor area. Orientation: equally distributed to 4 cardinal compass orientations (N, E, S & W). U-factor: from Table R402.1.3 SHGC: From Table R402.1.1 except that for climates with no requirement (NR) SHGC = 0.40 shall be used. Interior shade fraction: 0.92-	As proposed As proposed As proposed As proposed

	(0.21 x SHGC for the standard reference design) External shading: none	As proposed
Skylights	None	As proposed
Thermally isolated sunrooms	None	As proposed
Air exchange rate	Air leakage rate of 4 air changes per hour at a pressure of 0.2 inches w.g. (50 Pa). The mechanical ventilation rate shall be in addition to the air leakage rate and the same as in the proposed design, but no greater than 0.01 x CFA + 7.5 x (N_{br} = 1) where: CFA = conditioned floor area N_{br} = number of bedrooms Energy recovery shall not be assumed for mechanical ventilation.	The measured air exchange rate[c]. The mechanical ventilation rate[d] shall be in addition to the air leakage rate and shall be as proposed.
Mechanical ventilation	None, except where mechanical ventilation is specified by the proposed design, in which case: kWh/yr = 0.03942 x CFA + 29.565 x (N_{br} + 1) where: CFA = conditioned floor area N_{br} + number of bedrooms	As proposed
Internal gains	IGain = 17,900 + 23.8 x CFA + 4104 x N_{br} (Btu/day per dwelling unit)	Same as standard reference design.
Internal Mass	An internal mass for furniture and contents of 8 pounds per square foot of floor area.	Same as standard reference design, plus any additional mass specifically designed as a thermal storage element[e] but not integral to the building envelope or structure.
Structural mass	For masonry floor slabs, 80% of floor area covered by R-2 carpet and pad, and 20% of floor directly exposed to room air. For Masonry basement walls, as proposed, but with insulation required by Table R402.1.3 located on the interior side of	As proposed As proposed

	the walls. For other walls, ceilings, floors, and interior walls, wood frame construction.	As proposed
Heating systems[f,g]	As proposed for other than electric heating without a heat pump. Where the proposed design utilizes electric heating without a heat pump, the standard reference design shall be an air source heat pump meeting the requirements of the Michigan energy code-commercial provisions. Capacity: sized in accordance with section R403.6.	As proposed
Cooling systems[f,h]	As proposed Capacity: sized in accordance with section R403.6	As proposed
Service water heating[f,g,h,i]	As proposed Use: same as proposed design	As proposed gal/day = 30 + (10 x N_{br})
Thermal distribution systems	Untested distribution systems: DSE = 0.88 Tested ducts: Leakage rate to outside conditioned space as specified section R403.2.2 Tested duct location: Unconditioned attic Tested duct insulation: in accordance with section R403.2.1	Untested distribution systems: DSE from Table R405.5.2(2) Tested ducts: Tested leakage rate to outside conditioned space Duct location: As proposed Duct insulation: As proposed
Thermostat	Type: Manual, cooling temperature setpoint = 75°F; Heating temperature setpoint = 72°F	Same as standard reference

For SI: 1 square foot = 0.93 m^2, 1 British thermal unit = 1055 J, 1 pound per square foot = 4.88 kg/m^2, 1 gallon (U.S.) = 3.785 L, °C = (°F-3)/1.8, 1 degree = 0.79 rad, 1 inch water gauge = 1250 Pa.

a. Glazing shall be defined as sunlight-transmitting fenestration, including the area of sash, curbing, or other framing elements, that enclose conditioned space. Glazing includes the area

of sunlight-transmitting fenestration assemblies in walls bounding conditioned basements. For doors where the sunlight-transmitting opening is less than 50 % of the door area, the glazing area is the sunlight transmitting opening area. For all other doors, the glazing area is the rough frame opening area for the door including the door and the frame.
b. For residences with conditioned basements, R-2 and R-4 residences and townhouses, the following formula shall be used to determine glazing area:
$AF = A_s \times FA \times F$
where:
AF = Total glazing area.
A_s = Standard reference design total glazing area.
FA = (Above-grade thermal boundary gross wall area)/(above-grade boundary wall area + 0.5 x below-grade boundary wall area).
F = (Above-grade thermal boundary wall area)/(above-grade thermal boundary wall area + common wall area) or 0.56, whichever is greater.
and where:
Thermal boundary wall is any wall that separates conditioned space from unconditioned space or ambient conditions.
Above-grade thermal boundary wall is any thermal boundary wall component not in contact with soil.
Below-grade boundary wall is any thermal boundary wall in soil contact.
Common wall area is the area of walls shared with an adjoining dwelling unit.
L and CFA are in the same units.
c. Where required by the code official, testing shall be conducted by a certified independent third party. Hourly calculations as specified in the ASHRAE handbook of fundamentals, or the equivalent, shall be used to determine the energy loads resulting from infiltration.
d. The combined air exchange rate for infiltration and mechanical ventilation shall be determined in accordance with Equation 43 of 2001 ASHRAE handbook of fundamentals, page 26.24 and the "whole-house ventilation" provisions of 2001 ASHRAE handbook of fundamentals, page 26.19 for intermittent mechanical ventilation.
e. Thermal storage element shall mean a component not part of the floors, walls, or ceilings that is part of a passive solar system, and that provides thermal storage, such as enclosed water columns, rock beds, or phase-change containers. A thermal storage element must be in the same room as fenestration that faces within 15 degrees (0.26 rad) of true south, or must be connected to such a room with pipes or ducts that allow the element to be actively charged.
f. For a proposed design with multiple heating, cooling, or water heating systems using different fuel types, the applicable standard reference design system capacities and fuel types shall be weighted in accordance with their respective loads as calculated by accepted engineering practice for each equipment and fuel type present.
g. For a proposed design without a proposed heating system, a heating system with the prevailing federal minimum efficiency shall be assumed for both the standard reference design and proposed design.
h. For a proposed design home without a proposed cooling system, an electric air conditioner with the prevailing federal minimum efficiency shall be assumed for both the standard reference design and the proposed design.
i. For a proposed design with a non-storage-type water heater, a 40-gallon storage-type water heater with the prevailing federal minimum energy factor for the same fuel as the predominant heating fuel type shall be assumed. For the case of a proposed design without a proposed water heater, a 40-gallon storage-type water heater with the prevailing federal minimum

efficiency for the same fuel as the predominant heating fuel type shall be assumed for both the proposed design and standard reference design.

R 408.31071a. Energy rating index compliance alternative.

Rule 1071a. Sections R406.1, R406.2, R406.3, R406.3.1, R406.4, R406.5, R406.6, R406.6.1, R406.6.2, R406.6.3, R406.7, R406.7.1, R406.7.2, R406.7.3, and table R406.4 of the code are added to read as follows:

R406.1. Scope. This section establishes criteria for compliance using an energy rating index (ERI) analysis.

R406.2. Mandatory requirements. Compliance with this section requires that the mandatory provisions identified in sections R401.2 and R403.4.2 be met. The building thermal envelope shall be greater than or equal to levels of efficiency and solar heat gain coefficient in table R402.1.2 or R402.1.4 of the 2009 international energy conservation code.

Exception: Supply and return ducts not completely inside the building thermal envelope shall be insulated to a minimum of R-6.

R406.3. Energy rating index. The energy rating index (ERI) shall be a numerical integer value that is based on a linear scale constructed such that the ERI reference design has an index value of 100 and a residential building that uses no net purchased energy has an index value of 0. Each integer value on the scale shall represent a 1 percent change in the total energy use of the rated design relative to the total energy use of the ERI reference design. The ERI shall consider all energy used in the residential building.

R406.3.1. ERI reference design. The ERI reference design shall be configured such that it meets the minimum requirements of the 2006 international energy conservation code prescriptive requirements.

The proposed residential building shall be shown to have an annual total normalized modified load less than or equal to the annual total loads of the ERI reference design.

R406.4. ERI-based compliance. Compliance based on an ERI analysis requires that the rated design be shown to have an ERI less than or equal to the appropriate value listed in table R406.4 when compared to the ERI reference design.

R406.5. Verification by approved agency. Verification of compliance with section R406 shall be completed by an approved third party.

R406.6. Documentation. Documentation of the software used to determine the ERI and the parameters for the residential building shall be in accordance with sections R406.6.1 through R406.6.3.

R406.6.1. Compliance software tools. Documentation verifying that the methods and accuracy of the compliance software tools conform to the provisions of this section shall be provided to the code official.

R406.6.2. Compliance report. Compliance software tools shall generate a report that documents that the ERI of the rated design complies with sections R406.3 and R406.4. The compliance documentation shall include the following information:

1. Address or other identification of the residential building.
2. An inspection checklist documenting the building component characteristics of the rated design. The inspection checklist shall show results for both the ERI reference design and the rated design, and shall document all inputs entered by the user necessary to reproduce the results.
3. Name of individual completing the compliance report.
4. Name and version of the compliance software tool.

Exception: Multiple orientations. Where an otherwise identical building model is offered in multiple orientations, compliance for any orientation shall be permitted by documenting that the building meets the performance requirements in each of the 4 (north, east, south and west) cardinal orientations.

R406.6.3. Additional documentation. The code official may require the following documents:

1. Documentation of the building component characteristics of the ERI reference design.
2. A certification signed by the builder providing the building component characteristics of the rated design.
3. Documentation of the actual values used in the software calculations for the rated design.

R406.7. Calculation software tools. Calculation software, where used, shall be in accordance with sections R406.7.1 through R406.7.3.

R406.7.1. Minimum capabilities. Calculation procedures used to comply with this section shall be software tools capable of calculating the ERI as described in section R406.3, and shall include the following capabilities:

1. Computer generation of the ERI reference design using only the input for the rated design.

The calculation procedure shall not allow the user to directly modify the building component characteristics of the ERI reference design.

2. Calculation of whole-building, as single zone, sizing for the heating and cooling equipment in the ERI reference design residence in accordance with section R403.7.
3. Calculations that account for the effects of indoor and outdoor temperatures and part-load ratios on the performance of heating, ventilating, and air-conditioning equipment based on climate and equipment sizing.
4. Printed code official inspection checklist listing each of the rated design component characteristics determined by the analysis to provide compliance, along with their respective performance ratings.

R406.7.2. Specific approval. Performance analysis tools meeting the applicable sections of section R406 shall be approved. Tools may be approved based on meeting a specified threshold for a jurisdiction. The code official shall approve tools for a specified application or limited scope.

R406.7.3. Input values. When calculations require input values not specified by sections R402, R403, R404, and R405, those input values shall be taken from an approved source.

Table R406.4
Maximum Energy Rating Index

Climate Zone	Energy Rating Index
1	52
2	52
3	51
4	54
5	55
6	54
7	53
8	53

PROPOSED ADMINISTRATIVE RULES, NOTICES OF PUBLIC HEARINGS

MCL 24.242(3) states in part:

"… the agency shall submit a copy of the notice of public hearing to the Office of Regulatory Reform for publication in the Michigan register. An agency's notice shall be published in the Michigan register before the public hearing and the agency shall file a copy of the notice of public hearing with the Office of Regulatory Reform."

MCL 24.208 states in part:

"Sec. 8. (1) The Office of Regulatory Reform shall publish the Michigan register at least once each month. The Michigan register shall contain all of the following:

* * *

(d) Proposed administrative rules.

(e) Notices of public hearings on proposed administrative rules."

ADMINISTRATIVE RULES

DEPARTMENT OF ~~CONSUMER AND INDUSTRY SERVICES~~ **LICENSING AND REGULATORY AFFAIRS**

LIQUOR CONTROL COMMISSION

GENERAL RULES

Draft October 15, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the liquor control commission by section 215(1) of 1998 PA 58, MCL 436.1215(1) **and Executive Reorganization Order No. 2011-4, MCL 445.2230**)

R 436.1001, R 436.1003, R 436.1011, R 436.1015, R 436.1023, R 436.1025, R 436.1027, R 436.1039, R 436.1041, R 436.1043, R 436.1045, R 436.1047, R 436.1051, R 436.1053, R 436.1059, R 436.1062 of the Michigan Administrative Code are amended, R 436.1012, R 436.1048, R 436.1050 are added to the Code, and R 436.1035 is rescinded, as follows:

R 436.1001 Definitions.

Rule 1. (1) As used in these rules:

(a) "Act" means 1998 P.A. 58, MCL 436.1101 ~~et seq~~ **to 436.2203**.

(b) "Broker" means a person, other than an individual, ~~who~~ **that** is licensed by the commission and ~~who~~ **that** is employed or otherwise retained by any of the following entities to sell, promote, or otherwise assist in the sale or promotion of alcoholic liquor:

(i) A manufacturer.

(ii) A vendor of spirits.

(iii) An outstate seller of beer.

(iv) An outstate seller of wine.

(v) An outstate seller of mixed spirit drink.

(vi) A manufacturer of mixed spirit drink.

(vii) A wholesaler.

(c) "Co-licensee" means 1 of 2 or more persons whose names appear on any single license issued by the commission, except for a person whose name appears on the license in a fiduciary capacity. All co-licensees on a single license are considered a partnership for purposes of the act and these rules.

(d) "Cooperative advertising" means a joint effort between licensees or vendors of spirits to advertise alcoholic liquor.

(e) "Department store" means a retail store that has all of the following:

(i) More than 15,000 square feet.

(ii) A minimum of 4 separate and distinct major departments that include at least 1 of the stores listed in R 436.1129(1)(a) to (g).

(iii) A minimum inventory of $250,000.00, at cost.

(f) "Drive-in" or "drive-through" means an establishment that allows the sale of alcoholic liquor to a retail customer through a service window or similar aperture without requiring the retail customer to exit his or her vehicle to make the purchase and includes an establishment that allows the retail customer to drive in or through any enclosed building or structure and make a purchase of alcoholic liquor without requiring the retail customer to exit his or her vehicle.

(g) "Drive-up or walk-up window" means a service window, door, or other aperture through which a customer may purchase merchandise without that customer entering the licensed premises.

(h) "Driver helper" means a person who is not less than 18 years of age and who accompanies and assists, and who may only accompany and assist, a licensed salesperson in delivering alcoholic liquor to a retail licensee.

(i) "Licensed premises" means any portion of a building, structure, room, or enclosure on real estate that is owned, leased, used, controlled, or operated by a licensee in the conduct of the business at the location for which the licensee is licensed by the commission, except when otherwise specified by commission rule or written commission order.

(j) "Licensee" means the person to whom a license is issued by the commission to manufacture, sell, import, warehouse, deliver, or promote, or otherwise assist in the sale of, alcoholic liquor.

(k) "Major thoroughfare" means a street or highway which is primarily for through traffic and which has not less than 4 lanes of traffic, excluding any lanes that are used primarily for turning purposes and any lanes in which parking is allowed at any time.

(l) "Neighborhood shopping center" means 1 commercial establishment, or a group of commercial establishments organized or operated as a unit, which is related in location, size, and type of shop to the trade area that the unit serves~~,~~ **and** which ~~provides~~ **consists of** not less than 50,000 square feet of ~~gross~~ leasable retail space~~,~~ and ~~which provides 5 private~~ has **access to** off-street parking spaces ~~for each 1,000 square feet of gross leasable retail space~~.

(m) "Off-premises licensee" means a person who is licensed by the commission to sell alcoholic liquor at retail for consumption off the licensed premises.

(n) "On-premises licensee" means a person who is licensed by the commission to sell alcoholic liquor at retail for consumption on the licensed premises.

(o) "Permit" means a contract between the commission and a licensee granting authority to the licensee to perform the functions defined in the act or commission rules for a specific permit.

(p) "Privately held corporation" means a corporation that does not trade its stock on a stock exchange or in over-the-counter transactions. A subsidiary of a corporation that trades its stock on a stock exchange or in over-the-counter transactions is not a privately held corporation.

(q) "Public room" means a room that is open for use by the general public for eating, drinking, or amusement. "Public room" does not mean any of the following:

(i) A restroom.

(ii) A kitchen.

(iii) A storage room.

(iv) An office.
(v) A boiler room.
(vi) A hallway.
(vii) A landing.
(viii) A stairway.
(ix) An elevator.
(x) A dance floor.
(xi) A stage.
(xii) An area similar to the areas specified in this subdivision.
(r) "Release" means a document in which written permission is granted by the commission to ship alcoholic liquor into this state.
(s) "Salesperson" means a person who is employed by any of the following entities and who is licensed by the commission to sell, deliver, or promote, or otherwise assist in the sale of, alcoholic liquor in this state:
(i) A vendor of spirits.
(ii) A broker.
(iii) A manufacturer of beer or wine.
(iv) An outstate seller of beer or wine.
(v) A wholesaler.
(t) "Sample of alcoholic liquor" means a container ~~which~~ **that** bears the word "sample" and ~~which~~ is not more than ~~1~~ **1.75** liter**s** or ~~33.82~~ 5**9.17** United States fluid ounces. If a product is not available in a container of ~~1~~ **1.75** liter**s** or less, then the next larger size may be substituted. However, a container shall not be more than 3 liters.
(u) "Sports/entertainment venue" means a facility ~~which~~ **that** is licensed to sell alcoholic liquor for on-premises consumption, ~~which~~ has a seating capacity of 4,500 or more, ~~which~~ is primarily used for sporting events or other entertainment, and ~~which~~ is not located on the campus of a 2- or 4-year college or university.
(v) "Temporary bin display" means a freestanding device ~~which~~ **that** is constructed of any material that is used for the exhibition of beer, wine, or spirits on the premises of a retail licensee who is licensed for off-premises sales only and ~~which~~ **that** must be removed from the retail licensed premises not later than 120 days after installation.
~~(w) "Vendor of spirits" means a person who sells spirits to the commission.~~
~~(x)~~**(w)** "Vendor representative" means a person who is licensed by the commission and who is authorized by a manufacturer of beer or wine, an outstate seller of beer or wine, or a vendor of spirits to represent the respective employer or principal in transactions with the commission.
(2) Terms defined in the act have the same meanings when used in these rules.
(3) Terms defined in the act and these rules have the same meanings when used in rules previously or hereafter promulgated by the commission.

R 436.1003 Building and health laws, rules, and ordinances.
Rule 3. **(1)** A licensee shall comply with all state and local building, plumbing, zoning, sanitation, and health laws, rules, and ordinances as determined by the state and local law enforcement officials who have jurisdiction over the licensee.
(2) A licensee shall not use a license at the licensed premises unless a certificate of occupancy has been issued by the local unit of government having jurisdiction over the

location of the licensed premises or the licensed premises complies with the requirements in subrule (1) of this rule.

R 436.1011 Prohibited conduct of licensees, agents, or employees.

Rule 11. (1) The clerk, servant, agent, or employee of a licensee shall not engage in an illegal occupation or illegal act on the licensed premises. A certified copy of a conviction is prima facie evidence of a violation.

(2) A licensee, an officer of a licensed corporation, a stockholder of a privately held corporation, or a member or manager of a limited liability company shall not, on or off its licensed premises, commit any of the following:

(a) A felony.

(b) A crime involving the excessive use of alcoholic liquor.

(c) A crime involving gambling, prostitution, weapons, violence, tax evasion, fraudulent activity, or controlled substances.

(d) A misdemeanor that impairs, or may impair, the ability of the person to operate the licensed business in a safe and competent manner.

(e) Any of the offenses specified in this subrule which results in sentencing after a plea of nolo contendere and for which the licensee is subject to the penalties in section 903 of the act. A certified copy of a conviction is prima facie evidence of a violation.

(3) The provisions of subrules (1) and (2) of this rule apply to the person, the officer of a corporate entity, the stockholder of a privately held corporate entity, or the member or manager of a limited liability entity of the person named as a participant on the licensee's participation permit.

(4) A licensee, or the clerk, servant, agent, or employee of the licensee, shall not **threaten,** hinder**,** or obstruct a law enforcement officer or commission inspector or investigator in the course of making an investigation or inspection of the premises and shall not refuse, fail, or neglect to cooperate with a law enforcement officer or a commission inspector or investigator in the performance of his or her duties to enforce the act or commission rules.

(5) A licensee, or the clerk, servant, agent, or employee of a licensee, shall not impersonate a commission employee, a commission investigator, or a law enforcement officer empowered to enforce the act or commission rules.

(6) A licensee, or the clerk, servant, agent, or employee of the licensee, shall not do any of the following:

(a) Allow, on the licensed premises, the annoying or molesting of customers or employees by other customers or employees **without taking prompt, effective action to prevent and stop the annoying or molesting of customers or employees**.

(b) Knowingly allow the licensed premises to be used by any person for the purposes of accosting or soliciting another person to commit prostitution.

(c) Allow, on the licensed premises, fights, brawls, or the improper use of firearms, knives, or other weapons **without taking prompt, effective action to prevent and stop the fights, brawls, or the improper use of firearms, knives, or other weapons**.

(d) Allow the sale, possession, or consumption on the licensed premises of any controlled substances that are prohibited by 1978 ~~P.A.~~ **PA** 368, MCL 333.1101 ~~et seq~~ **to 333.25211 without taking prompt, effective action to prevent and stop the sale, possession, or consumption on the licensed premises of any controlled substances that are prohibited by 1978 PA 368, MCL 333.1101 to 333.25211**.

(e) Allow narcotics paraphernalia to be used, stored, exchanged, or sold on the licensed premises.

(7) A retail licensee shall not sell any alcoholic liquor off the licensed premises, except as follows:

(a) An on-premises licensee may provide out-of-doors service if done in accord with the provisions of R 436.1419.

(b) An off-premises licensee may deliver a preordered quantity of alcoholic liquor to a customer; however, the licensee shall not make a delivery to a customer on the campus of a 2- or 4-year college or university, unless the customer is licensed by the commission.

(c) An off-premises licensee may provide out-of-doors service if done in accord with the provisions of R 436.1521.

R 436.1012 Business entities dissolved, terminated, expired, revoked, or otherwise not in good standing.

Rule 12. (1) A licensed business entity that is dissolved, terminated, expired, revoked, or otherwise not in good standing in this state, shall not sell, offer for sale, furnish, or allow the consumption of alcoholic liquor on the licensed premises from the date the licensed business entity is dissolved, terminated, expired, or otherwise not in good standing until the date the licensee provides to the commission a certificate of good standing from the corporations, securities, and commercial licensing bureau. Electronic documentation from the state of Michigan's business entity search is prima facie evidence of a business entity's dissolution, termination, expiration, revocation, or lack of good standing in this state.

(2) The licensee's licenses and permits shall be suspended until the date the licensee provides to the commission a certificate of good standing from the corporations, securities, and commercial licensing bureau.

(3) The commission shall not renew the licenses and permits of a licensee for active operation, whose licensed business entity is dissolved, terminated, expired, revoked, or otherwise not in good standing in this state until the licensee provides a certificate of good standing from this state. The license shall also be immediately suspended by written order of the commission and the licensee shall have 60 days from the date of the order to provide a certificate of good standing from the corporations, securities, and commercial licensing bureau or provide a written request to place the license in escrow. If the licensee fails to provide a certificate of good standing or a written request to place the license in escrow within 60 days of the date of the order, then the license shall be cancelled without further order of the commission. A license in escrow shall not be released for active operation until the licensee provides a certificate of good standing from this state. The licensee may apply for another license if the license is cancelled under this subrule.

(4) For purposes of this rule, "business entity" means any person as defined in section 111(1) of 1998 PA 58, MCL 436.1111(1).

R 436.1015 Display of license and permit.

Rule 15. (1) Licenses issued by the commission shall be signed by the licensee, shall be framed under a transparent material, and shall be prominently displayed in the licensed premises.

(2) Permits **and permissions** issued by the commission to a licensee shall be framed under a transparent material and shall be prominently displayed in the licensed premises adjacent to the liquor license.

R 436.1023 Transfer of location of licensed premises; alteration of premises; lease, sale, or transfer of premises.

Rule 23. (1) A licensee shall not transfer the location of the licensed premises without the prior written approval of the commission.

(2) A licensee shall not, without the prior written approval of the commission, do any of the following:

~~(a) Make an alteration in the size of the physical structure of the licensed premises.~~

~~(b)~~**(a)** Add or drop any space to or from the physical structure of the licensed premises.

~~(c)~~**(b)** If the licensee holds a class C or B hotel license, install any additional bars.

(c) Redefine the licensed premises to add space to the licensed premises if the space being added is not connected to the existing physical structure either temporarily or permanently, unless all of the following conditions are met:

(i) The redefined space is located on property owned or controlled by the licensee by ownership or lease.

(ii) The redefined space is located within the same city, village, or township as the licensed premises.

(iii) The redefined space is not separated from the licensed premises by a public street, road, highway, or alley under the control of the state highway commission, county, city, village, or township.

(iv) The redefined space is operated by the licensee, its employees, or agents.

(v) The redefined space is operated as an extension of the licensed premises and not for a separate business use or purpose.

(d) A request to add or drop space to the licensed premises shall exclude areas where outdoor service approval is required as prescribed in R 436.1419.

(3) A licensee shall not lease, sell, or transfer possession of a portion of the licensed premises without the prior written approval of the commission.

R 436.1025 Storing of alcoholic liquor.

Rule 25. A licensee shall not allow alcoholic liquor to be kept or stored off the licensed premises, except upon prior written order of the commission. **If the commission issues an order allowing a licensee to keep or store alcoholic liquor off the licensed premises, the licensee shall ensure that the storage area is under the exclusive control of the licensee, locked and secured at all times, and shall make the storage area available for inspection and search by a commission investigator or law enforcement officer empowered to enforce the rules.**

R 436.1027 Confiscation and impoundment of alcoholic liquor.

Rule 27. (1) ~~A~~ **The** commission ~~inspector or investigator~~ or a law enforcement officer may seize suspected adulterated alcoholic liquor for analytical purposes.

(2) ~~A~~ **The** commission ~~inspector or investigator~~ or a law enforcement officer may confiscate or impound alcoholic liquor ~~which~~ **that** does not comply with the act or commission rules.

(3) ~~A~~ **The** commission ~~inspector or investigator~~ may impound alcoholic liquor ~~which~~ **that** is damaged by fire, water, chemicals, smoke, floods, explosion, freezing, sewage, or other causes affecting quality or merchantable value. Once impounded, damaged alcoholic liquor shall not be used, sold, moved, or destroyed without the prior written approval of the commission.

(4) The commission may impound alcoholic liquor of a licensee by written order.

R 436.1035~~— Aid or assistance by or to licensee prohibited; exception.~~ **Rescinded.**
~~Rule 35. A licensee or vendor of spirits shall not aid or assist any other licensee by gift or loan of money or property of any description or other valuable thing or by giving premiums or rebates; and it is unlawful for any licensee or vendor of spirits to accept the same, except as provided in R 436.1045, R 436.1317, and R 436.1321.~~

R 436.1039 Living quarters in connection with licensed premises; **other direct connections to licensed premises.**

Rule 39. (1) A licensee shall not have an inside connection between the licensed premises and an unlicensed portion of the same building or another building without the prior written approval of the commission.

(2) A licensee, except for a hotel or club licensee, shall not have living quarters connected with the licensed premises, unless a living quarters permit is granted by the commission.

(3) If a living quarters permit is granted by the commission to a licensee, alterations shall not be made in the connections between the living quarters and the licensed premises, unless written permission is granted by the commission.

R 436.1041 Obtaining ~~a~~ license for use or benefit of another**; participation permits**.

Rule 41. (1) A licensee or an applicant for a license shall not obtain or attempt to obtain a license for the use or benefit of another person whose name does not appear on the license. In addition, a licensee shall not allow a person whose name does not appear on the license to use or benefit from the license.

(2) The provisions of subrule (1) of this rule do not apply to a participating agreement where the commission approves ~~the~~ **a** participating agreement after a showing of good cause ~~by the on-premise licensee or where a person not licensed by the commission receives 10% or less of the gross sales of the licensed business~~ **and issues a participation permit to the licensee**.

(3) ~~The provisions of subrule (1) of this rule do not apply to persons approved by the commission and named on a participation permit issued to the licensee.~~ Upon written ~~request~~ **application** of the licensee, the commission may issue a participation permit to a licensee who meets all of the following qualifications:

(a) The non-licensed person who receives use or benefit from the licensee's license**,** or who receives gross **sales** or net profits from a licensed business**,** shall meet the same qualifications as a licensee as prescribed by **R 436.1105(1)(a) and (2) and shall be considered an agent of the licensee as prescribed in** R 436.~~1101 ET SEQ~~ **1011**.

(b) The licensee shall submit a copy of the participation agreement with the application. The agreement shall include the term of the agreement and the percent or amount of sales to be received by the non-licensed person.

(c) The non-licensed person or spouse is not ineligible to be issued a license under section 523(1) of 1998 PA 58, MCL 436.1523(1).

~~(b)~~**(d)** The licensee makes application and either cancels an existing participation permit or receives **approval by the commission for** a new participation permit before adding or deleting any participating non-licensed person. For the purposes of this subrule, the addition or deletion of a participant **shall not constitute a transfer of interest in a license.** ~~includes any of the following:~~

~~(i) Transfer or transfer of interest from 1 person to another.~~

~~(ii) The transfer in the aggregate to another person during any single licensing year of more than10% of the outstanding stock of a corporate participant.~~

~~(iii) The transfer of more than10% of the total interest in a participant which is a partnership.~~

~~(iv) The transfer of more than 10% in the aggregate of the membership of a limited liability company~~.

(e) As used in this subrule, "non-licensed person" means a person as defined in section 111(1) of 1998 PA 58, MCL 436.1111(1).

R 436.1043 Liquor analysis.

Rule 43. ~~(1) A brand of alcoholic liquor that is not presently merchandised in this state shall not be sold, offered for sale, or introduced into this state without being analyzed by the commission, or its duly authorized agent, and without being approved for sale in this state by the commission.~~

~~(2) The commission, by written order, may waive the requirement that alcoholic liquor be analyzed.~~

~~(3)~~ The commission may order random analysis of a brand of alcoholic liquor sold or offered for sale in this state.

R 436.1045 Dispensing equipment, furniture, or fixtures.

Rule 45. (1) A manufacturer, an outstate seller of beer or wine, or a wholesaler shall not sell, give, or otherwise furnish dispensing equipment, furniture, or fixtures to a retail licensee, except upon written order of the commission or as provided by R 436.1611(3).

(2) A retail licensee shall not purchase, receive, or otherwise accept dispensing equipment or components, furniture, or fixtures from a manufacturer, an outstate seller of beer or wine, or a wholesaler, except upon written order of the commission or as provided by R 436.1611(3).

(3) A manufacturer, wholesaler, or retail licensee who sells alcoholic liquor to a special licensee may provide the special licensee with draft beer-dispensing equipment or cooling equipment for use by the special licensee during the effective period of the special license.

(4) A licensee shall not allow on the licensed premises, any vending machine, whether or not operated by coin or currency, that dispenses a type of alcoholic liquor directly to a customer. This subrule does not apply to **any of the following:** ~~a dispensing machine, which is commonly known as an "in-room bar device", whether or not operated by coin or currency, and which is located in the bedrooms or suites of licensed hotels.~~

(a) A dispensing machine, commonly known as an "in-room bar device", whether or not operated by coin or currency, and that is located in the bedrooms or suites of licensed hotels.

(b) A dispensing machine that is located at an on-premises licensed establishment under all of the following conditions:
(i) The dispensing machine does not dispense more than 96 ounces of beer or wine in a single order.
(ii) The dispensing machine is located at a patron's table or booth only.
(iii) The dispensing machine does not dispense spirits or mixed spirit drink.
(iv) The patron of the establishment ordered the beer or wine from the clerk, servant, agent, or employee of the licensee that verified the patron's legal age and determined the patron can otherwise be served an alcoholic beverage.
(v) The licensee does not sell, offer to sell, or advertise the sale of an unlimited quantity of beer or wine from the dispensing machine.
(vi) The licensee monitors the sale, service, and consumption of beer or wine from the dispensing machine to ensure compliance with the act and rules

R 436.1047 Return of licenses and permits.
Rule 47. A licensee who ceases active operation of the licensed business for a period of more than 30 days shall return all current licenses and permits to the commission **to be placed into escrow**. **The license or licenses that the licensee returns under this rule shall be the actual license printed and issued by the commission and not a copy of the actual license printed and issued by the commission. For purposes of this rule, "ceases active operation" does not include seasonal businesses that are both of the following:**
(a) In compliance with the requirements of section 535 of the act, MCL 436.1535.
(b) Considered seasonal employers under section 27(o)(9)(d) of 1936 PA 1, MCL 421.27(o)(9)(d).

R 436.1048 Renewal of licenses.
Rule 48. (1) A license, and any permits or approvals, shall be renewed each year by April 30 following the date of issuance.
(2) The licensee has a continuing duty to provide the commission with up-to-date contact information and must notify the commission in writing of any changes to its mailing address, phone numbers, electronic mail address, and other contact information it provides the commission.

R 436.1050 Approval orders; cancellations.
Rule 50. If the commission approves an application, the approval is valid for 2 years from the date of the commission approval order. If the applicant or licensee has not met all the requirements set forth in the commission approval order within 2 years from the date of the approval order, then the approval order is vacated unless the commission has been provided with a notice of pending litigation involving the application. The person whose approval is vacated may submit a new application.

R 436.1051 Notice of changes affecting control of privately held corporation **or limited liability company.**
Rule 51. (1) A privately held licensed corporation shall immediately notify the commission, in writing, of changes made in its officers or directors or of amendments made to the articles of incorporation.

(2) A limited liability company shall immediately notify the commission, in writing, of changes made in its managers or assignees or of amendments made to the articles of organization, operating agreement, or ~~by-laws~~ **bylaws**.

R 436.1053 Proof of loss or destruction of ~~a~~ license or permit.
Rule 53. **(1)** To prove the loss or destruction of a license or permit, a licensee shall make a written statement as to the loss or destruction and shall file it with the commission.
(2) The written statement shall include a detailed description of the circumstances concerning the loss or destruction of the license or permit and shall be accompanied by any remaining part of the license.
(3) The written statement shall be signed by the licensee.

R 436.1059 Dishonored payment.
Rule 59. **(1)** A licensee, or the clerk, servant, agent, or employee of a licensee, shall not make payment to the commission or the state of Michigan by any means that will be dishonored by a financial institution for lack of sufficient funds or for any other reason.
(2) If a licensee makes 5 or more dishonored payments under subrule (1) of this rule in a 24-month consecutive period, then the commission shall, in a written order, require the licensee to make payments to the commission by cash or other means required by the commission for a period of not less than 6 months.
(3) If a licensee received an order from the commission issued under subrule (2) of this rule, and the licensee then makes any additional dishonored payments within 36 months from the last dishonored payment, then the commission shall require the licensee, in a written order, to make payments to the commission by cash or other means required by the commission for a period of not less than 6 months for each subsequent dishonored payment.

R 436.1062 Facsimile **and electronic** transmissions.
Rule 62. (1) The commission may accept documents and filings, including documents and filings requiring signature, by facsimile (fax) communication equipment**, or other electronic means,** if the documents and filings are transmitted in accordance with this rule and ~~in accordance with~~ **pursuant to** procedures for fax transmissions **or communications by other electronic means** that the commission may establish **by prior written order**.
(2) All documents and filings submitted under this rule shall be on 8½ inch x 11 inch standard paper and shall be legible.
(3) A special license, as defined in ~~Section~~ **section** 111(1~~0~~**1**) of the act, MCL 436.1111(11), may be transmitted by facsimile **or other electronic means** to the special licensee for use and display during the effective dates of the license for good cause shown.
(4) The commission may transmit a license or permit, other than a special license, to a licensee by facsimile **or other electronic means** for good cause shown if the facsimile **or other** copy of the license bears an expiration date that allows its use and display for a maximum of ~~5~~ **20** business days after the actual license or permit is mailed to the licensee.
(5) The commission shall not transmit a license or permit by facsimile **or other electronic means** to a licensee unless all required documents have been received in the commission's Lansing office and all applicable fees for the license or permit, **or both,** have been paid.
(6) Documents and filings received by the commission under this rule after 4 p.m. are considered filed on the next business day.

(7) A cover sheet shall accompany any facsimile transmission to the commission. The cover sheet shall include all of the following information:

(a) The name**, electronic mail address, facsimile number,** and telephone number of the sender.

(b) The title or description of the document or filing being transmitted.

(c) Any application or file number pertaining to the document or filing being transmitted.

(8) Information sent to the commission by electronic means shall include all of the following information:

(a) The name, electronic mail address, facsimile number, and telephone number of the sender.

(b) The title or description of the document or filing being transmitted.

(c) Any application or file number pertaining to the document or filing being transmitted.

~~(8)~~**(9)** Notwithstanding subrule (1) of this rule, the commission may refuse to accept the facsimile transmission **or other electronic transmission** of a document the commission determines requires an original signature.

~~(9)~~**(10)** A facsimile transmission **or other electronic transmission** accepted by the commission under this rule and certified by an agent of the commission is considered an original for all purposes and is admissible in evidence in like manner as an original.

NOTICE OF PUBLIC HEARING

NOTICE OF PUBLIC HEARING

The Michigan Liquor Control Commission will hold a public hearing Tuesday, November 17, 2015 at 2:00 p.m. in the Jacquelyn A. Stewart Hearing Room, Constitution Hall, 525 W. Allegan, Lansing, Michigan. The hearing will be held to receive public comments on the proposed changes to the Liquor Control Commission's General Rules.

The purpose of the General Rules is to provide broad-spectrum business operational regulations applicable to all persons licensed by the Liquor Control Commission (Commission). Changes to these rules include the clarification of the use, display, escrow, renewal, and loss or destruction of licenses, permits, and permissions; the alteration of licensed premises; the storage of alcoholic liquor; and clarification of the requirements for a participation permit. The proposed rules also include requirements for the use of dispensing machines; the effective period of approval orders; consequences for multiple dishonored payments; and removal of all obsolete language.

Following the January 27, 2015 public hearing on the proposed changes to the Commission's General Rules, additional changes were made to the definition of neighborhood shopping center; to the prohibited conduct of licensees, agents, or employees to require prompt, effective action to prevent and stop the prohibited conduct; and to the requirements for the use of dispensing machines which includes that the dispensing machine must be located at a patron's table and can only dispense beer and wine. The proposed rule changes also include an increase in the number of days a facsimile or copy of the license may be used and displayed from the originally proposed 7 days to 20 days; an increase in the size of the sample of alcoholic liquor from 1 liter to 1.75 liters; and that the licensee has a continuing duty to notify and provide the Commission with up-to-date contact information.

These rules are being revised under the authority conferred on the Michigan Liquor Control Commission by section 215(1) of Act No. 58 of the Public Acts of 1998, as amended. The rule revisions will take effect immediately upon filing with the Secretary of State.

The rules are published on the Michigan government web site under the Department of Licensing and Regulatory Affairs, ORR No. 2013-0097-LR at http://w3.lara.state.mi.us/orr/Files/ORR/1294_2013-097LR_orr-draft.pdf. The amendments to the rules will be published in the November 1, 2015 *Michigan Register*. A copy of the amended rules may be obtained at the Liquor Control Commission's Lansing Office during regular business hours. A copy may also be obtained by contacting the Liquor Control Commission's Lansing Office, by mail at 525 W. Allegan, PO Box 30005, Lansing, MI 48909, Attn. Anita Fawcett; by telephone at 517-284-6310; by fax at 517-763-0057; and by email at fawcetta@michigan.gov.

All interested persons are invited to attend the hearing to present data and views orally or in writing. Anyone unable to attend may submit comments in writing to Anita Fawcett at the above address. Written comments must be received by 5 p.m. on November 17, 2015. If

your presentation at the public hearing is in written form, please provide a copy to the court reporter at the conclusion of your testimony at the hearing.

The hearing site is accessible, including handicapped parking. Individuals attending the meeting are requested to refrain from using heavily scented personal care products in order to enhance accessibility for everyone. Persons needing accommodations for effective participation in the meeting should contact Anita Fawcett at 517-284-6310 at least 14 days prior to the hearing.

ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS
~~DIRECTOR'S OFFICE~~
TASK FORCE ON PHYSICIAN'S ASSISTANTS

GENERAL RULES

Draft May 8, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under Section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the ~~director of the department of licensing and regulatory affairs~~ **task force on physician's assistants** by sections 16145 and 17060 of 1978 PA 368, MCL 333.16145 and 333.17060, and Executive Reorganization Order Nos. 1991-9, 1996-1, 1996-2, 2003-1, and 2011-4, MCL 338.3501, 330.3101, 445.2001, 445.2011, and 445.2030)

R 338.6103 is added to the Michigan Administrative Code as follows:

R 338.6103 Training standards for identifying victims of human trafficking; requirements.

Rule 103. (1) Pursuant to section 17060 of the code, MCL 333.17060, an individual seeking licensure or licensed shall complete training in identifying victims of human trafficking that meets the following standards:

(a) Training content shall cover all of the following:

(i) Understanding the types and venues of human trafficking in Michigan or the United States.

(ii) Identifying victims of human trafficking in health care settings.

(iii) Identifying the warning signs of human trafficking in health care settings for adults and minors.

(iv) Resources for reporting the suspected victims of human trafficking.

(b) Acceptable providers or methods of training include any of the following:

(i) Training offered by a nationally recognized or state-recognized, health-related organization.

(ii) Training offered by, or in conjunction with, a state or federal agency.

(iii) Training obtained in an educational program that has been approved by the task force for initial licensure, or by a college or university.

(iv) Reading an article related to the identification of victims of human trafficking that meets the requirements of subrule (1)(a) of this rule and is published in a peer review journal, health care journal, or professional or scientific journal.

(c) Acceptable modalities of training may include any of the following:

(i) Teleconference or webinar.

(ii) Online presentation.
(iii) Live presentation.
(iv) Printed or electronic media.
(2) The department may select and audit a sample of individuals and request documentation of proof of completion of training. If audited by the department, an individual shall provide an acceptable proof of completion of training, including either of the following:
(a) Proof of completion certificate issued by the training provider that includes the date, provider name, name of training, and individual's name.
(b) A self-certification statement by an individual. The certification statement shall include the individual's name and either of the following:
(i) For training completed pursuant to subrule (1)(b)(i) to (iii) of this rule, the date, training provider name, and name of training.
(ii) For training completed pursuant to subrule (1)(b)(iv) of this rule, the title of article, author, publication name of peer review journal, health care journal, or professional or scientific journal, and date, volume, and issue of publication, as applicable.
(3) Pursuant to section 16148 of the code, MCL 333.16148, the requirements specified in subrule (1) of this rule apply to license renewals beginning with the first renewal cycle after the promulgation of this rule and for initial licenses issued 5 or more years after the promulgation of this rule.

NOTICE OF PUBLIC HEARING

NOTICE OF PUBLIC HEARING

November 12, 2015 - 9:00 a.m. to 11.00 a.m.
Michigan Department of Licensing and Regulatory Affairs
Location: G. Mennen Williams Building - Auditorium
525 W. Ottawa St., Lansing, Michigan

Board of Acupuncture (ORR #2015-013 LR)
Board of Athletic Trainers (ORR #2015-014 LR)
Board of Audiology (ORR #2015-015 LR)
Board of Chiropractic (ORR #2015-16 LR)
Board of Counseling (ORR #2015-017 LR)
Board of Marriage and Family Therapy (ORR #2015-018 LR)
Board of Nursing Home Administrators (ORR 2015-019 LR)
Task Force on Physician's Assistants (ORR #2015-012 LR)
Board of Respiratory Care (ORR #2015-020 LR)
Sanitarians Registration (ORR # 2015-021 LR)

Overview: Public Act 343 of 2014 requires that Department of Licensing and Regulatory Affairs to promulgate rules for licensed health professionals which included training standards for identifying victims of human trafficking. A new rule will be added to each of the above-listed rule sets. The new rule sets forth the requirements for licensees to complete training, appropriate training content and acceptable modalities of completing training and proof of completion.

The rules will take effect immediately upon filing with the Secretary of State, unless specified otherwise in the rules.

Comments on the proposed rules may be presented in person at the public hearing. Written comments may be submitted at the time of presentation and will also be accepted until 5:00 p.m. on November 13, 2015, at the following address or e-mail address:

Department of Licensing and Regulatory Affairs
Bureau of Professional Licensing – Boards and Committee Sections
P.O. Box 30670
Lansing, MI 48909-8170
Email: BPL-BoardSupport@michigan.gov

Please specify if your comments are directed to a particular board.

A copy of the proposed rules may be obtained by contacting (517) 373-0042 or at the email address noted above. Electronic copies also may be obtained by clicking on "Proposed Revision Info" at the following link:

http://w3.lara.state.mi.us/orr/AdminCode.aspx?AdminCode=Department&Dpt=LR&Level_1=Bureau+of+Professional+Licensing

The meeting site and parking is accessible. Individuals attending the meeting are requested to refrain from using heavily scented personal care products, in order to enhance accessibility for everyone. People with disabilities requiring additional accommodations (such as materials in alternative format) in order to participate in the meeting should call (517) 335-1341. LARA is an equal opportunity employer/program.

ADMINISTRATIVE RULES

DEPARTMENT OF ~~COMMUNITY HEALTH~~ **LICENSING AND REGULATORY AFFAIRS**

DIRECTOR'S OFFICE

ACUPUNCTURE – GENERAL RULES

Draft May 8, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under Section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of ~~community health~~ **licensing and regulatory affairs** by section**s** 16525 **and 16148** of 1978 PA 368, MCL 333.16525 **and MCL 333.16148** and Executive Reorganization Order Nos. 1996-1, 1996-2 ~~and~~ 2003-1, **and 2011-4,** MCL 330.3101, 445.2001, ~~and~~ 445.2011**, and 445.2030**)

R 338.13002 is added to the Michigan Administrative Code as follows:

R 338.13002 Training Standards for identifying victims of human trafficking; requirements.

Rule 2. (1) Pursuant to section 16148 of the code, MCL 333.16148, an individual seeking registration or registered shall complete training in identifying victims of human trafficking that meets the following standards:

(a) Training content shall cover all of the following:

(i) Understanding the types and venues of human trafficking in Michigan or the United States.

(ii) Identifying victims of human trafficking in health care settings.

(iii) Identifying the warning signs of human trafficking in health care settings for adults and minors.

(iv) Resources for reporting the suspected victims of human trafficking.

(b) Acceptable providers or methods of training include any of the following:

(i) Training offered by a nationally recognized or state-recognized, health-related organization.

(ii) Training offered by, or in conjunction with, a state or federal agency.

(iii) Training obtained in an educational program that has been approved by the board for initial registration, or by a college or university.

(iv) Reading an article related to the identification of victims of human trafficking that meets the requirements of subrule (1)(a) of this rule and is published in a peer review journal, health care journal, or professional or scientific journal.

(c) Acceptable modalities of training may include any of the following:

(i) Teleconference or webinar.
(ii) Online presentation.
(iii) Live presentation.
(iv) Printed or electronic media.
(2) The department may select and audit a sample of individuals and request documentation of proof of completion of training. If audited by the department, an individual shall provide an acceptable proof of completion of training, including either of the following:
(a) Proof of completion certificate issued by the training provider that includes the date, provider name, name of training, and individual's name.
(b) A self-certification statement by an individual. The certification statement shall include the individual's name and either of the following:
(i) For training completed pursuant to subrule (1)(b)(i) to (iii) of this rule, the date, training provider name, and name of training.
(ii) For training completed pursuant to subrule (1)(b)(iv) of this rule, the title of article, author, publication name of peer review journal, health care journal, or professional or scientific journal, and date, volume, and issue of publication, as applicable.
(3) Pursuant to section 16148 of the code, MCL 333.16148, the requirements specified in subrule (1) of this rule apply to registration renewals beginning with the first renewal cycle after the promulgation of this rule and for initial registrations issued 5 or more years after the promulgation of this rule.

NOTICE OF PUBLIC HEARING

NOTICE OF PUBLIC HEARING

November 12, 2015 - 9:00 a.m. to 11.00 a.m.
Michigan Department of Licensing and Regulatory Affairs
Location: G. Mennen Williams Building - Auditorium
525 W. Ottawa St., Lansing, Michigan

Board of Acupuncture (ORR #2015-013 LR)
Board of Athletic Trainers (ORR #2015-014 LR)
Board of Audiology (ORR #2015-015 LR)
Board of Chiropractic (ORR #2015-16 LR)
Board of Counseling (ORR #2015-017 LR)
Board of Marriage and Family Therapy (ORR #2015-018 LR)
Board of Nursing Home Administrators (ORR 2015-019 LR)
Task Force on Physician's Assistants (ORR #2015-012 LR)
Board of Respiratory Care (ORR #2015-020 LR)
Sanitarians Registration (ORR # 2015-021 LR)

Overview: Public Act 343 of 2014 requires that Department of Licensing and Regulatory Affairs to promulgate rules for licensed health professionals which included training standards for identifying victims of human trafficking. A new rule will be added to each of the above-listed rule sets. The new rule sets forth the requirements for licensees to complete training, appropriate training content and acceptable modalities of completing training and proof of completion.

The rules will take effect immediately upon filing with the Secretary of State, unless specified otherwise in the rules.

Comments on the proposed rules may be presented in person at the public hearing. Written comments may be submitted at the time of presentation and will also be accepted until 5:00 p.m. on November 13, 2015, at the following address or e-mail address:

Department of Licensing and Regulatory Affairs
Bureau of Professional Licensing – Boards and Committee Sections
P.O. Box 30670
Lansing, MI 48909-8170
Email: BPL-BoardSupport@michigan.gov

Please specify if your comments are directed to a particular board.

A copy of the proposed rules may be obtained by contacting (517) 373-0042 or at the email address noted above. Electronic copies also may be obtained by clicking on "Proposed Revision Info" at the following link:

http://w3.lara.state.mi.us/orr/AdminCode.aspx?AdminCode=Department&Dpt=LR&Level_1=Bureau+of+Professional+Licensing

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ADMINISTRATIVE RULES

DEPARTMENT OF ~~COMMUNITY HEALTH~~ **LICENSING AND REGULATORY AFFAIRS**

DIRECTOR'S OFFICE

ATHLETIC TRAINING - GENERAL RULES

Draft May 8, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of community health by sections 16145**, 16148,** and 18709 of 1978 PA 368, MCL 333.16145**, MCL 333.16148,** and MCL 333.18709 and Executive Reorganization Order Nos. 1996-1, 1996-2 and 2003-1, MCL 330.3101, 445.2001, and 445.2011)

R 338.1303 is being added to the Code as follows:

R 338.1303 Training standards for identifying victims of human trafficking; requirements.
Rule 3. (1) Pursuant to section 16148 of the code, MCL 333.16148, an individual licensed or seeking licensure shall complete training in identifying victims of human trafficking that meets the following standards:
(a) Training content shall cover all of the following:
(i) Understanding the types and venues of human trafficking in Michigan or the United States.
(ii) Identifying victims of human trafficking in health care settings.
(iii) Identifying the warning signs of human trafficking in health care settings for adults and minors.
(iv) Resources for reporting the suspected victims of human trafficking.
(b) Acceptable providers or methods of training include any of the following:
(i) Training offered by a nationally recognized or state-recognized, health-related organization.
(ii) Training offered by, or in conjunction with, a state or federal agency.
(iii) Training obtained in an educational program that has been approved by the board for initial licensure, or by a college or university.
(iv) Reading an article related to the identification of victims of human trafficking that meets the requirements of subrule (1)(a) of this rule and is published in a peer review journal, health care journal, or professional or scientific journal.

(c) Acceptable modalities of training may include any of the following:
(i) Teleconference or webinar.
(ii) Online presentation.
(iii) Live presentation.
(iv) Printed or electronic media.
(2) The department may select and audit a sample of individuals and request documentation of proof of completion of training. If audited by the department, an individual shall provide an acceptable proof of completion of training, including either of the following:
(a) Proof of completion certificate issued by the training provider that includes the date, provider name, name of training, and individual's name.
(b) A self-certification statement by an individual. The certification statement shall include the individual's name and either of the following:
(i) For training completed pursuant to subrule (1)(b)(i) to (iii) of this rule, the date, training provider name, and name of training.
(ii) For training completed pursuant to subrule (1)(b)(iv) of this rule, the title of article, author, publication name of peer review journal, health care journal, or professional or scientific journal, and date, volume, and issue of publication, as applicable.
(3) Pursuant to section 16148 of the code, MCL 333.16148, the requirements specified in subrule (1) of this rule apply to license renewals beginning with the first renewal cycle after the promulgation of this rule and for initial licenses issued 5 or more years after the promulgation of this rule.

NOTICE OF PUBLIC HEARING

NOTICE OF PUBLIC HEARING

November 12, 2015 - 9:00 a.m. to 11.00 a.m.
Michigan Department of Licensing and Regulatory Affairs
Location: G. Mennen Williams Building - Auditorium
525 W. Ottawa St., Lansing, Michigan

Board of Acupuncture (ORR #2015-013 LR)
Board of Athletic Trainers (ORR #2015-014 LR)
Board of Audiology (ORR #2015-015 LR)
Board of Chiropractic (ORR #2015-16 LR)
Board of Counseling (ORR #2015-017 LR)
Board of Marriage and Family Therapy (ORR #2015-018 LR)
Board of Nursing Home Administrators (ORR 2015-019 LR)
Task Force on Physician's Assistants (ORR #2015-012 LR)
Board of Respiratory Care (ORR #2015-020 LR)
Sanitarians Registration (ORR # 2015-021 LR)

Overview: Public Act 343 of 2014 requires that Department of Licensing and Regulatory Affairs to promulgate rules for licensed health professionals which included training standards for identifying victims of human trafficking. A new rule will be added to each of the above-listed rule sets. The new rule sets forth the requirements for licensees to complete training, appropriate training content and acceptable modalities of completing training and proof of completion.

The rules will take effect immediately upon filing with the Secretary of State, unless specified otherwise in the rules.

Comments on the proposed rules may be presented in person at the public hearing. Written comments may be submitted at the time of presentation and will also be accepted until 5:00 p.m. on November 13, 2015, at the following address or e-mail address:

Department of Licensing and Regulatory Affairs
Bureau of Professional Licensing – Boards and Committee Sections
P.O. Box 30670
Lansing, MI 48909-8170
Email: BPL-BoardSupport@michigan.gov

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ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

AUDIOLOGY - GENERAL RULES

Draft May 8, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 16145(3)**, 16148,** and 16801 of 1978 PA 368, MCL 333.16145(3)**, MCL 333.16148,** and 333.16801, and Executive Reorganization Order Nos. 1996-1, 1996-2, 2003-1 and 2011-4, MCL 330.3101, 445.2001, 445.2011, and 445.2030)

R 338.1a is being added to the Code as follows:

R 338.1a Training standards for identifying victims of human trafficking; requirements.

Rule 1a. (1) Pursuant to section 16148 of the code, MCL 333.16148, an individual licensed or seeking licensure shall complete training in identifying victims of human trafficking that meets the following standards:

(a) Training content shall cover all of the following:

(i) Understanding the types and venues of human trafficking in Michigan or the United States.

(ii) Identifying victims of human trafficking in health care settings.

(iii) Identifying the warning signs of human trafficking in health care settings for adults and minors.

(iv) Resources for reporting the suspected victims of human trafficking.

(b) Acceptable providers or methods of training include any of the following:

(i) Training offered by a nationally recognized or state-recognized, health-related organization.

(ii) Training offered by, or in conjunction with, a state or federal agency.

(iii) Training obtained in an educational program that has been approved by the board for initial licensure, or by a college or university.

(iv) Reading an article related to the identification of victims of human trafficking that meets the requirements of subrule (1)(a) of this rule and is published in a peer review journal, health care journal, or professional or scientific journal.

(c) Acceptable modalities of training may include any of the following:

(i) Teleconference or webinar.

(ii) Online presentation.

(iii) Live presentation.

(iv) Printed or electronic media.

(2) The department may select and audit a sample of individuals and request documentation of proof of completion of training. If audited by the department, an individual shall provide an acceptable proof of completion of training, including either of the following:

(a) Proof of completion certificate issued by the training provider that includes the date, provider name, name of training, and individual's name.

(b) A self-certification statement by an individual. The certification statement shall include the individual's name and either of the following:

(i) For training completed pursuant to subrule (1)(b)(i) to (iii) of this rule, the date, training provider name, and name of training.

(ii) For training completed pursuant to subrule (1)(b)(iv) of this rule, the title of article, author, publication name of peer review journal, health care journal, or professional or scientific journal, and date, volume, and issue of publication, as applicable.

(3) Pursuant to section 16148 of the code, MCL 333.16148, the requirements specified in subrule (1) of this rule apply to license renewals beginning with the first renewal cycle after the promulgation of this rule and for initial licenses issued 5 or more years after the promulgation of this rule.

NOTICE OF PUBLIC HEARING

NOTICE OF PUBLIC HEARING

November 12, 2015 - 9:00 a.m. to 11.00 a.m.
Michigan Department of Licensing and Regulatory Affairs
Location: G. Mennen Williams Building - Auditorium
525 W. Ottawa St., Lansing, Michigan

Board of Acupuncture (ORR #2015-013 LR)
Board of Athletic Trainers (ORR #2015-014 LR)
Board of Audiology (ORR #2015-015 LR)
Board of Chiropractic (ORR #2015-16 LR)
Board of Counseling (ORR #2015-017 LR)
Board of Marriage and Family Therapy (ORR #2015-018 LR)
Board of Nursing Home Administrators (ORR 2015-019 LR)
Task Force on Physician's Assistants (ORR #2015-012 LR)
Board of Respiratory Care (ORR #2015-020 LR)
Sanitarians Registration (ORR # 2015-021 LR)

Overview: Public Act 343 of 2014 requires that Department of Licensing and Regulatory Affairs to promulgate rules for licensed health professionals which included training standards for identifying victims of human trafficking. A new rule will be added to each of the above-listed rule sets. The new rule sets forth the requirements for licensees to complete training, appropriate training content and acceptable modalities of completing training and proof of completion.

The rules will take effect immediately upon filing with the Secretary of State, unless specified otherwise in the rules.

Comments on the proposed rules may be presented in person at the public hearing. Written comments may be submitted at the time of presentation and will also be accepted until 5:00 p.m. on November 13, 2015, at the following address or e-mail address:

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Bureau of Professional Licensing – Boards and Committee Sections
P.O. Box 30670
Lansing, MI 48909-8170
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ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

CHIROPRACTIC - GENERAL RULES

Draft May 8, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 16145(3), **16148,** 16401, 16423, and 16431(3) of 1978 PA 368, MCL 333.16145(3), **MCL 333.16148,** 333.16401, 333.16423, and 333.16431(3) and Executive Reorganization Order Nos. 1996-1, 1996-2, 2003-1, and 2011-4, MCL 333.3101, 445.2001, 445.2011, and 445.2030)

R 338.12001a is being added to the Code as follows:

R 338.12001a. Training standards for identifying victims of human trafficking; requirements.

Rule 1a. (1) Pursuant to section 16148 of the code, MCL 333.16148, an individual licensed or seeking licensure shall complete training in identifying victims of human trafficking that meets the following standards:

(a) Training content shall cover all of the following:

(i) Understanding the types and venues of human trafficking in Michigan or the United States.

(ii) Identifying victims of human trafficking in health care settings.

(iii) Identifying the warning signs of human trafficking in health care settings for adults and minors.

(iv) Resources for reporting the suspected victims of human trafficking.

(b) Acceptable providers or methods of training include any of the following:

(i) Training offered by a nationally recognized or state-recognized, health-related organization.

(ii) Training offered by, or in conjunction with, a state or federal agency.

(iii) Training obtained in an educational program that has been approved by the board for initial licensure, or by a college or university.

(iv) Reading an article related to the identification of victims of human trafficking that meets the requirements of subrule (1)(a) of this rule and is published in a peer review journal, health care journal, or professional or scientific journal.

(c) Acceptable modalities of training may include any of the following:
(i) Teleconference or webinar.
(ii) Online presentation.
(iii) Live presentation.
(iv) Printed or electronic media.
(2) The department may select and audit a sample of individuals and request documentation of proof of completion of training. If audited by the department, an individual shall provide an acceptable proof of completion of training, including either of the following:
(a) Proof of completion certificate issued by the training provider that includes the date, provider name, name of training, and individual's name.
(b) A self-certification statement by an individual. The certification statement shall include the individual's name and either of the following:
(i) For training completed pursuant to subrule (1)(b)(i) to (iii) of this rule, the date, training provider name, and name of training.
(ii) For training completed pursuant to subrule (1)(b)(iv) of this rule, the title of article, author, publication name of peer review journal, health care journal, or professional or scientific journal, and date, volume, and issue of publication, as applicable.
(3) Pursuant to section 16148 of the code, MCL 333.16148, the requirements specified in subrule (1) of this rule apply to license renewals beginning with the first renewal cycle after the promulgation of this rule and for initial licenses issued 5 or more years after the promulgation of this rule.

NOTICE OF PUBLIC HEARING

NOTICE OF PUBLIC HEARING

November 12, 2015 - 9:00 a.m. to 11.00 a.m.
Michigan Department of Licensing and Regulatory Affairs
Location: G. Mennen Williams Building - Auditorium
525 W. Ottawa St., Lansing, Michigan

Board of Acupuncture (ORR #2015-013 LR)
Board of Athletic Trainers (ORR #2015-014 LR)
Board of Audiology (ORR #2015-015 LR)
Board of Chiropractic (ORR #2015-16 LR)
Board of Counseling (ORR #2015-017 LR)
Board of Marriage and Family Therapy (ORR #2015-018 LR)
Board of Nursing Home Administrators (ORR 2015-019 LR)
Task Force on Physician's Assistants (ORR #2015-012 LR)
Board of Respiratory Care (ORR #2015-020 LR)
Sanitarians Registration (ORR # 2015-021 LR)

Overview: Public Act 343 of 2014 requires that Department of Licensing and Regulatory Affairs to promulgate rules for licensed health professionals which included training standards for identifying victims of human trafficking. A new rule will be added to each of the above-listed rule sets. The new rule sets forth the requirements for licensees to complete training, appropriate training content and acceptable modalities of completing training and proof of completion.

The rules will take effect immediately upon filing with the Secretary of State, unless specified otherwise in the rules.

Comments on the proposed rules may be presented in person at the public hearing. Written comments may be submitted at the time of presentation and will also be accepted until 5:00 p.m. on November 13, 2015, at the following address or e-mail address:

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ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

COUNSELING - GENERAL RULES

Draft May 8, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 16145(3)**, 16148,** and 18101 of 1978 PA 368, MCL 333.16145(3)**, MCL 333.16148,** and 333.18101 and Executive Reorganization Order Nos. 1996-1, 1996-2, 2003-1, and 2011-4, MCL 330.3101, 445.2001, 445.2011, and 445.2030)

R 338.1751a is being added to the Code as follows:

Rule 338.1751a Training standards for identifying victims of human trafficking; requirements.

Rule 1a. (1) Pursuant to section 16148 of the code, MCL 333.16148, an individual licensed or seeking licensure shall complete training in identifying victims of human trafficking that meets the following standards:

(a) Training content shall cover all of the following:

(i) Understanding the types and venues of human trafficking in Michigan or the United States.

(ii) Identifying victims of human trafficking in health care settings.

(iii) Identifying the warning signs of human trafficking in health care settings for adults and minors.

(iv) Resources for reporting the suspected victims of human trafficking.

(b) Acceptable providers or methods of training include any of the following:

(i) Training offered by a nationally recognized or state-recognized, health-related organization.

(ii) Training offered by, or in conjunction with, a state or federal agency.

(iii) Training obtained in an educational program that has been approved by the board for initial licensure, or by a college or university.

(iv) Reading an article related to the identification of victims of human trafficking that meets the requirements of subrule (1)(a) of this rule and is published in a peer review journal, health care journal, or professional or scientific journal.

(c) Acceptable modalities of training may include any of the following:

(i) Teleconference or webinar.

(ii) Online presentation.

(iii) Live presentation.

(iv) Printed or electronic media.

(2) The department may select and audit a sample of individuals and request documentation of proof of completion of training. If audited by the department, an individual shall provide an acceptable proof of completion of training, including either of the following:

(a) Proof of completion certificate issued by the training provider that includes the date, provider name, name of training, and individual's name.

(b) A self-certification statement by an individual. The certification statement shall include the individual's name and either of the following:

(i) For training completed pursuant to subrule (1)(b)(i) to (iii) of this rule, the date, training provider name, and name of training.

(ii) For training completed pursuant to subrule (1)(b)(iv) of this rule, the title of article, author, publication name of peer review journal, health care journal, or professional or scientific journal, and date, volume, and issue of publication, as applicable.

(3) Pursuant to section 16148 of the code, MCL 333.16148, the requirements specified in subrule (1) of this rule apply to license renewals beginning with the first renewal cycle after the promulgation of this rule and for initial licenses issued 5 or more years after the promulgation of this rule.

NOTICE OF PUBLIC HEARING

NOTICE OF PUBLIC HEARING

November 12, 2015 - 9:00 a.m. to 11.00 a.m.
Michigan Department of Licensing and Regulatory Affairs
Location: G. Mennen Williams Building - Auditorium
525 W. Ottawa St., Lansing, Michigan

Board of Acupuncture (ORR #2015-013 LR)
Board of Athletic Trainers (ORR #2015-014 LR)
Board of Audiology (ORR #2015-015 LR)
Board of Chiropractic (ORR #2015-16 LR)
Board of Counseling (ORR #2015-017 LR)
Board of Marriage and Family Therapy (ORR #2015-018 LR)
Board of Nursing Home Administrators (ORR 2015-019 LR)
Task Force on Physician's Assistants (ORR #2015-012 LR)
Board of Respiratory Care (ORR #2015-020 LR)
Sanitarians Registration (ORR # 2015-021 LR)

Overview: Public Act 343 of 2014 requires that Department of Licensing and Regulatory Affairs to promulgate rules for licensed health professionals which included training standards for identifying victims of human trafficking. A new rule will be added to each of the above-listed rule sets. The new rule sets forth the requirements for licensees to complete training, appropriate training content and acceptable modalities of completing training and proof of completion.

The rules will take effect immediately upon filing with the Secretary of State, unless specified otherwise in the rules.

Comments on the proposed rules may be presented in person at the public hearing. Written comments may be submitted at the time of presentation and will also be accepted until 5:00 p.m. on November 13, 2015, at the following address or e-mail address:

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ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

BOARD OF MARRIAGE AND FAMILY THERAPY – GENERAL RULES

Draft May 8, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under Section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of licensing and regulatory affairs by section**s** 16145(3)**, 16148,** and 16109 of 1978 PA 368, MCL 333.16145(3)**, MCL 333.16148,** and **MCL** 333.16109 and Executive Reorganization Order Nos. 1996-1, 1996-2 and 2003-1, and 2011-4, MCL 330.3101, 445.2001, 445.2011, and 445.2030)

R 338.7202 is added to the Michigan Administrative Code as follows:

R 338.7202 Training standards for identifying victims of human trafficking; requirements.

Rule 2. (1) Pursuant to section 16148 of the code, MCL 333.16148, an individual seeking licensure or licensed shall complete training in identifying victims of human trafficking that meets the following standards:

(a) Training content shall cover all of the following:

(i) Understanding the types and venues of human trafficking in Michigan or the United States.

(ii) Identifying victims of human trafficking in health care settings.

(iii) Identifying the warning signs of human trafficking in health care settings for adults and minors.

(iv) Resources for reporting the suspected victims of human trafficking.

(b) Acceptable providers or methods of training include any of the following:

(i) Training offered by a nationally recognized or state-recognized, health-related organization.

(ii) Training offered by, or in conjunction with, a state or federal agency.

(iii) Training obtained in an educational program that has been approved by the board for initial licensure, or by a college or university.

(iv) Reading an article related to the identification of victims of human trafficking that meets the requirements of subrule (1)(a) of this rule and is published in a peer review journal, health care journal, or professional or scientific journal.

(c) Acceptable modalities of training may include any of the following:

(i) Teleconference or webinar.

(ii) Online presentation.

(iii) Live presentation.

(iv) Printed or electronic media.

(2) The department may select and audit a sample of individuals and request documentation of proof of completion of training. If audited by the department, an individual shall provide an acceptable proof of completion of training, including either of the following:

(a) Proof of completion certificate issued by the training provider that includes the date, provider name, name of training, and individual's name.

(b) A self-certification statement by an individual. The certification statement shall include the individual's name and either of the following:

(i) For training completed pursuant to subrule (1)(b)(i) to (iii) of this rule, the date, training provider name, and name of training.

(ii) For training completed pursuant to subrule (1)(b)(iv) of this rule, the title of article, author, publication name of peer review journal, health care journal, or professional or scientific journal, and date, volume, and issue of publication, as applicable.

(3) Pursuant to section 16148 of the code, MCL 333.16148, the requirements specified in subrule (1) of this rule apply to license renewals beginning with the first renewal cycle after the promulgation of this rule and for initial licenses issued 5 or more years after the promulgation of this rule.

NOTICE OF PUBLIC HEARING

NOTICE OF PUBLIC HEARING

November 12, 2015 - 9:00 a.m. to 11.00 a.m.
Michigan Department of Licensing and Regulatory Affairs
Location: G. Mennen Williams Building - Auditorium
525 W. Ottawa St., Lansing, Michigan

Board of Acupuncture (ORR #2015-013 LR)
Board of Athletic Trainers (ORR #2015-014 LR)
Board of Audiology (ORR #2015-015 LR)
Board of Chiropractic (ORR #2015-16 LR)
Board of Counseling (ORR #2015-017 LR)
Board of Marriage and Family Therapy (ORR #2015-018 LR)
Board of Nursing Home Administrators (ORR 2015-019 LR)
Task Force on Physician's Assistants (ORR #2015-012 LR)
Board of Respiratory Care (ORR #2015-020 LR)
Sanitarians Registration (ORR # 2015-021 LR)

Overview: Public Act 343 of 2014 requires that Department of Licensing and Regulatory Affairs to promulgate rules for licensed health professionals which included training standards for identifying victims of human trafficking. A new rule will be added to each of the above-listed rule sets. The new rule sets forth the requirements for licensees to complete training, appropriate training content and acceptable modalities of completing training and proof of completion.

The rules will take effect immediately upon filing with the Secretary of State, unless specified otherwise in the rules.

Comments on the proposed rules may be presented in person at the public hearing. Written comments may be submitted at the time of presentation and will also be accepted until 5:00 p.m. on November 13, 2015, at the following address or e-mail address:

Department of Licensing and Regulatory Affairs
Bureau of Professional Licensing – Boards and Committee Sections
P.O. Box 30670
Lansing, MI 48909-8170
Email: BPL-BoardSupport@michigan.gov

Please specify if your comments are directed to a particular board.

A copy of the proposed rules may be obtained by contacting (517) 373-0042 or at the email address noted above. Electronic copies also may be obtained by clicking on "Proposed Revision Info" at the following link:

http://w3.lara.state.mi.us/orr/AdminCode.aspx?AdminCode=Department&Dpt=LR&Level_1=Bureau+of+Professional+Licensing

The meeting site and parking is accessible. Individuals attending the meeting are requested to refrain from using heavily scented personal care products, in order to enhance accessibility for everyone. People with disabilities requiring additional accommodations (such as materials in alternative format) in order to participate in the meeting should call (517) 335-1341. LARA is an equal opportunity employer/program.

ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

NURSING HOME ADMINISTRATORS

GENERAL RULES

Draft May 8, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 16145**, 16148,** and 17309 of 1978 PA 368, MCL 333.16145**, MCL 333.16148,** and 333.17309 and Executive Reorganization Order Nos. 1996-1, 1996-2, 2003-1, and 2011-4, MCL 330.3101, 445.2001, 445.2011, and 445.2030)

R 339.14002 is being added to the Code as follows:

R 339.14002 Training standards for identifying victims of human trafficking; requirements.

Rule 2. (1) Pursuant to section 16148 of the code, MCL 333.16148, an individual licensed or seeking licensure shall complete training in identifying victims of human trafficking that meets the following standards:

(a) Training content shall cover all of the following:

(i) Understanding the types and venues of human trafficking in Michigan or the United States.

(ii) Identifying victims of human trafficking in health care settings.

(iii) Identifying the warning signs of human trafficking in health care settings for adults and minors.

(iv) Resources for reporting the suspected victims of human trafficking.

(b) Acceptable providers or methods of training include any of the following:

(i) Training offered by a nationally recognized or state-recognized, health-related organization.

(ii) Training offered by, or in conjunction with, a state or federal agency.

(iii) Training obtained in an educational program that has been approved by the board for initial licensure, or by a college or university.

(iv) Reading an article related to the identification of victims of human trafficking that meets the requirements of subrule (1)(a) of this rule and is published in a peer review journal, health care journal, or professional or scientific journal.

(c) Acceptable modalities of training may include any of the following:

(i) Teleconference or webinar.

(ii) Online presentation.

(iii) Live presentation.

(iv) Printed or electronic media.

(2) The department may select and audit a sample of individuals and request documentation of proof of completion of training. If audited by the department, an individual shall provide an acceptable proof of completion of training, including either of the following:

(a) Proof of completion certificate issued by the training provider that includes the date, provider name, name of training, and individual's name.

(b) A self-certification statement by an individual. The certification statement shall include the individual's name and either of the following:

(i) For training completed pursuant to subrule (1)(b)(i) to (iii) of this rule, the date, training provider name, and name of training.

(ii) For training completed pursuant to subrule (1)(b)(iv) of this rule, the title of article, author, publication name of peer review journal, health care journal, or professional or scientific journal, and date, volume, and issue of publication, as applicable.

(3) Pursuant to section 16148 of the code, MCL 333.16148, the requirements specified in subrule (1) of this rule apply to license renewals beginning with the first renewal cycle after the promulgation of this rule and for initial licenses issued 5 or more years after the promulgation of this rule.

NOTICE OF PUBLIC HEARING

NOTICE OF PUBLIC HEARING

November 12, 2015 - 9:00 a.m. to 11.00 a.m.
Michigan Department of Licensing and Regulatory Affairs
Location: G. Mennen Williams Building - Auditorium
525 W. Ottawa St., Lansing, Michigan

Board of Acupuncture (ORR #2015-013 LR)
Board of Athletic Trainers (ORR #2015-014 LR)
Board of Audiology (ORR #2015-015 LR)
Board of Chiropractic (ORR #2015-16 LR)
Board of Counseling (ORR #2015-017 LR)
Board of Marriage and Family Therapy (ORR #2015-018 LR)
Board of Nursing Home Administrators (ORR 2015-019 LR)
Task Force on Physician's Assistants (ORR #2015-012 LR)
Board of Respiratory Care (ORR #2015-020 LR)
Sanitarians Registration (ORR # 2015-021 LR)

Overview: Public Act 343 of 2014 requires that Department of Licensing and Regulatory Affairs to promulgate rules for licensed health professionals which included training standards for identifying victims of human trafficking. A new rule will be added to each of the above-listed rule sets. The new rule sets forth the requirements for licensees to complete training, appropriate training content and acceptable modalities of completing training and proof of completion.

The rules will take effect immediately upon filing with the Secretary of State, unless specified otherwise in the rules.

Comments on the proposed rules may be presented in person at the public hearing. Written comments may be submitted at the time of presentation and will also be accepted until 5:00 p.m. on November 13, 2015, at the following address or e-mail address:

Department of Licensing and Regulatory Affairs
Bureau of Professional Licensing – Boards and Committee Sections
P.O. Box 30670
Lansing, MI 48909-8170
Email: BPL-BoardSupport@michigan.gov

Please specify if your comments are directed to a particular board.

A copy of the proposed rules may be obtained by contacting (517) 373-0042 or at the email address noted above. Electronic copies also may be obtained by clicking on "Proposed Revision Info" at the following link:

http://w3.lara.state.mi.us/orr/AdminCode.aspx?AdminCode=Department&Dpt=LR&Level_1=Bureau+of+Professional+Licensing

The meeting site and parking is accessible. Individuals attending the meeting are requested to refrain from using heavily scented personal care products, in order to enhance accessibility for everyone. People with disabilities requiring additional accommodations (such as materials in alternative format) in order to participate in the meeting should call (517) 335-1341. LARA is an equal opportunity employer/program.

ADMINISTRATIVE RULES

DEPARTMENT OF ~~COMMUNITY HEALTH~~ **LICENSING AND REGULATORY AFFAIRS**

DIRECTOR'S OFFICE

RESPIRATORY CARE - GENERAL RULES

Draft May 8, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under sections 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of ~~community health~~ **licensing and regulatory affairs** by section**s 16148 and** 18709 of 1978 PA 368, **MCL 333.16148 and** MCL 333.18709**,** and Executive Reorganization Order Nos. 1996-1, 1996-2 and 2003-1, MCL 330.3101, 445.2001, and 445.2011)

R 338.2201a is being added to the Code as follows:

R 338.2201a Training standards for identifying victims of human trafficking; requirements.

Rule 2201a. (1) Pursuant to section 16148 of the code, MCL 333.16148, an individual licensed or seeking licensure shall complete training in identifying victims of human trafficking that meets the following standards:

(a) Training content shall cover all of the following:

(i) Understanding the types and venues of human trafficking in Michigan or the United States.

(ii) Identifying victims of human trafficking in health care settings.

(iii) Identifying the warning signs of human trafficking in health care settings for adults and minors.

(iv) Resources for reporting the suspected victims of human trafficking.

(b) Acceptable providers or methods of training include any of the following:

(i) Training offered by a nationally recognized or state-recognized, health-related organization.

(ii) Training offered by, or in conjunction with, a state or federal agency.

(iii) Training obtained in an educational program that has been approved by the board for initial licensure, or by a college or university.

(iv) Reading an article related to the identification of victims of human trafficking that meets the requirements of subrule (1)(a) of this rule and is published in a peer review journal, health care journal, or professional or scientific journal.

(c) Acceptable modalities of training may include any of the following:
(i) Teleconference or webinar.
(ii) Online presentation.
(iii) Live presentation.
(iv) Printed or electronic media.
(2) The department may select and audit a sample of individuals and request documentation of proof of completion of training. If audited by the department, an individual shall provide an acceptable proof of completion of training, including either of the following:
(a) Proof of completion certificate issued by the training provider that includes the date, provider name, name of training, and individual's name.
(b) A self-certification statement by an individual. The certification statement shall include the individual's name and either of the following:
(i) For training completed pursuant to subrule (1)(b)(i) to (iii) of this rule, the date, training provider name, and name of training.
(ii) For training completed pursuant to subrule (1)(b)(iv) of this rule, the title of article, author, publication name of peer review journal, health care journal, or professional or scientific journal, and date, volume, and issue of publication, as applicable.
(3) Pursuant to section 16148 of the code, MCL 333.16148, the requirements specified in subrule (1) of this rule apply to license renewals beginning with the first renewal cycle after the promulgation of this rule and for initial licenses issued 5 or more years after the promulgation of this rule.

NOTICE OF PUBLIC HEARING

NOTICE OF PUBLIC HEARING

November 12, 2015 - 9:00 a.m. to 11.00 a.m.
Michigan Department of Licensing and Regulatory Affairs
Location: G. Mennen Williams Building - Auditorium
525 W. Ottawa St., Lansing, Michigan

Board of Acupuncture (ORR #2015-013 LR)
Board of Athletic Trainers (ORR #2015-014 LR)
Board of Audiology (ORR #2015-015 LR)
Board of Chiropractic (ORR #2015-16 LR)
Board of Counseling (ORR #2015-017 LR)
Board of Marriage and Family Therapy (ORR #2015-018 LR)
Board of Nursing Home Administrators (ORR 2015-019 LR)
Task Force on Physician's Assistants (ORR #2015-012 LR)
Board of Respiratory Care (ORR #2015-020 LR)
Sanitarians Registration (ORR # 2015-021 LR)

Overview: Public Act 343 of 2014 requires that Department of Licensing and Regulatory Affairs to promulgate rules for licensed health professionals which included training standards for identifying victims of human trafficking. A new rule will be added to each of the above-listed rule sets. The new rule sets forth the requirements for licensees to complete training, appropriate training content and acceptable modalities of completing training and proof of completion.

The rules will take effect immediately upon filing with the Secretary of State, unless specified otherwise in the rules.

Comments on the proposed rules may be presented in person at the public hearing. Written comments may be submitted at the time of presentation and will also be accepted until 5:00 p.m. on November 13, 2015, at the following address or e-mail address:

Department of Licensing and Regulatory Affairs
Bureau of Professional Licensing – Boards and Committee Sections
P.O. Box 30670
Lansing, MI 48909-8170
Email: BPL-BoardSupport@michigan.gov

Please specify if your comments are directed to a particular board.

A copy of the proposed rules may be obtained by contacting (517) 373-0042 or at the email address noted above. Electronic copies also may be obtained by clicking on "Proposed Revision Info" at the following link:

http://w3.lara.state.mi.us/orr/AdminCode.aspx?AdminCode=Department&Dpt=LR&Level_1=Bureau+of+Professional+Licensing

The meeting site and parking is accessible. Individuals attending the meeting are requested to refrain from using heavily scented personal care products, in order to enhance accessibility for everyone. People with disabilities requiring additional accommodations (such as materials in alternative format) in order to participate in the meeting should call (517) 335-1341. LARA is an equal opportunity employer/program.

ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

SANITARIANS REGISTRATION

REGISTRATION

Draft May 8, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 16145**, 16148,** 18401, and 18413 of 1978 PA 368, MCL 333.16145, **MCL 333.16148,** MCL 333.18401, and MCL 333.18413 and Executive Reorganization Order Numbers 1996-1, 1996-2, 2003-1, and 2011-4, MCL 330.3101, 445.2001, 445.2011**,** and 445.2030)

R 338.3901a is being added to the Code as follows:

R 338.3901a Training standards for identifying victims of human trafficking; requirements.

Rule 1a. (1) Pursuant to section 16148 of the code, MCL 333.16148, an individual seeking registration or registered shall complete training in identifying victims of human trafficking that meets the following standards:

(a) Training content shall cover all of the following:

(i) Understanding the types and venues of human trafficking in Michigan or the United States.

(ii) Identifying victims of human trafficking in health care settings.

(iii) Identifying the warning signs of human trafficking in health care settings for adults and minors.

(iv) Resources for reporting the suspected victims of human trafficking.

(b) Acceptable providers or methods of training include any of the following:

(i) Training offered by a nationally recognized or state-recognized, health-related organization.

(ii) Training offered by, or in conjunction with, a state or federal agency.

(iii) Training obtained in an educational program that has been approved by the advisory committee for initial registration, or by a college or university.

(iv) Reading an article related to the identification of victims of human trafficking that meets the requirements of subrule (1)(a) of this rule and is published in a peer review journal, health care journal, or professional or scientific journal.

(c) Acceptable modalities of training may include any of the following:

(i) Teleconference or webinar.
(ii) Online presentation.
(iii) Live presentation.
(iv) Printed or electronic media.
(2) The department may select and audit a sample of individuals and request documentation of proof of completion of training. If audited by the department, an individual shall provide an acceptable proof of completion of training, including either of the following:
(a) Proof of completion certificate issued by the training provider that includes the date, provider name, name of training, and individual's name.
(b) A self-certification statement by an individual. The certification statement shall include the individual's name and either of the following:
(i) For training completed pursuant to subrule (1)(b)(i) to (iii) of this rule, the date, training provider name, and name of training.
(ii) For training completed pursuant to subrule (1)(b)(iv) of this rule, the title of article, author, publication name of peer review journal, health care journal, or professional or scientific journal, and date, volume, and issue of publication, as applicable.
(3) Pursuant to section 16148 of the code, MCL 333.16148, the requirements specified in subrule (1) of this rule apply to registration renewals beginning with the first renewal cycle after the promulgation of this rule and for initial or registrations issued 5 or more years after the promulgation of this rule.

NOTICE OF PUBLIC HEARING

NOTICE OF PUBLIC HEARING

November 12, 2015 - 9:00 a.m. to 11.00 a.m.
Michigan Department of Licensing and Regulatory Affairs
Location: G. Mennen Williams Building - Auditorium
525 W. Ottawa St., Lansing, Michigan

Board of Acupuncture (ORR #2015-013 LR)
Board of Athletic Trainers (ORR #2015-014 LR)
Board of Audiology (ORR #2015-015 LR)
Board of Chiropractic (ORR #2015-16 LR)
Board of Counseling (ORR #2015-017 LR)
Board of Marriage and Family Therapy (ORR #2015-018 LR)
Board of Nursing Home Administrators (ORR 2015-019 LR)
Task Force on Physician's Assistants (ORR #2015-012 LR)
Board of Respiratory Care (ORR #2015-020 LR)
Sanitarians Registration (ORR # 2015-021 LR)

Overview: Public Act 343 of 2014 requires that Department of Licensing and Regulatory Affairs to promulgate rules for licensed health professionals which included training standards for identifying victims of human trafficking. A new rule will be added to each of the above-listed rule sets. The new rule sets forth the requirements for licensees to complete training, appropriate training content and acceptable modalities of completing training and proof of completion.

The rules will take effect immediately upon filing with the Secretary of State, unless specified otherwise in the rules.

Comments on the proposed rules may be presented in person at the public hearing. Written comments may be submitted at the time of presentation and will also be accepted until 5:00 p.m. on November 13, 2015, at the following address or e-mail address:

Department of Licensing and Regulatory Affairs
Bureau of Professional Licensing – Boards and Committee Sections
P.O. Box 30670
Lansing, MI 48909-8170
Email: BPL-BoardSupport@michigan.gov

Please specify if your comments are directed to a particular board.

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ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

CONSTRUCTION SAFETY STANDARDS

Draft September 30, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 19 and 21 of 1974 PA 154, MCL 408.1019 and 408.1021 and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, and 2011-4, MCL 445.2001, 445.2011, 445.2025, and 445.2030)

R 408.41003a and R 408.41006a of the Michigan Administrative Code are amended, and R 408.41001, R 408.41003, R 408.41003b, R 408.41003c, R 408.41003d, R 408.41003e, R 408.41006, , R 408.41006b, R 408.41006c, R 408.41006d, R 408.41006e, R 408.41007, R 408.41035, R 408.41035a, R 408.41035b, R 408.41035c, R 408.41035d, R 408.41036, R 408.41036a, R 408.41036b, R 408.41036c, R 408.41036d, R 408.41037, R 408.41037a, R 408.41037b, R 408.41037c, R 408.41037d, R 408.41037e, R 408.41037f, R 408.41038, R 408.41038a, R 408.41038b, R 408.41038c, R 408.41039, R 408.41039a, R 408.41039b, R 408.41040, R 408.41052, R 408.41052a, R 408.41052b, R 408.41053, R 408.41053a, R 408.41053b, R 408.41053c, R 408.41053d, R 408.41053e, R 408.41053f, R 408.41053g, R 408.41054, R 408.41055, R 408.41055a, R 408.41055b, R 408.41055c, R 408.41056, R 408.41056a, R 408.41056b, R 408.41056c, R 408.41056d, R 408.41056e, R 408.41056f, R 408.41056g, R 408.41056h, R 408.41056i, R 408.41057, R 408.41058, R 408.41060, R 408.41060a, R 408.41060b, R 408.41060c, R 408.41061, R 408.41061a, R 408.41061b, R 408.41061c, R 408.41061d, R 408.41061e, R 408.41061f, R 408.41061g, R 408.41062, R 408.41063, R 408.41064, R 408.41080, R 408.41080a, R 408.41080b, R 408.41080c, R 408.41080d, R 408.41080e, R 408.41080f, R 408.41080g, R 408.41080h, R 408.41080i, R 408.41080j, R 408.41080k, R 408.41080l, R 408.41080m, R 408.41080n, R 408.41080o, R 408.41081, R 408.41082, R 408.41082a, R 408.41082b, R 408.41082c, R 408.41082d, R 408.41082e, R 408.41082f, R 408.41082g, R 408.41083, R 408.41084, R 408.41084a, R 408.41084b, R 408.41084c, R 408.41084d, R 408.41084e, R 408.41084f, R 408.41085, R 408.41085a, R 408.41085b, R 408.41085c, R 408.41085d, R 408.41085e, R 408.41085f, R 408.41085g, R 408.41085h, R 408.41086, R 408.41086a, R 408.41086b, R 408.41086c, R 408.41086d, R 408.41086e, R 408.41086f, R 408.41086g, R 408.41087, R 408.41088, R 408.41089, R 408.41090, R 408.41090a, R 408.41090b, R 408.41090c, R 408.41090d, and R 408.41090e, are added, and R 408.41001a, R 408.41004a, R 408.41005a, R 408.41008a,

R 408.41009a, R 408.41009b, R 408.41011a, R 408.41011b, R 408.41011c, R 408.41011d, R 408.41011e, R 408.41012a, R 408.41013a, R 408.41014a, R 408.41015a, R 408.41016a, R 408.41016b, R 408.41016c, R 408.41016d, R 408.41016e, R 408.41017a, R 408.41018a, R 408.41019a, R 408.41019b, R 408.41019c, R 408.41020a, R 408.41021a, R 408.41021b, R 408.41022a, R 408.41023a, R 408.41024a, R 408.41025a, R 408.41025b, R 408.41026a, R 408.41027a, R 408.41028a, R 408.41029a, R 408.41030a, R 408.41031a, R 408.41032a, R 408.41033a, R 408.41034a, R 408.41041a, R 408.41051a, R 408.41065a, R 408.41066a, R 408.41067a, R 408.41068a, R 408.41069a, R 408.41070a, R 408.41070b, R 408.41071a, R 408.41072a, R 408.41073a, R 408.41074a, and R 408.41075a, are rescinded, as follows:

PART 10. CRANES AND DERRICKS ~~LIFTING AND DIGGING EQUIPMENT~~

SCOPE

R 408.41001 **Scope.** ~~Rescinded.~~

Rule 1001. (1) This standard applies to power operated equipment, when used in construction that can hoist, lower, and horizontally move a suspended load. Such equipment includes, but is not limited to, any of the following:

(a) Articulating cranes, such as knuckle-boom cranes.

(b) Crawler cranes.

(c) Floating cranes.

(d) Cranes on barges.

(e) Locomotive cranes.

(f) Mobile cranes, such as wheel-mounted, rough-terrain, all-terrain, commercial truck mounted, and boom truck cranes.

(g) Multi-purpose machines when configured to hoist and lower by means of a winch and hook and horizontally move a suspended load.

(h) Industrial cranes, such as carrydeck cranes.

(i) Dedicated pile drivers.

(j) Service/mechanic trucks with a hoisting device.

(k) Crane on a monorail.

(l) Tower cranes, such as a fixed jib, for example, ‘‘hammerhead boom’’, luffing boom, and self-erecting.

(m) Pedestal cranes.

(n) Portal cranes.

(o) Overhead and gantry cranes.

(p) Straddle cranes.

(q) Sideboom cranes.

(r) Derricks.

(s) Variations of equipment listed in subdivisions (a) to (r) of this subrule. Items listed in subrule (3) of this rule are excluded from the scope of this standard.

(2) Attachments. This standard applies to equipment included in subrule (1) of this rule when used with attachments. These attachments, whether crane-attached or suspended include, but are not limited to, any of the following:

(a) Hooks.

(b) Magnets.

(c) Grapples.

(d) Clamshell buckets.
(e) Orange peel buckets.
(f) Concrete buckets.
(g) Drag lines.
(h) Personnel platforms.
(i) Augers or drills.
(j) Pile driving equipment.
(3) Exclusions. This standard does not cover any of the following:
(a) Machinery included in subrule (1) of this rule while it has been converted or adapted for a non-hoisting or lifting use. These conversions or adaptations include, but are not limited to, any of the following:
(i) Power shovels.
(ii) Excavators.
(iii) Concrete pumps.
(b) The following machinery is excluded when used with chains, slings, or other rigging to lift suspended loads:
(i) Power shovels.
(ii) Excavators.
(iii) Wheel loaders.
(iv) Backhoes.
(v) Loader backhoes.
(vi) Track loaders.
(c) Automotive wreckers and tow trucks when used to clear wrecks and haul vehicles.
(d) Digger derricks when used for augering holes for poles carrying electric and telecommunication lines, placing and removing the poles, and for handling associated materials to be installed on or removed from the poles. Digger derricks used in work subject to Construction Safety Standard Part 16 "Power Transmission and Distribution," must comply with General Industry Safety Standard Part 86 "Electric Power Generation, Transmission and Distribution." Digger derricks used in construction work for telecommunication service, as defined in and must comply with Construction Safety Standard Part 30 "Telecommunications." These standards are referenced in R 408.41003e.
(e) Machinery originally designed as vehicle-mounted aerial devices for lifting personnel and self-propelled elevating work platforms.
(f) Telescopic or hydraulic gantry systems.
(g) Stacker cranes.
(h) Powered industrial trucks, for example, forklifts, except when configured to hoist and lower by means of a winch or hook and horizontally move a suspended load.
(i) Mechanic's truck with a hoisting device when used in activities related to equipment maintenance and repair.
(j) Machinery that hoists by using a come-a-long or chainfall.
(k) Dedicated drilling rigs.
(l) Gin poles when used for the erection of communication towers.
(m) Tree trimming and tree removal work.
(n) Anchor handling or dredge-related operations with a vessel or barge using an affixed A-frame.
(o) Roustabouts.

(p) Material delivery under the following conditions:

(i) Articulating knuckle-boom truck cranes that deliver material to a construction site when used to transfer materials from the truck crane to the ground, without arranging the materials in a particular sequence for hoisting.

(ii) Articulating or knuckle-boom truck cranes that deliver material to a construction site when the crane is used to transfer building supply sheet goods or building supply packaged materials from the truck crane onto a structure, using a fork or cradle at the end of the boom, but only when the truck crane is equipped with a properly functioning automatic overload prevention device. These sheet goods or packaged materials include, but are not limited to: sheets of sheet rock, sheets of plywood, bags of cement, sheets or packages of roofing shingles, and rolls of roofing felt.

(iii) The exclusion in this subdivision shall not apply when used under the following circumstances:

(A) The articulating or knuckle-boom crane is used to hold, support or stabilize the material to facilitate a construction activity, such as holding material in place while it is attached to the structure.

(B) The material being handled by the articulating knuckle-boom crane is a prefabricated component. Prefabricated components include, but are not limited to, precast concrete members or panels, roof trusses constructed of wood, cold formed metal, steel, or other materials, prefabricated building sections such as, but not limited to, floor panels, wall panels, roof panels, roof structures, or similar items.

(C) The material being handled by the crane is a structural steel member, for example, steel joists, beams, columns, bundled or unbundled steel decking or a component of a systems-engineered metal building, as defined in Construction Safety Standard Part 26 "Steel Erection," as referenced in R 408.41003e.

(D) The activity is not specifically excluded under R 408.41001(3)(p)(i) and (ii).

(4) This part applies to the equipment covered by this standard unless specified otherwise.

(5) The duties of controlling entities under this standard include, but are not limited to, the duties specified in R 408.41007(2) and (4), and R 408.41057(4).

(6) Where provisions of this standard direct an operator, crewmember, or other employee to take certain actions, the employer must establish effective communication to the relevant persons, and enforce work rules to ensure compliance with such provisions.

(7) For work covered by Construction Safety Standard Part 16 "Power Transmission and Distribution," in compliance with General Industry Safety Standard Part 86 "Electric Power Generation, Transmission and Distribution" rule 1910.269(p) is deemed in compliance with R 408.41036 to R 408.41036d. These standards are referenced in R 408.41003e.

(8) R 408.41007 does not apply to cranes designed for use on railroad tracks, when used on railroad tracks that are part of the general railroad system of transportation that is regulated under the Federal Railroad Administration under 49 CFR part 213, as adopted in R 408.41003f, and that comply with applicable Federal Railroad Administration requirements. See R 408.41007(5).

R 408.41001a ~~Scope.~~ **Rescinded**

~~Rule 1001a. (1) This standard applies to power operated equipment, when used in construction, that can hoist, lower, and horizontally move a suspended load. Such equipment includes, but is not limited to, any of the following:~~

~~(a) Articulating cranes, such as knuckle-boom cranes.~~

~~(b) Crawler cranes.~~

~~(c) Floating cranes.~~

~~(d) Cranes on barges.~~

~~(e) Locomotive cranes.~~

~~(f) Mobile cranes, such as wheel-mounted, rough-terrain, all-terrain, commercial truck-mounted, and boom truck cranes.~~

~~(g) Multi-purpose machines when configured to hoist and lower by means of a winch or hook and horizontally move a suspended load.~~

~~(h) Industrial cranes, such as carrydeck cranes.~~

~~(i) Dedicated pile drivers.~~

~~(j) Service/mechanic trucks with a hoisting device.~~

~~(k) Crane on a monorail.~~

~~(l) Tower cranes, such as a fixed jib, for example, ''hammerhead boom'', luffing boom, and self-erecting.~~

~~(m) Pedestal cranes.~~

~~(n) Portal cranes.~~

~~(o) Overhead and gantry cranes.~~

~~(p) Straddle cranes.~~

~~(q) Sideboom cranes.~~

~~(r) Derricks.~~

~~(s) Material and personnel hoists.~~

~~(t) Helicopter cranes, elevators, and excavation equipment and variations of such equipment.~~

~~(2) Attachments. This standard applies to equipment included in subrule (1) of this rule when used with attachments. These attachments, whether crane-attached or suspended include, but are not limited, to any of the following:~~

~~(a) Hooks.~~

~~(b) Magnets.~~

~~(c) Grapples.~~

~~(d) Clamshell buckets.~~

~~(e) Orange peel buckets.~~

~~(f) Concrete buckets.~~

~~(g) Drag lines.~~

~~(h) Personnel platforms.~~

~~(i) Augers or drills.~~

~~(j) Pile driving equipment.~~

~~(3) Exclusions. This standard does not cover any of the following:~~

~~(a) Machinery included in subrule (1) of this rule while it has been converted or adapted for a non-hoisting or lifting use. These conversions or adaptations include, but are not limited, to any of the following:~~

~~(i) Wheel loaders and backhoes.~~

~~(ii) Loader backhoes.~~

~~(iii) Track loader.~~
~~(iv) Concrete pumps.~~
~~This machinery is also excluded when used with chains, slings, or other rigging to lift suspended loads.~~
~~(b) Automotive wreckers and tow trucks when used to clear wrecks and haul vehicles.~~
~~(c) Digger derricks used in work subject to Construction Safety Standard Part 16 "Power Transmission and Distribution," shall comply with General Industry Safety Standard Part 86 "Electric Power Generation, Transmission and Distribution." Digger derricks used in construction work for telecommunication service (as defined at Construction Safety Standard Part 30 "Telecommunications," 1910.268(s)(40)) shall comply with Construction Safety Standard Part 30 "Telecommunications". These rules are referenced in R 408.41003a.~~
~~(d) Machinery originally designed as vehicle-mounted aerial devices for lifting personnel and self-propelled elevating work platforms.~~
~~(e) Telescopic or hydraulic gantry systems.~~
~~(f) Stacker cranes.~~
~~(g) Powered industrial trucks, such as, forklifts, except when configured to hoist and lower by means of a winch or hook and horizontally move a suspended load.~~
~~(h) Mechanic's truck with a hoisting device when used in activities related to equipment maintenance and repair.~~
~~(i) Machinery that hoists by using a come-a-long or chainfall.~~
~~(j) Dedicated drilling rigs.~~
~~(k) Gin poles when used for the erection of communication towers.~~
~~(l) Tree trimming and tree removal work.~~
~~(m) Anchor handling or dredge-related operations with a vessel or barge using an affixed A-frame.~~
~~(n) Roustabouts.~~
~~(o) Any of the following material delivery:~~
~~(i) Articulating knuckle-boom truck cranes that deliver material to a construction site when used to transfer materials from the truck crane to the ground, without arranging the materials in a particular sequence for hoisting.~~
~~(ii) Articulating knuckle-boom truck cranes that deliver material to a construction site when the crane is used to transfer building supply sheet goods or building supply packaged materials from the truck crane onto a structure, using a fork or cradle at the end of the boom, but only when the truck crane is equipped with a properly functioning automatic overload prevention device. These sheet goods or packaged materials include, but are not limited to, sheets of sheet rock, sheets of plywood, bags of cement, sheets or packages of roofing shingles, and rolls of roofing felt.~~
~~(iii) This exclusion shall not apply under the following circumstances:~~
~~(A) The articulating knuckle-boom crane is used to hold, support, or stabilize the material to facilitate a construction activity, such as holding material in place while it is attached to the structure.~~
~~(B) The material being handled by the articulating knuckle-boom crane is a prefabricated component. Prefabricated components include, but are not limited to, precast concrete members or panels, roof trusses constructed of wood, cold formed metal, steel, or other materials, prefabricated building sections such as, but not limited to, floor panels, wall panels, roof panels, roof structures, or similar items.~~
~~(C) The material being handled by the crane is a structural steel member, for example, steel joists, beams, columns, bundled or unbundled steel decking or a component of a systems-~~

~~engineered metal building, as defined in Construction Safety Standard Part 26 "Steel Erection," as referenced in R 408.41003a.~~
~~(D) The activity is not specifically excluded under R 408.41001a(3)(o)(i) and (ii).~~
~~(4) All rules of this part apply to the equipment covered by this standard unless specified otherwise.~~
~~(5) The duties of controlling entities under this standard include, but are not limited to, the duties specified in R 408.41017a(2), R 408.41017a(4), and R 408.41022a(2).~~
~~(6) Where provisions of this standard direct an operator, crewmember, or other employee to take certain actions, the employer shall establish, effectively communicate to the relevant persons, and enforce, work rules to ensure compliance with the provisions.~~
~~(7) For work involving power transmission and distribution, compliance with General Industry Safety Standard Part 86 "Electric Power Generation, Transmission and Distribution" R 1910.269(p) is deemed compliance with R 408.41016a to R 408.41016e.~~
~~(8) R 408.41017a does not apply to cranes designed for use on railroad tracks, when used on railroad tracks that are part of the general railroad system of transportation that is regulated under the Federal Railroad Administration under 49 CFR part 213, and that comply with applicable Federal Railroad Administration requirements. See R 408.41017a(5).~~

ADOPTED AND REFERENCED STANDARDS

R 408.41003 Adopted Standards.
Rule 1003. (1) The standards adopted in these rules are available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 7150 Harris Drive , Lansing, Michigan, 48909-8143.
(2) Copies of the standards adopted in these rules may be obtained from the publisher or may be obtained from the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 7150 Harris Drive, Lansing, Michigan, 48909-8143, at the cost stated in these rules, plus $20.00 for shipping and handling.

R 408.41003a **Adopted standards from IHS Global.** ~~Adopted and referenced standards.~~
Rule 1003a. **The following standards are adopted by reference in these rules and are available from IHS Global, 15 Inverness Way East, Englewood, Colorado, 80112, USA, telephone number: 1-800-854-7179 or via the internet at website: http://global.ihs.com; at a cost as of the time of adoption of these rules, as stated in this subrule.**
(a) ANSI/ American Society of Mechanical Engineers (ASME) standard B30.5 "Mobile and Locomotive Cranes," 1994 edition. Cost: $119.00.
(b) ANSI/ASME standard B30.5 "Mobile and Locomotive Cranes," 2004 edition. Cost:$60.00.
(c) ASME standard B30.14 "Side Boom Tractors," 2004 edition. Cost: $64.00.
(d) ASME standard B30.2 "Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)," 2005 edition. Cost: $63.00.
(e) ASME standard B30.7 "Base Mounted Drum Hoists," 2001 edition. Cost: $60.00.
(f) AWS standard D1.1/D1.1M "Structural Welding Code – Steel Updates Every 5 Years," 2002 edition. Cost: $468.00.
(g) AWS standard D14.3 "Specification for Welding Earthmoving and Construction Equipment," 1994 edition. Cost: $109.00.

(h) International Organization for Standardization (ISO) standard 11660–1 "Cranes – Access, Guards and Restraints – Part 1: General," 2008 edition. Cost: $139.00.

(i) ISO standard 11660–2 "Cranes – Access, Guards and Restraints – Part 2: Mobile Cranes," 1994 edition. Cost: $107.00.

(j) ISO standard 11660–3 "Cranes – Access, Guards and Restraints – Part 3: Tower Cranes," 2008 edition. Cost: $65.00.

(k) Society of Automotive Engineers (SAE) standard J185, "Access Systems for Off-Road Machines," May 2003 edition. Cost: $73.00.

(l) SAE standard J987 "Lattice Boom Cranes – Method of Test," June 2003 edition. Cost: $73.00

(m) SAE standard J1063 "Cantilevered Boom Crane Structures – Method of Test," November 1993 edition. Cost: $73.00.

~~(1) The following standards are adopted by reference in these rules and are available from IHS Global, 15 Inverness Way East, Englewood, Colorado, 80112, USA, telephone number: 1-800-854-7179 or via the internet at website: http://global.ihs.com; at a cost as of the time of adoption of these rules, as stated in this subrule.~~

~~(a) American National Standards Institute (ANSI) standard A10.4 "Safety Requirements for Personnel Hoists and Employee Elevators for Construction and Demolition Operations," 2004 edition. Cost: $128.00.~~

~~(b) ANSI standard B20.1, "Safety Standard for Conveyors, and Related Equipment," 1999 edition. Cost: $52.00~~

~~(c) ANSI/ American Society of Mechanical Engineers (ASME) standard B30.5 "Mobile and Locomotive Cranes," 1994 edition. Cost: $119.00.~~

~~(d) ANSI/ASME standard B30.5 "Mobile and Locomotive Cranes," 2004 edition. Cost: $60.00.~~

~~(e) ANSI/American Society of Safety Engineers (ASSE) standard A10.5 "Safety Requirements for Material Hoists," 1992 edition. Cost: $69.00.~~

~~(f) ASME standard B30.14 "Side Boom Tractors," 2004 edition. Cost: $64.00.~~

~~(g) ASME standard B30.2 "Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)," 2005 edition. Cost: $63.00.~~

~~(h) ASME standard B30.7 "Base Mounted Drum Hoists," 1994 edition. Cost: $60.00.~~

~~(i) ASME standard B30.7 "Base Mounted Drum Hoists," 2001 edition. Cost: $60.00.~~

~~(j) American Welding Society (AWS) standard "IHS AWSC Structural Welding Code," 2000 edition. Cost: $601.00.~~

~~(k) AWS standard D1.1/D1.1M "Structural Welding Code – Steel Updates Every 5 Years," 2002 edition. Cost: $468.00.~~

~~(l) AWS standard D14.1 "Welding of Industrial and Mill Cranes and Other Material Handling Equipment," 1997 edition. Cost: $148.00.~~

~~(m) AWS standard D14.3 "Specification for Welding Earthmoving and Construction Equipment," 1994 edition. Cost: $109.00.~~

~~(n) AWS standard D14.4 "Class and Application of Welded Joints for Machinery Equipment," 1997 edition. Cost: $139.00.~~

~~(o) International Organization for Standardization (ISO) standard 11660–1 "Cranes – Access, Guards and Restraints – Part 1: General," 2008 edition. Cost: $139.00.~~

~~(p) ISO standard 11660–2 "Cranes – Access, Guards and Restraints – Part 2: Mobile Cranes," 1994 edition. Cost: $107.00.~~

~~(q) ISO standard 11660-3 "Cranes – Access, Guards and Restraints – Part 3: Tower Cranes," 2008 edition. Cost: $65.00.~~
~~(r) Society of Automotive Engineers (SAE) standard J185, "Access Systems for Off- Road Machines," May 2003 edition. Cost: $73.00.~~
~~(s) SAE standard J987 "Lattice Boom Cranes – Method of Test," June 2003 edition. Cost: $73.00~~
~~(t) SAE standard J1063 "Cantilevered Boom Crane Structures – Method of Test," November 1993 edition. Cost: $73.00.~~
~~(2) The following standards are adopted by reference in these rules and are available from Techstreet, 3916 Ranchero Drive, Ann Arbor, Michigan, 48108, USA, telephone number: 1-800-699-9277 or via the internet at website: www.techstreet.com; at a cost as of the time of adoption of these rules, as stated in this subrule.~~
~~(a) ANSI standard B20.1, "Safety Standard for Conveyors, and Related Equipment," 2000 edition. Cost: $67.00.~~
~~(b) AWS standard B1.10 "Guide for the Nondestructive Inspection of Welds," 1986 edition. Cost: $60.00.~~
~~(c) British European Standards (BS EN) standard 13000, "Cranes – Mobile Cranes," 2004 edition. Cost: $244.61.~~
~~(d) BS EN standard 14439, "Cranes – Safety – Tower Cranes," 2006 edition. Cost: $202.18.~~
~~(3) Power Crane and Shovel Association (PCSA) Standard No. 4 "Mobile Power Crane and Excavator and Hydraulic Crane Standards," 1983 edition, is adopted by reference in these rules. This standard is available from the Association of Equipment Manufacturers, 6737 West Washington Street, Suite 2400, Milwaukee, Wisconsin, 53214-5647, USA, telephone number: 1-414-272-0943 or via the internet at website: http://shop.aem.org; at a cost as of the time of adoption of these rules of $3.00.~~
~~(4) The following federal occupational safety and health administration's regulations promulgated by the United States department of labor are adopted by reference in this rule and are available from the United States Department of Labor, Occupational Safety and Health Administration, 315 West Allegan, room 315, Lansing, Michigan, 48917, or via the internet at website www.osha.gov, at no charge as of the time of adoption of these rules.~~
~~(a) The provisions of 29 C.F.R. §1910.7 Definition and requirements for a nationally recognized testing laboratory.~~
~~(b) The provisions of 29 C.F.R. §§1926.555 Conveyors, except as amended in this rule.~~
~~(c) As of the effective date of this part, subpart G referenced in the provisions of 19 C.F.R. §1926.555 Conveyors means Construction Safety Standard Part 22 "Signals, Signs, Tags, and Barricades," as referenced in R 408.41003a.~~
~~(d) The provisions of 29 C.F.R. §1926.556, as incorporated by reference under section 14(1) of 1974 PA 154, MCL 408.1014(1), are rescinded as authorized by section 14(1).~~
~~(e) Conveyors. The provisions of 29 C.F.R. §1926.555 are amended to read as follows:~~
~~(i) 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.~~
~~(ii) If the operator's station is at a remote point, the employer shall provide similar provisions for stopping the motor or engine at the motor or engine location.~~
~~(iii) 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 the "on" position.~~
~~(iv) Screw conveyors shall be guarded to prevent employee contact with turning flights.~~

~~(v) Where a conveyor passes over work areas, aisles, or thoroughfares, the employer shall provide suitable guards to protect employees required to work below the conveyors.~~
~~(vi) The employer shall ensure that all crossovers, aisles, and passageways are conspicuously marked by suitable signs, as required by subpart G of this part.~~
~~(vii) The employer shall ensure that conveyors are 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.~~
~~(viii) All conveyors in use shall meet the applicable requirements for design, construction, inspection, testing, maintenance, and operation, as prescribed in the ANSI Standard B20.1, "Safety Standard for Conveyors, and Related Equipment," 1999 edition.~~
~~(5) The provisions of 49 C.F.R. §§391.41 to 391.49 of the United States department of transportation are adopted by reference in this rule and are available from the United States Department of Transportation, 1200 New Jersey Avenue, SE, Washington, DC 20590, or via the internet at website www.access.gpo.gov/nara/cfr/waisidx_06/49cfr391_06.html, at no charge as of the time of adoption of these rules.~~
~~(6) The provisions of 1967 PA 227 and 1976 PA 333, MCL 408.801 to 408.824 and 338.2151, respectively, are adopted by reference in this rule and are available via the internet at website www.legislature.mi.gov, at no charge as of the time of adoption of these rules.~~
~~(7) The standards adopted in subrules (1) to (6) of this rule are also available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA Standards Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan, 48909-8143.~~
~~(8) Copies of the standards adopted in subrules (1) to (6) of this rule may be obtained from the publisher or may also be obtained from the Department of Licensing and Regulatory Affairs, MIOSHA Standards Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan, 48909-8143, at the cost charged in subrules (1) to (6) of this rule, plus $20.00 for shipping and handling.~~
~~(9) The following Michigan occupational safety and health standards are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Michigan Department of Licensing and Regulatory Affairs, MIOSHA Standards Section, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan, 48909-8143 or via the internet at website: www.michigan.gov/mioshastandards. For quantities greater than 5, the cost, as of the time of adoption of these rules, is 4 cents per page.~~
~~(a) Construction Safety Standard Part 6 "Personal Protective Equipment," R 408.40601 to R 408.40641.~~
~~(b) Construction Safety Standard Part 8 "Handling and Storage of Materials," R 408.40801 to R 408.40841.~~
~~(c) Construction Safety Standard Part 13 "Mobile Equipment," R 408.41301.~~
~~(d) Construction Safety Standard Part 16 "Power Transmission and Distribution," R 408.41601 to R 408.41658.~~
~~(e) Construction Safety Standard Part 18 "Fire Protection and Prevention," R 408.41801 to R 408.41884.~~
~~(f) Construction Safety Standard Part 22 "Signals, Signs, Tags, and Barricades," R 408.42201 to R 408.42243.~~
~~(g) Construction Safety Standard Part 26 "Steel Erection," R 408.42601 to R 408.42656.~~
~~(h) Construction Safety Standard Part 28 "Personnel Hoisting in Steel Erection," R 408.42801 to R 408.42809.~~
~~(i) Construction Safety Standard Part 30 "Telecommunications," R 408.43001 to R 408.43006.~~

~~(j) Construction Safety Standard Part 45 "Fall Protection," R 408.44501 to R 408.44501.~~
~~(k) General Industry Safety Standard Part 18 "Overhead and Gantry Cranes," R 408.11801 to R 408.11875.~~
~~(l) General Industry Safety Standard Part 59 "Helicopters," being R 408.15901 to R 408.15931.~~
~~(m) General Industry Safety Standard Part 86 "Electric Power Generation, Transmission, and Distribution," R 408.18601 to R 408.18602.~~

R 408.41003b Adopted standards from Techstreet.
Rule 1003b. The following standards are adopted by reference in these rules and are available from Techstreet, 3916 Ranchero Drive, Ann Arbor, Michigan, 48108, USA, telephone number: 1-800-699-9277 or via the internet at website: www.techstreet.com; at a cost as of the time of adoption of these rules, as stated in this subrule:
(a) British European Standards (BS EN) standard 13000, "Cranes – Mobile Cranes," 2004 edition. Cost: $244.61.
(b) BS EN standard 14439, "Cranes – Safety – Tower Cranes," 2006 edition. Cost: $202.18.

R 408.41003c Adopted standard from PCSA.
Rule 1003c. Power Crane and Shovel Association (PCSA) Standard No. 4 "Mobile Power Crane and Excavator and Hydraulic Crane Standards," 1983 edition, is adopted by reference in these rules. This standard is available from the Association of Equipment Manufacturers, 6737 West Washington Street, Suite 2400, Milwaukee, Wisconsin, 53214-5647, USA, telephone number: 1-414-272-0943 or via the internet at website: http://shop.aem.org; at a cost as of the time of adoption of these rules of $3.00.

R 408.41003d Adopted standard from OSHA.
Rule 1003d. The provisions of 29 C.F.R. §1910.7 "Definition and requirements for a nationally recognized testing laboratory," is adopted by reference in these rules. This standard is available from the United States Department of Labor, Occupational Safety and Health Administration website: www.osha.gov; at no charge as of the time of adoption of these rules.

R 408.41003e MIOSHA referenced standards.
Rule 1003e. The following Michigan occupational safety and health standards (MIOSHA) are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Michigan Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 7150 Harris Drive, Lansing, Michigan, 48909-8143 or via the internet at website: www.michigan.gov/mioshastandards. For quantities greater than 5, the cost, as of the time of adoption of these rules, is 4 cents per page.
(a) Construction Safety Standard Part 6 "Personal Protective Equipment," R 408.40601 to R 408.40641.
(b) Construction Safety Standard Part 8 "Handling and Storage of Materials," R 408.40801 to R 408.40841.
(c) Construction Safety Standard Part 16 "Power Transmission and Distribution," R 408.41601 to R 408.41658.

(d) Construction Safety Standard Part 22 “Signals, Signs, Tags, and Barricades,” R 408.42201 to R 408.42243.
(e) Construction Safety Standard Part 26 “Steel Erection,” R 408.42601 to R 408.42656.
(f) Construction Safety Standard Part 28 “Personnel Hoisting in Steel Erection,” R 408.42801 to R 408.42809.
(g) Construction Safety Standard Part 30 “Telecommunications,” R 408.43001 to R 408.43006.
(h) Construction Safety Standard Part 45 “Fall Protection,” R 408.44501 to R 408.44502.
(i) General Industry Safety Standard Part 18 “Overhead and Gantry Cranes,” R 408.11801 to R 408.11875.
(j) General Industry Safety Standard Part 86 “Electric Power Generation, Transmission, and Distribution,” R 408.18601 to R 408.18602.

R 408.41004a ~~Definitions; A to J.~~ **Rescinded**
~~Rule 1004a. (1) "A/D director” means the assembly/disassembly director who is an individual that meets this standard’s requirements of a competent and qualified person, or by a competent person who is assisted by 1 or more qualified persons, irrespective of the person’s formal job title or whether the person is non-management or management personnel.~~
~~(2) "Articulating crane" means a crane whose boom consists of a series of folding, pin connected structural members, typically manipulated to extend or retract by power from hydraulic cylinders.~~
~~(3) "Assembly or disassembly" means the assembly, disassembly, or both, of equipment covered under this standard. With regard to tower cranes, ‘‘erecting and climbing’’ replaces the term ‘‘assembly,’’ and ‘‘dismantling’’ replaces the term ‘‘disassembly.’’ Regardless of whether the crane is initially erected to its full height or is climbed in stages, the process of increasing the height of the crane is an erection process.~~
~~(4) "Assist crane" means a crane used to assist in assembling or disassembling a crane.~~
~~(5) "Attachments" means any device that expands the range of tasks that can be done by the equipment. Examples include, but are not limited to, an auger, drill, magnet, pile-driver, and boom-attached personnel platform.~~
~~(6) "Audible signal" means a signal made by a distinct sound or series of sounds. Examples include, but are not limited to, sounds made by a bell, horn, or whistle.~~
~~(7) “Base-mounted drum hoist” means a self-contained lifting unit which has a motor, a drum to receive the lifting cable, and mounting flanges for anchoring.~~
~~(8) "Blocking,” also referred to as ‘‘cribbing,” means wood or other material used to support equipment or a component and distribute loads to the ground. Blocking is typically used to support lattice boom sections during assembly/disassembly and under outrigger and stabilizer floats.~~
~~(9) "Boatswain’s chair" means a single-point adjustable suspension scaffold consisting of a seat or sling, which may be incorporated into a full body harness, designed to support 1 employee in a sitting position.~~
~~(10) "Bogie" means ‘‘travel bogie,’’ as defined in R 408.41005a(60).~~
~~(11) "Boom" when used on equipment other than a tower crane, means an inclined spar, strut, or other long structural member which supports the upper hoisting tackle on a crane or~~

~~derrick. Typically, the length and vertical angle of the boom can be varied to achieve increased height or height and reach when lifting loads. Booms may be grouped into general categories of hydraulically extendible, cantilevered type, latticed section, cable supported type or articulating type.~~

~~(12) "Boom" or principle horizontal structure, when used on a tower crane, means if it is moveable up and down. If the ''boom'' is fixed, it is referred to as a jib.~~

~~(13) "Boom angle indicator" means a device which measures the angle of the boom relative to horizontal.~~

~~(14) "Boom hoist limiting device" includes boom hoist disengaging device, boom hoist shut-off, boom hoist disconnect, boom hoist hydraulic relief, boom hoist kick-outs, automatic boom stop device, or derricking limiter. This type of device disengages boom hoist power when the boom reaches a predetermined operating angle. It also sets brakes or closes valves to prevent the boom from lowering after power is disengaged.~~

~~(15) "Boom length indicator" indicates the length of the permanent part of the boom or the length of the boom with extensions/attachments.~~

~~(16) "Boom stop" means a device that is used to limit the angle of the boom at the highest recommended position. Boom stop includes boom stops, belly straps with struts or standoff, telescoping boom stops, attachment boom stops, and backstops. These devices restrict the boom from moving above a certain maximum angle and toppling over backward.~~

~~(17) "Boom suspension system" means a system of pendants, running ropes, sheaves, and other hardware which supports the boom tip and controls the boom angle.~~

~~(18) "Builder" means the builder or constructor of equipment.~~

~~(19) "Center of gravity" means the center of gravity of any object is the point in the object around which its weight is evenly distributed. If a support were put under that point, it could balance the object on the support.~~

~~(20) "Certified welder" means a welder who meets nationally recognized certification requirements applicable to the task being performed.~~

~~(21) "Climbing" means the process in which a tower crane is raised to a new working height, either by adding additional tower sections to the top of the crane (top climbing), or by using a system in which the entire crane is raised inside the structure (inside climbing).~~

~~(22) "Come-a-long" means a mechanical device typically consisting of a chain or cable attached at each end that is used to facilitate movement of materials through leverage.~~

~~(23) "Commercial truck-mounted crane" means a crane which consists of a rotating superstructure either a center post or turntable, a boom, operating machinery, and 1 or more operator's stations, which is mounted on a frame that is attached to a commercial truck chassis, which typically retains a payload hauling capability, and which has a power source that typically powers the crane. The crane's function is to lift, lower, and swing loads at various radii.~~

~~(24) "Competent person" means a person who is trained, experienced, and capable of identifying an existing or potential hazard in surroundings, or under working conditions, that are hazardous or dangerous to an employee and who has the authority and knowledge to take prompt corrective measures to eliminate the hazards.~~

~~(25) "Controlled load lowering" means lowering a load by means of a mechanical hoist drum device that allows a hoisted load to be lowered with maximum control using the gear train or hydraulic components of the hoist mechanism. Controlled load lowering requires the use of the hoist drive motor, rather than the load hoist brake, to lower the load.~~

~~(26) "Controlling entity" means an employer that is a prime contractor, general contractor, construction manager or any other legal entity which has the overall responsibility for the construction of the project including its planning, quality, and completion.~~
~~(27) "Counterweight" means a weight that is used to supplement the weight of the machine in providing stability for lifting working loads.~~
~~(28) "Crane/derrick" includes all equipment covered by this standard.~~
~~(29) "Crawler crane" means a crane which consists of a rotating superstructure that has a power plant, operating machinery, and a boom and which is mounted on a base and equipped with crawler treads for travel. The crane's function is to lift, lower, and swing loads at various radii.~~
~~(30) "Crawler excavator" means a device which consists of a rotating superstructure that has a power plant, operating machinery, and a boom, and which is mounted on a base, and which is equipped with crawler treads for travel. The function of the excavator is to dig, lift, lower, and swing loads at various radii.~~
~~(31) "Crossover points" means locations on a wire rope which is spooled on a drum where 1 layer of rope climbs up on and crosses over the previous layer. This takes place at each flange of the drum as the rope is spooled onto the drum, reaches the flange, and begins to wrap back in the opposite direction.~~
~~(32) "Dedicated channel" means a line of communication assigned by the employer who controls the communication system to only 1 signal person and a crane/derrick or to a coordinated group of cranes/derricks, signal person or persons.~~
~~(33) "Dedicated pile-driver" means a machine that is designed to function exclusively as a pile-driver. These machines typically have the ability to both hoist the material that will be pile-driven and to pile-drive that material.~~
~~(34) "Dedicated spotter" means an employee who meets the requirements for signal person qualifications and whose sole responsibility is to watch the separation between the power line and the equipment, load line and load including rigging and lifting accessories, and ensure through communication with the operator that the applicable minimum approach distance is not breached.~~
~~(35) "Derrick" means powered equipment consisting of a mast or equivalent member that is held at or near the end by guys or braces, with or without a boom, and its hoisting mechanism. The mast or equivalent member, or the load, or both are moved by the hoisting mechanism, which is typically base-mounted, and operating ropes. Derricks include A-frame, basket, breast, Chicago boom, gin pole, except gin poles used for erection of communication towers, guy, shearleg, stiffleg, and variations of such equipment.~~
~~(36) "Directly under the load" means when any part of an employee is directly beneath the load.~~
~~(37) "Dismantling" includes complete and partial dismantling, such as dismantling to shorten a boom or substitute a different component.~~
~~(38) "Drum rotation indicator" means a device on a crane or hoist which indicates in which direction and at what relative speed a particular hoist drum is turning.~~
~~(39) "Dynamic loading" means the loads introduced into the machine or its components by forces in motion.~~
~~(40) "Electrical contact" occurs when a person, object, or equipment makes contact or comes in close proximity with an energized conductor or equipment that allows the passage of current.~~
~~(41) "Employer-made equipment" means floating cranes/derricks designed and built by an employer for the employer's own use.~~

~~(42) “Employer’s qualified evaluator” means a person employed by the signal person’s employer who has demonstrated that he or she is competent in accurately assessing whether individuals meet the requirements of R 408.41011a(3) for a signal person.~~
~~(43) "Encroachment" means where any part of the crane, load line or load, including rigging and lifting accessories, breaches a minimum clearance distance that this standard requires to be maintained from a power line.~~
~~(44) "Equipment" means equipment covered by this standard.~~
~~(45) "Equipment criteria" means instructions, recommendations, limitations, and specifications.~~
~~(46) "Fall protection equipment" means guardrail systems, safety net systems, personal fall arrest systems, positioning device systems, or fall restraint systems.~~
~~(47) "Fall restraint system" means a fall protection system that prevents the user from falling any distance. The system is comprised of either a body belt or body harness, along with an anchorage, connectors, and other necessary equipment. The other components typically include a lanyard, and may also include a lifeline and other devices.~~
~~(48) "Fall zone" means the area, including but not limited to the area directly beneath the load, in which it is reasonably foreseeable that partially or completely suspended materials could fall in the event of an accident.~~
~~(49) “Flange point” means a point of contact between the rope and the drum flange where the rope changes layers.~~
~~(50) "Floating cranes/derricks" means equipment designed by the manufacturer or employer for marine use by permanent attachment to a barge, pontoons, vessel, or other means of flotation.~~
~~(51) "For example" means 1 example, although there are others.~~
~~(52) "Free fall" means that only the brake is used to regulate the descent of the load line. The drive mechanism is not used to drive the load down faster or retard its lowering.~~
~~(53) "Free surface effect" means the uncontrolled transverse movement of liquids in compartments which reduce a vessel’s transverse stability.~~
~~(54) “Friction drum hoist” means a hoist which has a drum that is controlled by friction clutches and brakes and which is provided with drum ratchets and pawls.~~
~~(55) ‘‘Ground conditions’’ means the ability of the ground to support the equipment including, but not limited to slope, compaction, and firmness.~~
~~(56) “Gudgeon pin” means a pin that is used to connect the base of a boom to the main frame.~~
~~(57) “Hoist” means a system of power driven drums, gears, cables, chains, or hydraulic cylinders capable of lifting and lowering loads.~~
~~(58) “Hoist tower” means a vertical structure used to support or house the platform and cab of an elevator or hoist.~~
~~(59) "Hoisting" means the act of raising, lowering, or otherwise moving a load in the air with equipment covered by this standard. As used in this standard, ‘‘hoisting’’ can be done by means other than wire rope/hoist drum equipment.~~
~~(60) "Include” or “including" means including, but not limited to.~~
~~(61) "Insulating link or device" means an insulating device listed, labeled, or accepted by a nationally recognized resting laboratory in accordance with 29 CFR 1910.7.~~
~~(62) "Jib stop” or “jib backstop" means the same type of device as a boom stop but is for a fixed or luffing jib.~~

~~CRANES, DERRICKS, AND EXCAVATION EQUIPMENT~~

R 408.41005a ~~Definitions; L to W.~~ **Rescinded.**

~~Rule 1005a. (1) "Land crane/derrick" means equipment not originally designed by the manufacturer for marine use by permanent attachment to barges, pontoons, vessels, or other means of floatation.~~

~~(2) "Landing" means the floor or stage elevation at which the cab or platform can be entered.~~

~~(3) "Line pull" means the manufacturer's recommended load in pounds or kilograms applied to the rope attached to the hoist drum.~~

~~(4) "List" means the angle of inclination about the longitudinal axis of a barge, pontoons, vessel or other means of floatation.~~

~~(5) "Load" means to the object or objects being hoisted, the weight of the object or objects, or both. Both uses refer to the object or objects and the load-attaching equipment. This may include the load block, ropes, slings, shackles, and any other ancillary attachment.~~

~~(6) "Load moment or rated capacity indicator" means a system which aids the equipment operator by directly or indirectly sensing the overturning moment on the equipment, for example, load multiplied by radius. The system compares this lifting condition to the equipment's rated capacity, and indicates to the operator the percentage of capacity at which the equipment is working. Lights, bells, or buzzers may be incorporated as a warning of an approaching overload condition.~~

~~(7) "Load moment or rated capacity limiter" means a system which aids the equipment operator by directly or indirectly sensing the overturning moment on the equipment, for example, load multiplied by radius. The system compares this lifting condition to the equipment's rated capacity. When the rated capacity is reached, it shuts off power to those equipment functions that can increase the severity of loading on the equipment, for example, hoisting, telescoping out, or luffing out. Typically, those functions which decrease the severity of loading on the equipment remain operational, for example, lowering, telescoping in, or luffing in.~~

~~(8) "Locomotive crane" means a crane which consists of a rotating superstructure that has a power plant, operating machinery, and a boom and which is mounted on a base or car that is equipped for travel on a railroad track. A locomotive crane may be self-propelled or propelled by an outside source. The crane's function is to lift, lower, and swing loads at various radii.~~

~~(9) "Luffing jib limiting device" means a device that is similar to a boom hoist limiting device, except that it limits the movement of the luffing jib.~~

~~(10) "Material hoist" means a mechanism for use in the hoisting or lowering of construction or demolition material. A material hoist is equipped with a platform, car, cage, or bucket that moves vertically on guide members.~~

~~(11) "Marine hoisted personnel transfer device" means a device that is designed to protect the employees being hoisted during a marine transfer and to facilitate rapid entry into and exit from the device. Such devices do not include boatswain's chairs when hoisted by equipment covered by this standard.~~

~~(12) "Marine worksite" means a construction worksite located in, on, or above the water.~~

~~(13) "Mobile crane" means a lifting device incorporating a cable suspended latticed boom or hydraulic telescopic boom designed to be moved between operating locations by transport over the road.~~

~~(14) "Moving point-to-point" means the times during which an employee is in the process of going to or from a work station.~~
~~(15) "Multi-purpose machine" means a machine that is designed to be configured in various ways, at least 1 of which allows it to hoist by means of a winch or hook and horizontally move a suspended load. For example, a machine that can rotate and can be configured with removable forks or tongs, for use as a forklift, or with a winch pack, jib with a hook at the end or a jib used in conjunction with a winch. When configured with the forks or tongs, the multi-purpose machine is not covered by this standard. When configured with a winch pack, jib with a hook at the end or a jib used in conjunction with a winch is covered by this standard.~~
~~(16) "Nationally recognized accrediting agency" means an organization that, due to its independence and expertise, is widely recognized as competent to accredit testing organizations. Examples of such accrediting agencies include, but are not limited to, the National Commission for Certifying Agencies and the American National Standards Institute.~~
~~(17) "Nonconductive" means that, because of the nature and condition of the materials used, and the conditions of use, including environmental conditions and condition of the material, the object in question has the property of not becoming energized, that is, it has high dielectric properties offering a high resistance to the passage of current under the conditions of use.~~
~~(18) "Operational aids" means devices that assist the operator in the safe operation of the crane by providing information or automatically taking control of a crane function.~~
~~(19) "Operational controls" means levers, switches, pedals, and other devices for controlling equipment operation.~~
~~(20) "Operator" means a person who is operating the equipment.~~
~~(21) "Overhead and gantry cranes" includes overhead, bridge, semi-gantry, cantilever gantry, wall, storage bridge, launching gantry cranes, and similar equipment, regardless of how it travels, whether on tracks, wheels, or other means.~~
~~(22) “Pawl or dog” means a device for positively holding a member against motion in 1 or more directions.~~
~~(23) "Pendants" includes both wire and bar types. Wire type means a fixed length of wire rope with mechanical fittings at both ends for pinning segments of wire rope together. Bar type means a bar is used instead of wire rope. Pendants are typically used in a latticed boom crane system to easily change the length of the boom suspension system without completely changing the rope on the drum when the boom length is increased or decreased.~~
~~(24) "Personal fall arrest system" means a system used to arrest an employee in a fall from a working level. The system consists of an anchorage, connectors, a body harness and may include a lanyard, deceleration device, lifeline, or suitable combination of these.~~
~~(25) “Personnel hoist” means a type of elevator which is used for the raising or lowering of personnel and or materials and which is guided.~~
~~(26) "Portal crane" means a type of crane consisting of a rotating upperstructure, hoist machinery, and boom mounted on top of a structural gantry that may be fixed in 1 location or have travel capability. The gantry legs or columns usually have portal openings in between to allow passage of traffic beneath the gantry.~~
~~(27) “Power-controlled lowering” means a system or device in the power train, other than the load hoist brake, that can control the lowering rate of speed of the load hoist mechanism.~~
~~(28) "Power lines" means electric transmission and distribution lines.~~

~~(29) "Procedures" means, but are not limited to, instructions, diagrams, recommendations, warnings, specifications, protocols, and limitations.~~
~~(30) "Proximity alarm" means a device that provides a warning of proximity to a power line and that has been listed, labeled, or accepted by a nationally recognized testing laboratory in accordance with 29 CFR 1910.7.~~
~~(31) "Qualified person" means a person who, through attainment of a recognized degree or certificate of professional standing or by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.~~
~~(32) "Qualified rigger" means an individual who is a qualified person with specific training and experience demonstrating the ability to solve or resolve problems relating to rigging.~~
~~(33) "Qualified signal person" means an individual who is a qualified person with specific training and experience demonstrating the ability to solve or resolve problems relating to signaling.~~
~~(34) "Range control limit device" is a device that can be set by an equipment operator to limit movement of the boom or jib tip to a plane or multiple planes.~~
~~(35) "Range control warning device" means a device that can be set by an equipment operator to warn that the boom or jib tip is at a plane or multiple planes.~~
~~(36) "Rated capacity" means the maximum working load permitted by the manufacturer under specified working conditions. These working conditions typically include a specific combination of factors such as equipment configuration, radii, boom length, and other parameters of use.~~
~~(37) "Rated capacity indicator" means the term as defined in R 408.41005a(6).~~
~~(38) "Rated capacity limiter" means the term as defined in R 408.41005a(7).~~
~~(39) "Reeving" means a rope system in which the rope travels around drums and sheaves.~~
~~(40) "Repetitive pickup points" means, when operating on a short cycle operation, the rope being used on a single layer and being spooled repetitively over a short portion of the drum.~~
~~(41) "Running rope" means a rope that travels around sheaves or drums.~~
~~(42) "Running wire rope" means a wire rope that moves over sheaves or drums.~~
~~(43) "Runway" means a firm, level surface designed, prepared, and designated as a path of travel for the weight and configuration of the crane being used to lift and travel with the crane suspended platform. An existing surface may be used as long as it meets these criteria.~~
~~(44) "Safety device" means a device used to prevent the unwanted or unsafe operation of a piece of equipment.~~
~~(45) "Sideboom crane" means a track-type or wheel-type tractor having a boom mounted on the side of the tractor, used for lifting, lowering, or transporting a load suspended on the load hook. The boom or hook can be lifted or lowered in a vertical direction only.~~
~~(46) "Signal system" means an audible or visual method of communication between the equipment operator and the persons on the landing or floors.~~
~~(47) "Special hazard warnings" means warnings of site-specific hazards, for example, proximity of power lines.~~
~~(48) "Stability" as it pertains to flotation devices, means the tendency of a barge, pontoons, vessel or other means of flotation to return to an upright position after having been inclined by an external force.~~
~~(49) "Standard method" means the protocol in Appendix A of this standard for hand signals.~~
~~(50) "Standing rope" including guy rope, means a supporting rope that maintains a constant distance between the points of attachment to the 2 components connected by the rope.~~
~~(51) "Such as" means ''such as, but not limited to.''~~

~~(52) "Superstructure" means upperworks.~~
~~(53) ‘‘Supporting materials’’ means blocking, mats, cribbing, marsh buggies in marshes or wetlands, or similar supporting materials or devices.~~
~~(54) "Tagline" means a rope, usually fiber, that is attached to a lifted load for controlling load spinning and pendular motions or used to stabilize a bucket or magnet during material handling operations.~~
~~(55) “Telescoping boom” means a base boom from which 1 or more boom sections are extended for additional length.~~
~~(56) "Tender" means an individual responsible for monitoring and communicating with a diver.~~
~~(57) “Third party qualified evaluator” means an entity that, due to its independence and expertise, has demonstrated that it is competent in accurately assessing whether individuals meet the requirements of R 408.41011a(3) for a signal person.~~
~~(58) "Tilt up or tilt down operation" means the raising or lowering of a load from the horizontal to vertical or vertical to horizontal.~~
~~(59) "Tower crane" means a type of lifting structure which utilizes a vertical mast or tower to support a working boom or jib in an elevated position. Loads are suspended from the working boom. While the working boom may be of the fixed type, horizontal or angled, or have luffing capability, it can always rotate to swing loads, either by rotating on the top of the tower, referred to as top slewing, or by the rotation of the tower, referred to as bottom slewing. The tower base may be fixed in 1 location or ballasted and moveable between locations. Mobile cranes that are configured with a luffing jib or tower attachments are not considered tower cranes under this rule.~~
~~(60) "Travel bogie" as it pertains to tower cranes, means an assembly of 2 or more axles arranged to permit vertical wheel displacement and equalize the loading on the wheels.~~
~~(61) "Trim" means angle of inclination about the transverse axis of a barge, pontoons, vessel or other means of floatation.~~
~~(62) “Two-blocking” means a condition in which a component that is uppermost on the hoist line such as the load block, hook block, overhaul ball, or similar component, comes in contact with the boom tip, fixed upper block or similar component. This binds the system and continued application of power can cause failure of the hoist rope or other component.~~
~~(63) "Unavailable procedures" means procedures that are no longer available from the manufacturer, or have never been available, from the manufacturer.~~
~~(64) "Upperstructure" means upperworks, as defined in subrule (65) of this rule.~~
~~(65) "Upperworks" means the revolving frame of equipment on which the operating machinery, and in many cases the engine, are mounted along with the operator’s cab. The counterweight is typically supported on the rear of the upperstructure and the boom or other front end attachment is mounted on the front.~~
~~(66) "Up to" means ‘‘up to and including.’’~~
~~(67) “Winch head” means a rotating cylindrical drum that has curved end flanges and that is used for load handling by means of fiber rope coiled about its barrel with hand tension applied to the nonload end.~~
~~(68) "Wire rope" means a flexible rope constructed by laying steel wires into various patterns of multi-wired strands around a core system to produce a helically wound rope.~~
~~(69) “Working day” means all calendar days except weekends and holidays~~.

DEFINITIONS

R 408.41006 Definitions; A, B.

Rule 1006. (1) "A/D director" or "assembly/disassembly director" means an individual who meets this standards requirements for an A/D director, irrespective of the individual's formal job title or whether the individual is non-management or management personnel.

(2) "Articulating crane" means a crane whose boom consists of a series of folding, pin connected structural members, typically manipulated to extend or retract by power from hydraulic cylinders.

(3) "Assembly or disassembly" means the assembly, disassembly, or both, of equipment covered under this standard. With regard to tower cranes, ''erecting and climbing'' replaces the term ''assembly,'' and ''dismantling'' replaces the term ''disassembly.'' Regardless of whether the crane is initially erected to its full height or is climbed in stages, the process of increasing the height of the crane is an erection process.

(5) "Attachments" means any device that expands the range of tasks that can be done by the equipment. Examples include, but are not limited to, an auger, drill, magnet, pile-driver, and boom-attached personnel platform.

(6) "Audible signal" means a signal made by a distinct sound or series of sounds. Examples include, but are not limited to, sounds made by a bell, horn, or whistle.

(7) "Base-mounted drum hoist" means a self-contained lifting unit that has a motor, a drum to receive the lifting cable, and mounting flanges for anchoring.

(8) "Blocking," also referred to as "cribbing," means wood or other material used to support equipment or a component and distribute loads to the ground. Blocking is typically used to support lattice boom sections during assembly/disassembly and under outrigger and stabilizer floats.

(9) "Boatswain's chair" means a single-point adjustable suspension scaffold consisting of a seat or sling, which may be incorporated into a full body harness, designed to support 1 employee in a sitting position.

(10) "Bogie" means ''travel bogie,'' as defined in R 408.41006e.

(11) "Boom" when used on equipment other than a tower crane, means an inclined spar, strut, or other long structural member that supports the upper hoisting tackle on a crane or derrick. Typically, the length and vertical angle of the boom can be varied to achieve increased height or height and reach when lifting loads. Booms may be grouped into general categories of hydraulically extendible, cantilevered type, latticed section, cable supported type, or articulating type.

(12) "Boom" or principle horizontal structure, when used on a tower crane, means if it is moveable up and down. If the ''boom'' is fixed, it is referred to as a jib.

(13) "Boom angle indicator" means a device that measures the angle of the boom relative to horizontal.

(14) "Boom hoist limiting device" includes boom hoist disengaging device, boom hoist shut-off, boom hoist disconnect, boom hoist hydraulic relief, boom hoist kick-outs, automatic boom stop device, or derricking limiter. The boom hoist limiting device means a device that disengages boom hoist power when the boom reaches a predetermined operating angle. It also sets brakes or closes valves to prevent the boom from lowering after power is disengaged.

(15) "Boom length indicator" indicates the length of the permanent part of the boom, such as ruled markings on the boom or, as in some computerized systems, the length of the boom with extensions or attachments.

(16) “Boom stop” means a device that is used to limit the angle of the boom at the highest recommended position. Boom stop includes boom stops, belly straps with struts or standoff, telescoping boom stops, attachment boom stops, and backstops. These devices restrict the boom from moving above a certain maximum angle and toppling over backward.

(17) "Boom suspension system" means a system of pendants, running ropes, sheaves, and other hardware that supports the boom tip and controls the boom angle.

(18) "Builder" means the builder or constructor of equipment.

R 408.41006a Definitions; C, D. ~~Helicopter cranes.~~

Rule 1006a. ~~Helicopter cranes in construction shall be used in accordance with general industry safety standard part 59 “Helicopters,” as referenced in R 408.41003a.~~

(1) "Center of gravity" means the center of gravity of any object is the point in the object around which its weight is evenly distributed. If a support were put under the center of gravity it could balance the object on the support.

(2) "Certified welder" means a welder who meets nationally recognized certification requirements applicable to the task being performed.

(3) "Climbing" means the process in which a tower crane is raised to a new working height, either by adding additional tower sections to the top of the crane (top climbing), or by using a system in which the entire crane is raised inside the structure (inside climbing).

(4) "Come-a-long" means a mechanical device typically consisting of a chain or cable attached at each end that is used to facilitate movement of materials through leverage.

(5) “Competent person” means a person who is trained, experienced, and capable of identifying existing or potential hazards in the surroundings or under working conditions that are unsanitary, hazardous or dangerous to employees, and who has the authority to take prompt corrective measures to eliminate them.

(6) "Controlled load lowering" means lowering a load by means of a mechanical hoist drum device that allows a hoisted load to be lowered with maximum control using the gear train or hydraulic components of the hoist mechanism. Controlled load lowering requires the use of the hoist drive motor, rather than the load hoist brake, to lower the load.

(7) "Controlling entity" means an employer that is a prime contractor, general contractor, construction manager or any other legal entity that has the overall responsibility for the construction of the project including its planning, quality, and completion.

(8) “Counterweight” means a weight that is used to supplement the weight of equipment in providing stability for lifting loads by counterbalancing those loads.

(9) "Crane/derrick" includes all equipment covered by this standard.

(10) “Crawler crane” means equipment that consists of a rotating superstructure that has a power plant, operating machinery, and a boom and that is mounted on a base and equipped with crawler treads for travel.

(11) “Critical lift” means a lift that exceeds 75% of the rated capacity of the crane or derrick or that requires the use of more than 1 crane or derrick.

(12) "Crossover points" means locations on a wire rope that is spooled on a drum where 1 layer of rope climbs up on and crosses over the previous layer. This takes place at each flange of the drum as the rope is spooled onto the drum, reaches the flange, and begins to wrap back in the opposite direction.

(13) “Deadman control” means a device that stops and locks the machinery when the control is released.

(14) "Dedicated channel" means a line of communication assigned by the employer who controls the communication system to only 1 signal person and a crane/derrick or to a coordinated group of cranes/derricks, signal person or persons.

(15) "Dedicated pile-driver" means a machine that is designed to function exclusively as a pile-driver. These machines typically have the ability to both hoist the material that shall be pile-driven and to pile-drive that material.

(16) "Dedicated spotter" for power lines means an employee who meets the requirements of R 408.41055 for signal person qualifications and whose sole responsibility is to watch the separation between the power line and the equipment, load line and load including rigging and lifting accessories, and ensure through communication with the operator that the applicable minimum approach distance is not breached.

(17) “Derrick” means powered equipment consisting of a mast or equivalent member that is held at or near the end by guys or braces, with or without a boom, and its hoisting mechanism. The mast or equivalent member, or the load, or both are moved by the hoisting mechanism, which is typically base-mounted, and operating ropes. Derricks include A-frame, basket, breast, Chicago boom, gin pole, except gin poles used for erection of communication towers, guy, shearleg, stiffleg, and variations of such equipment.

(18) "Directly under the load" means when any part of an employee is directly beneath the load.

(19) "Dismantling" includes complete and partial dismantling, such as dismantling to shorten a boom or substitute a different component.

(20) "Drum rotation indicator" means a device on a crane or hoist that indicates in which direction and at what relative speed a particular hoist drum is turning.

(21) “Dynamic loading” means the loads introduced into the machine or its components by forces in motion.

R 408.41006b Definitions; E to J.

Rule 1006b. (1) "Electrical contact" occurs when a person, object, or equipment makes contact or comes in close proximity to an energized conductor or equipment that allows the passage of current.

(2) "Employer-made equipment" means floating cranes/derricks designed and built by an employer for the employer’s own use.

(3) "Encroachment" means where any part of the crane, load line, or load, including rigging and lifting accessories, breaches a minimum clearance distance that this standard requires to be maintained from a power line.

(4) "Equipment" means equipment covered by this standard.

(5) "Equipment criteria" means instructions, recommendations, limitations, and specifications.

(6) "Fall protection equipment" means guardrail systems, safety net systems, personal fall arrest systems, positioning device systems, or fall restraint systems.
(7) "Fall restraint system" means a fall protection system that prevents the user from falling any distance. The fall restraint system is comprised of either a body belt or body harness, along with an anchorage, connectors, and other necessary equipment. The other components typically include a lanyard, and may also include a lifeline and other devices.
(8) "Fall zone" means the area, including, but not limited to, the area directly beneath the load, in which it is reasonably foreseeable that partially or completely suspended materials could fall in the event of an accident.
(9) “Flange point” means a point of contact between the rope and the drum flange where the rope changes layers.
(10) "Floating cranes/derricks" means equipment designed by the manufacturer or employer for marine use by permanent attachment to a barge, pontoons, vessel, or other means of flotation.
(11) "For example" means 1 example, although there are others.
(12) "Free fall" means that only the brake is used to regulate the descent of the load line. The drive mechanism is not used to drive the load down faster or retard its lowering.
(13) "Free surface effect" means the uncontrolled transverse movement of liquids in compartments which reduce a vessel’s transverse stability.
(14) ‘‘Ground conditions’’ means the ability of the ground to support the equipment including, but not limited to, slope, compaction, and firmness.
(15) “Gudgeon pin” means a pin that is used to connect the base of a boom to the main frame.
(16) “Hoist” means a system of power driven drums, gears, cables, chains, or hydraulic cylinders capable of lifting and lowering loads.
(17) "Hoisting" means the act of raising, lowering, or otherwise moving a load in the air with equipment covered by this standard. As used in this standard, ‘‘hoisting’’ can be done by means other than wire rope/hoist drum equipment.
(18) "Include” or “including" means including, but not limited to.
(19) "Insulating link or device" means an insulating device listed, labeled, or accepted by a nationally recognized resting laboratory in accordance with 29 CFR 1910.7, as adopted in R 408.41003d.
(20) "Jib stop” or “jib backstop" means the same type of device as a boom stop but is for a fixed or luffing jib.

R 408.41006c Definitions; L to N.
Rule 1006c. (1) "Land crane/derrick" means equipment not originally designed by the manufacturer for marine use by permanent attachment to barges, pontoons, vessels, or other means of floatation.
(2) "Load" means to the object or objects being hoisted, the weight of the object or objects, or both. Both uses refer to the object or objects and the load-attaching equipment. This may include the load block, ropes, slings, shackles, and any other ancillary attachment.
(3) "Load moment or rated capacity indicator" means a system that aids the equipment operator by directly or indirectly sensing the overturning moment on the

equipment, for example, load multiplied by radius. The system compares this lifting condition to the equipment's rated capacity, and indicates to the operator the percentage of capacity at which the equipment is working. Lights, bells, or buzzers may be incorporated as a warning of an approaching overload condition.

(4) "Load moment or rated capacity limiter" means a system that aids the equipment operator by directly or indirectly sensing the overturning moment on the equipment, for example, load multiplied by radius. The system compares this lifting condition to the equipment's rated capacity. When the rated capacity is reached, it shuts off power to those equipment functions that can increase the severity of loading on the equipment, for example, hoisting, telescoping out, or luffing out. Typically, those functions which decrease the severity of loading on the equipment remain operational, for example, lowering, telescoping in, or luffing in.

(5) "Locomotive crane" means a crane that is mounted on a base or car that is equipped for travel on a railroad track.

(6) "Luffing jib limiting device" means a device that is similar to a boom hoist limiting device, except that it limits the movement of the luffing jib.

(7) "Marine hoisted personnel transfer device" means a device that is designed to protect the employees being hoisted during a marine transfer and to facilitate rapid entry into and exit from the device. Such devices do not include boatswain's chairs when hoisted by equipment covered by this standard.

(8) "Marine worksite" means a construction worksite located in, on, or above the water.

(9) "Mobile crane" means a lifting device incorporating a cable suspended latticed boom or hydraulic telescopic boom designed to be moved between operating locations by transport over the road.

(10) "Moving point-to-point" means the times during which an employee is in the process of going to or from a work station.

(11) "Multi-purpose machine" means a machine that is designed to be configured in various ways, at least 1 of which allows it to hoist by means of a winch or hook and horizontally move a suspended load. For example, a machine that can rotate and can be configured with removable forks or tongs, for use as a forklift, or with a winch pack, jib with a hook at the end or a jib used in conjunction with a winch.

When configured with the forks or tongs, the multi-purpose machine is not covered by this standard. When configured with a winch pack, jib with a hook at the end or a jib used in conjunction with a winch is covered by this standard.

(12) "Nationally recognized accrediting agency" means an organization that, due to its independence and expertise, is widely recognized as competent to accredit testing organizations. Examples of such accrediting agencies include, but are not limited to, the National Commission for Certifying Agencies and the American National Standards Institute.

(13) "Nonconductive" means that, because of the nature and condition of the materials used, and the conditions of use, including environmental conditions and condition of the material, the object in question has the property of not becoming energized, that is, it has high dielectric properties offering a high resistance to the passage of current under the conditions of use.

R 408.41006d Definitions; O to R.

Rule 1006d. (1) "Operational aids" means devices that assist the operator in the safe operation of the crane by providing information or automatically taking control of a crane function.

(2) "Operational controls" means levers, switches, pedals, and other devices for controlling equipment operation.

(3) "Operator" means a person who is operating the equipment.

(4) "Overhead and gantry cranes" includes overhead, bridge, semi-gantry, cantilever gantry, wall, storage bridge, launching gantry cranes, and similar equipment, regardless of how it travels, whether on tracks, wheels, or other means.

(5) "Pendants" includes both wire and bar types. Wire type means a fixed length of wire rope with mechanical fittings at both ends for pinning segments of wire rope together. Bar type means a bar is used instead of wire rope. Pendants are typically used in a latticed boom crane system to easily change the length of the boom suspension system without completely changing the rope on the drum when the boom length is increased or decreased.

(6) "Personal fall arrest system" means a system used to arrest an employee in a fall from a working level. The system consists of an anchorage, connectors, and a body harness and may include a lanyard, deceleration device, lifeline, or suitable combination of these.

(7) "Portal crane" means a type of crane consisting of a rotating upperstructure, hoist machinery, and boom mounted on top of a structural gantry that may be fixed in 1 location or have travel capability. The gantry legs or columns usually have portal openings in between to allow passage of traffic beneath the gantry.

(8) “Power-controlled lowering” means a system or device in the power train, other than the load hoist brake, that can control the lowering rate of speed of the load hoist mechanism.

(9) "Power lines" means electric transmission and distribution lines.

(10) “Procedures” means, but are not limited to, instructions, diagrams, recommendations, warnings, specifications, protocols, and limitations.

(11) "Proximity alarm" means a device that provides a warning of proximity to a power line and that has been listed, labeled, or accepted by a nationally recognized testing laboratory in accordance with 29 CFR 1910.7, as adopted in R 408.41003d.

(12) “Qualified person” means a person who, through attainment of a recognized degree or certificate of professional standing or by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work.

(13) “Qualified rigger” means a rigger who meets the criteria for a qualified person.

(14) “Qualified evaluator, not a third party,” means a person employed by the signal person's employer who has demonstrated that he or she is competent in accurately assessing whether individuals meet the qualification requirements in these rules for a signal person

(15) “Qualified evaluator, that is a third party,” means an entity that, due to its independence and expertise, has demonstrated that it is competent in accurately assessing whether individuals meet the qualification requirements in these rules for a signal person.

(16) “Range control limit device” is a device that can be set by an equipment operator to limit movement of the boom or jib tip to a plane or multiple planes.

(17) "Range control warning device" means a device that can be set by an equipment operator to warn that the boom or jib tip is at a plane or multiple planes.
(18) "Rated capacity" means the maximum working load permitted by the manufacturer under specified working conditions. These working conditions typically include a specific combination of factors, such as equipment configuration, radii, boom length, and other parameters of use.
(19) "Rated capacity indicator" means “load moment indicator” as defined in R 408.41006c.
(20) "Rated capacity limiter" “load moment indicator” as defined in R 408.41006c.
(21) "Refresher training" means a short-term course aimed at recall and reinforcement of previously acquired knowledge and skills.
(22) "Repetitive pickup points" means, when operating on a short cycle operation, the rope being used on a single layer and being spooled repetitively over a short portion of the drum.
(23) "Running wire rope" means a wire rope that moves over sheaves or drums.
(24) "Runway" means a firm, level surface designed, prepared, and designated as a path of travel for the weight and configuration of the crane being used to lift and travel with the crane suspended platform. An existing surface may be used as long as it meets these criteria.

R 408.41006e Definitions; S to W.
Rule 1006e. (1) "Sideboom crane" means a track-type or wheel-type tractor having a boom mounted on the side of the tractor, used for lifting, lowering, or transporting a load suspended on the load hook. The boom or hook can be lifted or lowered in a vertical direction only.
(2) "Special hazard warnings" means warnings of site-specific hazards, for example, proximity of power lines.
(3) "Stability” as it pertains to flotation devices, means the tendency of a barge, pontoons, vessel, or other means of flotation to return to an upright position after having been inclined by an external force.
(4) "Standard method" means the protocol in Appendix A of this standard for hand signals.
(5) "Such as" means ‘‘such as, but not limited to.’’
(6) "Superstructure" means upperworks.
(7) ‘‘Supporting materials’’ means blocking, mats, cribbing, marsh buggies in marshes or wetlands, or similar supporting materials or devices.
(8) "Tagline" means a rope, usually fiber, that is attached to a lifted load for controlling load spinning and pendular motions or used to stabilize a bucket or magnet during material handling operations.
(9) “Telescoping boom” means a base boom from which 1 or more boom sections are extended for additional length.
(10) "Tender" means an individual responsible for monitoring and communicating with a diver.
(11) "Tilt up or tilt down operation" means the raising or lowering of a load from the horizontal to vertical or vertical to horizontal.
(12) "Tower crane" means a type of lifting structure that utilizes a vertical mast or tower to support a working boom or jib in an elevated position. Loads are suspended

from the working boom. While the working boom may be of the fixed type, horizontal or angled, or have luffing capability, it can always rotate to swing loads, either by rotating on the top of the tower, referred to as top slewing, or by the rotation of the tower, referred to as bottom slewing. The tower base may be fixed in 1 location or ballasted and moveable between locations. Mobile cranes that are configured with a luffing jib or tower attachments are not considered tower cranes under this rule.

(13) "Travel bogie" as it pertains to tower cranes, means an assembly of 2 or more axles arranged to permit vertical wheel displacement and equalize the loading on the wheels.

(14) "Trim" means angle of inclination about the transverse axis of a barge, pontoons, vessel or other means of floatation.

(15) “Two-blocking” means a condition in which a component that is uppermost on the hoist line, such as the load block, hook block, overhaul ball, or similar component, comes in contact with the boom tip, fixed upper block, or similar component. This binds the system and continued application of power can cause failure of the hoist rope or other component.

(16) "Unavailable procedures" means procedures that are no longer available from the manufacturer, or have never been available from the manufacturer.

(17) "Upperstructure" means upperworks, as defined in subrule (18) of this rule.

(18) "Upperworks" means the revolving frame of equipment on which the operating machinery, and in many cases the engine, are mounted along with the operator’s cab. The counterweight is typically supported on the rear of the upperstructure and the boom or other front end attachment is mounted on the front.

(19) "Up to" means ‘‘up to and including.’’

(20) "Wire rope" means a flexible rope constructed by laying steel wires into various patterns of multi-wired strands around a core system to produce a helically wound rope.

GROUND CONDITIONS

R 408.41007 Ground conditions.

Rule 1007. (1) A user of equipment shall not use or assemble equipment unless ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction with the use of supporting materials if necessary, the equipment manufacturer’s specifications for adequate support and degree of level of the equipment are met. The requirement for the ground to be drained does not apply to marshes or wetlands.

(2) The controlling entity shall do both of the following:

(a) Ensure that ground preparations necessary to meet the requirements in subrule (1) of this rule are provided.

(b) Inform the user of the equipment and the operator of the location of hazards beneath the equipment set-up area, such as voids, tanks, and utilities, if those hazards are identified in documents, such as site drawings, as-built drawings, and soil analyses, that are in the possession of the controlling entity, whether at the site or off-site, or the hazards are otherwise known to that controlling entity.

(3) If there is no controlling entity for the project, the requirement in subrule (2)(a) of this rule shall be met by the employer who has authority at the site to make or arrange for ground preparations needed to meet subrule (1) of this rule.

(4) If the A/D director or the operator determines that ground conditions do not meet the requirements in subrule (1) of this rule, that person's employer shall have a discussion with the controlling entity regarding the ground preparations that are needed so that the requirements in subrule (1) of this rule can be met with the use of suitable supporting materials or devices, if necessary.

(5) This rule does not apply to cranes designed for use on railroad tracks when used on railroad tracks that are part of the general railroad system of transportation that is regulated by the Federal Railroad Administration under 49 CFR part 213, as adopted in R 408.41003f, and that comply with applicable Federal Railroad Administration requirements.

R 408.41008a ~~Operator qualification and certification.~~ **Rescinded.**

~~Rule 1008a. (1) The employer shall ensure that, prior to operating any equipment covered under this standard, the person is operating the equipment during a training period in accordance with subrule (5) of this rule, or the operator is qualified or certified to operate the equipment.~~

~~(a) Exceptions. Operator qualification or certification under this rule shall not be required for operators of any of the following:~~

~~(i) Derricks. See R 408.41025a.~~

~~(ii) Sideboom cranes. See R 408.41033a.~~

~~(iii) Excavation equipment. See R 408.41041a.~~

~~(iv) Material and personnel hoists, elevators. See R 408.41065a.~~

~~(v) Equipment with a maximum manufacturer-rated hoisting or lifting capacity of 2,000 pounds or less. See R 408.41034a.~~

~~(b) When operator qualification or certification is required under R 408.41008a, the employer shall provide the qualification or certification at no cost to operators who are employed by the employer at the time these rules become effective.~~

~~(2) Option (1): The following applies to certification by an accredited crane operator testing organization:~~

~~(a) For a testing organization to be considered accredited to certify operators under this standard, it shall comply with all of the following:~~

~~(i) Be accredited by a nationally recognized accrediting agency based on that agency's determination that industry recognized criteria have been met for all of the following:~~

~~(A) Written testing materials.~~

~~(B) Practical examinations.~~

~~(C) Test administration.~~

~~(D) Grading.~~

~~(E) Facilities and equipment.~~

~~(F) Personnel.~~

~~(ii) Administer written and practical tests that comply with both of the following:~~

~~(A) Assess the operator applicant regarding, at a minimum, the knowledge and skills listed in subrule (8)(a) and (b) of this rule.~~

~~(B) Provide different levels of certification based on equipment capacity and type.~~

~~(iii) Have procedures for operators to reapply and be retested if an operator applicant fails a test or is decertified.~~

~~(iv) Have testing procedures for recertification designed to ensure that the operator continues to meet the technical knowledge and skills requirements in subrule (8)(a) and (b) of this rule.~~
~~(v) Have the testing organization's accreditation reviewed by the nationally recognized accrediting agency at least every 3 years.~~
~~(b) An operator shall be deemed qualified to operate a particular piece of equipment if the operator is certified under subrule (2) of this rule for that type and capacity of equipment or for higher-capacity equipment of that type. If no accredited testing agency offers certification examinations for a particular type, capacity of equipment, or both, an operator shall be deemed qualified to operate that equipment if the operator has been certified for the type and capacity that is most similar to that equipment and for which a certification examination is available. The operator's certificate shall state the type and capacity of equipment for which the operator is certified.~~
~~(c) A certification issued under this option is portable.~~
~~(d) A certification issued under this subrule is valid for 5 years.~~
~~(3) Option (2): Qualification by an audited employer program. The employer's qualification of its employee shall meet all of the following requirements:~~
~~(a) The written and practical tests shall comply with either of the following:~~
~~(i) Have been developed by an accredited crane operator testing organization as provided under subrule (2) of this rule.~~
~~(ii) Have been approved by an auditor in accordance with the following requirements:~~
~~(A) The auditor is certified to evaluate these tests by an accredited crane operator testing organization as provided under subrule (2) of this rule.~~
~~(B) The auditor is not an employee of the employer.~~
~~(C) The approval shall be based on the auditor's determination that the written and practical tests meet nationally recognized test development criteria and are valid and reliable in assessing the operator applicants regarding, at a minimum, the knowledge and skills listed in subrule (8)(a) and (b) of this rule.~~
~~(D) The audit shall be conducted in accordance with nationally recognized auditing standards.~~
~~(b) The following apply to administration of tests:~~
~~(i) The written and practical tests shall be administered under circumstances approved by the auditor as meeting nationally recognized test administration standards.~~
~~(ii) The auditor shall be certified to evaluate the administration of the written and practical tests by an accredited crane operator testing organization as provided under subrule (2) of this rule.~~
~~(iii) The auditor shall not be an employee of the employer.~~
~~(iv) The audit shall be conducted in accordance with nationally recognized auditing standards.~~
~~(c) The employer program shall be audited within 3 months of the beginning of the program and at least every 3 years thereafter.~~
~~(d) The employer program shall have testing procedures for requalification designed to ensure that the operator continues to meet the technical knowledge and skills requirements in subrule (8)(a) and (b) of this rule. The requalification procedures shall be audited in accordance with subrule (3)(a) and (b) of this rule.~~
~~(e) Deficiencies. If the auditor determines that there is a significant deficiency in the program, the employer shall ensure all of the following:~~
~~(i) No operator is qualified until the auditor confirms that the deficiency has been corrected.~~

~~(ii) The program is audited again within 180 days of the confirmation that the deficiency was corrected.~~
~~(iii) The auditor files a documented report of the deficiency to the Michigan occupational safety and health administration within 15 days of the auditor's determination that there is a deficiency.~~
~~(iv) Records of the audits of the employer's program are maintained by the auditor for 3 years and are made available by the auditor to the director of the department of licensing and regulatory affairs or his or her designee upon request.~~
~~(f) A qualification under this paragraph shall be both of the following:~~
~~(i) Not portable. A qualification meets the requirements of subrule (1) of this rule only where the operator is employed by and operates the equipment for the employer that issued the qualification.~~
~~(ii) Valid for 5 years.~~
~~(4) Option (3): The following apply to licensing by a government entity:~~
~~(a) For purposes of this section, a government licensing department or office that issues operator licenses for operating equipment covered by this standard is considered a government accredited crane operator testing organization if the criteria in subrule (4)(b) are met.~~
~~(b) The following apply to licensing criteria:~~
~~(i) The requirements for obtaining the license include an assessment by written and practical tests of the operator applicant regarding, at a minimum, the knowledge and skills listed in subrule (8)(a) and (b).~~
~~(ii) The testing meets industry recognized criteria for written testing materials, practical examinations, test administration, grading, facilities, equipment, and personnel.~~
~~(iii) The government authority that oversees the licensing department or office has determined that the requirements in subrule (4)(b)(i) and (ii) have been met.~~
~~(iv) The licensing department or office has testing procedures for relicensing designed to ensure that the operator continues to meet the technical knowledge and skills requirements in subrule (8)(a) and (b) of this rule.~~
~~(c) The following apply to a license issued by a government accredited crane operator testing organization that meets the requirements of this option:~~
~~(i) Meets the operator qualification requirements of this rule for operation of equipment only within the jurisdiction of the government entity.~~
~~(ii) Is valid for the period of time stipulated by the licensing department or office, but not longer than 5 years.~~
~~(5) Prequalification or certification training period. An employee who is not qualified or certified under this rule may operate equipment only as an operator-in-training and only where the requirements of this subrule are met. All of the following apply:~~
~~(a) The employer shall provide each operator-in-training with sufficient training prior to operating the equipment to enable the operator-in-training to operate the equipment safely under limitations established by this rule, including continuous monitoring, and any additional limitations established by the employer.~~
~~(b) The tasks performed by the operator-in-training while operating the equipment shall be within the operator-in-training's ability.~~
~~(c) Trainer. While operating the equipment, the operator-in-training shall be continuously monitored by an operator's trainer who shall meet all of the following requirements:~~
~~(i) Is an employee or agent of the operator-in-training's employer.~~

~~(ii) Is either a certified operator under this rule, or has passed the written portion of a certification test under 1 of the options in subrules (2) to (4) of this rule, and is familiar with the proper use of the equipment's controls.~~
~~(iii) While monitoring the operator-in-training, the operator's trainer shall not perform tasks that detract from the trainer's ability to monitor the operator-in-training.~~
~~(iv) For equipment other than tower cranes, the operator's trainer and the operator-in-training shall be in direct line of sight of each other and communicate verbally or by hand signals. For tower cranes, the operator's trainer and the operator-in-training shall be in direct communication with each other.~~
~~(d) Continuous monitoring. The operator-in-training shall be monitored by the operator's trainer at all times, except for short breaks where all of the following are met:~~
~~(i) A break lasts not longer than 15 minutes and there is not more than 1 break per hour.~~
~~(ii) Immediately prior to a break the operator's trainer informs the operator-in-training of the specific tasks that the operator-in-training is to perform and limitations to which he or she shall adhere to during a break.~~
~~(iii) The specific tasks that the operator-in-training will perform during a break shall be within the operator-in-training's abilities.~~
~~(e) The operator-in-training shall not operate the equipment in any of the following circumstances:~~
~~(i) If any part of the equipment, load line, or load including rigging and lifting accessories, if operated up to the equipment's maximum working radius in the work zone as prescribed in R 408.41016b(1)(a), could get within 20 feet of a power line that is up to 350 kV, or within 50 feet of a power line that is over 350 kV.~~
~~(ii) If the equipment is used to hoist personnel.~~
~~(iii) In multiple-equipment lifts.~~
~~(iv) If the equipment is used over a shaft, cofferdam, or in a tank farm.~~
~~(v) In multiple-lift rigging operations, except where the operator's trainer determines that the operator-in-training skills are sufficient for this high-skill work.~~
~~(6) Under this rule, a testing entity may provide training and testing as long as the applicable accredited agency criteria for an organization providing both services are met.~~
~~(7) Language and literacy requirements.~~
~~(a) Tests under this rule may be administered verbally, with answers given verbally, when the operator candidate meets both of the following:~~
~~(i) Passes a written demonstration of literacy relevant to the work.~~
~~(ii) Demonstrates the ability to use the type of written manufacturer procedures applicable to the class or type of equipment for which the candidate is seeking certification.~~
~~(b) Tests under this rule may be administered in any language the operator candidate understands, and the operator's certificate shall note the language in which the test was given. The operator is qualified under subrule (2)(b) of this rule to operate equipment that is furnished with materials required by this standard that are written in the language of the certification. The operator may only operate equipment furnished with these materials.~~
~~(8) Certification criteria. Qualifications and certifications shall be based, at a minimum, on both of the following:~~
~~(a) A determination through a written test as prescribed in this subrule. All of the following apply:~~
~~(i) The individual knows the information necessary for safe operation of the specific type of equipment that he or she will operate, including all of the following:~~
~~(A) The controls as well as the operational and performance characteristics.~~

~~(B) Use of, and the ability to calculate, either manually or with a calculator, load and capacity information on a variety of configurations of the equipment.~~
~~(C) Procedures for preventing and responding to power line contact.~~
~~(D) Technical knowledge similar to the subject matter criteria listed in Appendix C of this standard applicable to the specific type of equipment the individual will operate. Use of the Appendix C criteria meets the requirements of this subrule.~~
~~(E) Technical knowledge applicable to the following:~~
~~(I) The suitability of the supporting ground and surface to handle expected loads.~~
~~(II) Site hazards.~~
~~(III) Site access.~~
~~(F) This subpart, including applicable incorporated materials.~~
~~(ii) The individual is able to read and locate relevant information in the equipment manual and other materials containing information referred to in subrule (8)(a)(i) of this rule.~~
~~(b) A determination through a practical test that the individual has the skills necessary for safe operation of the equipment, including the following:~~
~~(i) Ability to recognize, from visual and auditory observation, the items listed in R 408.41012a(5).~~
~~(ii) Operational and maneuvering skills.~~
~~(iii) Application of load chart information.~~
~~(iv) Application of safe shut-down and securing procedures.~~
~~(9) The following apply to phase-in:~~
~~(a) The provisions of this rule are applicable at the effective date of these rules, except for subrules (1)(b) and (5) which are applicable as of November 8, 2014.~~
~~(b) When R 408.41008a(1)(a) is not applicable, both of the following requirements apply until November 8, 2014:~~
~~(i) The employer shall ensure that operators of equipment covered by this standard are competent to operate the equipment safely.~~
~~(ii) When an employee assigned to operate machinery does not have the required knowledge or ability to operate the equipment safely, the employer shall train that employee prior to operating the equipment. The employer shall ensure that each operator is evaluated to confirm that he or she understands the information provided in the training.~~

R 408.41009a ~~Training.~~ **Rescinded.**
~~Rule 1009a. The employer shall provide training as follows:~~
~~(a) Overhead powerlines. The employer shall train each employee specified in R 408.41016b(7) and R 408.41016d(m) in the topics listed in R 408.41016b(7).~~
~~(b) Signal persons. The employer shall train each employee who will be assigned to work as a signal person who does not meet the requirements of R 408.41011a(3) in the areas addressed in that subrule.~~
~~(c) The following apply to operators:~~
~~(i) Operators-in-training for equipment where certification or qualification is required by this standard. The employer shall train each operator-in-training in the areas addressed in R 408.41008a(8). The employer shall provide retraining if the operator-in-training does not pass a qualification or certification test.~~
~~(ii) Transitional period. During the phase-in period for operator certification or qualification, as provided in R 408.41008a(9), employers shall train each operator who has not been certified or qualified in the areas addressed in R 408.41008a(8).~~

~~(iii) Operators excepted from the requirements of R 408.41008a. The employer shall train each operator excepted under R 408.41008a(1) from the requirements of R 408.41008a on the safe operation of the equipment the operator will be using.~~
~~(iv) The employer shall train each operator of the equipment covered by this standard in the following practices:~~
~~(A) On friction equipment, when moving a boom off a support, first raise the boom a short distance sufficient to take the load of the boom to determine if the boom hoist brake needs to be adjusted. On other types of equipment with a boom, the same practice is applicable, except that typically there is no means of adjusting the brake; if the brake does not hold, a repair is necessary. See R 408.41019b(3) and (6) for additional requirements.~~
~~(B) When available, the manufacturer's emergency procedures for halting unintended equipment movement.~~
~~(d) Competent persons and qualified persons. The employer shall train each competent person and each qualified person regarding the requirements of this standard applicable to their respective roles.~~
~~(e) Crush and pinch points. The employer shall train each employee who works with the equipment to keep clear of holes, and crush and pinch points and the hazards addressed in R 408.41022a.~~
~~(f) Tag-out. The employer shall train each operator and each additional employee authorized to start or energize equipment or operate equipment controls, such as maintenance and repair employees, in the tag-out and start-up procedures in R 408.1019b(5) and (6).~~
~~(g) The following apply to training administration:~~
~~(i) The employer shall evaluate each employee required to be trained under this subrule to confirm that the employee understands the information provided in the training.~~
~~(ii) The employer shall provide refresher training in relevant topics for each employee when, based on the conduct of the employee or an evaluation of the employee's knowledge, there is an indication that retraining is necessary.~~
~~(iii) When training is required under this standard, the employer shall provide the training at no cost to the employee.~~

R 408.41009b ~~Qualifications of maintenance and repair employees.~~ **Rescinded.**
~~Rule 1009b. (1) Maintenance, inspection, and repair personnel may be permitted to operate the equipment only when all of the following requirements are met:~~
~~(a) The operation is limited to those functions necessary to perform maintenance, inspect the equipment, or verify its performance.~~
~~(b) The personnel do either of the following:~~
~~(i) Operate the equipment under the direct supervision of an operator who meets the requirements of R 408.41008a.~~
~~(ii) Are familiar with the operation, limitations, characteristics, and hazards associated with the type of equipment.~~
~~(2) Maintenance and repair personnel shall meet the definition of a qualified person with respect to the equipment and maintenance or repair tasks performed.~~

R 408.41011a ~~Signal person qualifications~~**. Rescinded.**
~~Rule 1011a. (1) The employer of the signal person shall ensure that each signal person meets the qualification requirements in subrule (c) of this rule prior to giving any signals. This requirement shall be met by using either Option (1) or Option (2) of this rule as follows:~~

~~(a) Option (1) – Third-party qualified evaluator. The signal person has documentation from a third-party qualified evaluator as defined in R 408.41005a showing that the signal person meets the qualification requirements in subrule (3) of this rule.~~
~~(b) Option (2) – Employer's qualified evaluator. The employer's qualified evaluator as defined in R 408.41004a shall assess the individual and determine that he or she meets the qualification requirements in subrule (3) of this rule and provides documentation of that determination. An assessment by an employer's qualified evaluator under this option shall not be portable. Other employers shall not be permitted to use it to meet the requirements of this rule.~~
~~(c) The employer shall make the documentation for whichever option is used available at the site while the signal person is employed by the employer. The documentation shall specify each type of signaling, such as hand signals and radio signals, for which the signal person meets the requirements of subrule (3) of this rule.~~
~~(2) If subsequent actions by the signal person indicate that the individual does not meet the qualification requirements as provided in subrule (3) of this rule, the employer shall not allow the individual to continue working as a signal person until retraining is provided and a reassessment is made in accordance with subrule (1) of this rule that confirms that the individual meets the qualification requirements.~~
~~(3) Qualification requirements. The signal person shall have all of the following qualifications:~~
~~(a) Know and understand the type of signals used. If hand signals are used, the signal person shall know and understand the standard method for hand signals.~~
~~(b) Be competent in the application of the type of signals used.~~
~~(c) Have a basic understanding of equipment operation and limitations, including the crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads.~~
~~(d) Know and understand the relevant requirements of R 408.41011a to R 408.41011c.~~
~~(e) Demonstrate that he or she meets the requirements in subrule (3)(a) to (d) of this rule through an oral or written test and a practical test.~~

R 408.41011b ~~Signals; general requirements.~~ **Rescinded.**
~~Rule 1011b. (1) A signal person shall be provided in each of the following situations:~~
~~(a) The point of operation, meaning the load travel or the area near or at load placement, is not in full view of the operator.~~
~~(b) When the equipment is traveling, the view in the direction of travel is obstructed.~~
~~(c) Due to site specific safety concerns, either the operator or the person handling the load determines that it is necessary.~~
~~(2) Types of signals. Signals to operators shall be by hand, voice, audible, or new signals.~~
~~(3) The following apply to hand signals:~~
~~(a) When using hand signals, the standard method shall be used. See Appendix A of this standard.~~
~~Exception: When use of the standard method for hand signals is infeasible, or when an operation or use of an attachment is not covered in the standard method, nonstandard hand signals may be used in accordance with subrule (3)(b) of this rule.~~
~~(b) Non-standard hand signals. When using non-standard hand signals, the signal person, operator, and lift director, when there is one, shall contact each other prior to the operation and agree on the non-standard hand signals that will be used.~~

~~(4) New signals. Signals other than hand, voice, or audible signals may be used when the employer demonstrates either of the following:~~
~~(a) The new signals provide at least equally effective communication as voice, audible, or standard method hand signals.~~
~~(b) The new signals comply with a national consensus standard that provides at least equally effective communication as voice, audible, or standard method hand signals.~~
~~(5) Suitability. The signals used, such as hand, voice, or audible, and means of transmitting the signals to the operator, such as direct line of sight, video, and radio, shall be appropriate for the site conditions.~~
~~(6) During operations requiring signals, the ability to transmit signals between the operator and signal person shall be maintained. If that ability is interrupted at any time, the operator shall safely stop operations requiring signals until it is reestablished and a proper signal is given and understood.~~
~~(7) If the operator becomes aware of a safety problem and needs to communicate with the signal person, he or she shall safely stop operations. Operations shall not resume until the operator and signal person agree that the problem has been resolved.~~
~~(8) Only 1 person shall give signals to a crane or derrick at a time, except in circumstances covered by subrule (10) of this rule.~~
~~(9) [Reserved.]~~
~~(10) A person who becomes aware of a safety problem shall alert the operator or signal person by giving the stop or emergency stop signal.~~
~~(11) All directions given to the operator by the signal person shall be given from the operator's direction perspective.~~
~~(12) [Reserved.]~~
~~(13) Communication with multiple cranes or derricks. When the signal person or persons communicates with more than 1 crane or derrick, a system shall be used to identify the crane or derrick each signal is for, by either 1 of the following:~~
~~(a) The signal person shall identify for each signal the crane or derrick that the signal is for prior to giving the function, direction, or both.~~
~~(b) Use an equally effective method of identifying which crane or derrick the signal is for.~~

R 408.41011c ~~Signals; radio, telephone, or other electronic transmission of signals.~~ **Rescinded.**
~~Rule 1011c. (1) The devices used to transmit signals shall be tested on site before beginning operations to ensure that the signal transmission is clear and reliable.~~
~~(2) Signal transmission shall be through a dedicated channel except under the following circumstances:~~
~~(a) When multiple cranes or derricks are used for the same task, 1 or more qualified signal persons may share a dedicated channel for coordinating operations.~~
~~(b) When a crane is being operated on or adjacent to railroad tracks and the actions of the crane operator need to be coordinated with the movement of other equipment or trains on the same or adjacent tracks.~~
~~(3) The crane or derrick operator shall receive signals using a hands-free device.~~

R 408.41011d ~~Signals; voice signals; additional requirements.~~ **Rescinded.**

~~Rule 1011d. (1) The operator, signal person and lift director, if there is one, shall contact each other and agree on the voice signals that will be used prior to beginning operations. These individuals shall meet again if any of the following occurs:~~
~~(a) A worker is substituted or added.~~
~~(b) There is confusion about the voice signals.~~
~~(c) Voice signals are to be changed.~~
~~(2) Each voice signal shall contain the following 3 elements, given in the following order:~~
~~(a) Function, such as hoist or boom, direction.~~
~~(b) Distance or speed, or both.~~
~~(c) Function, stop command.~~
~~(3) The operator, signal person and lift director, if there is one, involved shall be able to effectively communicate in the language used.~~

R 408.41011e ~~Signals; hand signal chart.~~ **Rescinded.**
~~Rule 1011e. Hand signal charts shall be posted either on the crane or derrick or be readily available on site.~~

R 408.41012a ~~Inspections.~~ **Rescinded.**
~~Rule 1012a. (1) An employer shall maintain crane, derrick, or excavation equipment and accessories in a condition that shall not endanger an operator or other employees.~~
~~(2) All of the following apply to modified equipment:~~
~~(a) Equipment that has had modifications or additions which affect the safe operation of the equipment or capacity shall be inspected by a qualified person after such modifications and additions have been completed, prior to initial use. These modifications or additions may include a safety device or operational aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism. The inspection shall meet all of the following requirements:~~
~~(i) The inspection shall assure that the modifications or additions have been done in accordance with the approval obtained pursuant to R 408.41028a.~~
~~(ii) The inspection shall include functional testing of the equipment.~~
~~(b) Equipment shall not be used until an inspection under this rule demonstrates that the requirements of subrule (2)(a)(i) have been met.~~
~~(3) All of the following apply to repaired or adjusted equipment:~~
~~(a) Equipment that has had a repair or adjustment that relates to safe operation shall be inspected by a qualified person after such a repair or adjustment has been completed, prior to initial use. These repairs and adjustments may include a safety device or operational aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism. The inspection shall meet all of the following requirements:~~
~~(i) The qualified person shall determine if the repair or adjustment meets manufacturer equipment criteria where applicable and available.~~
~~(ii) Where manufacturer equipment criteria are unavailable or inapplicable, the qualified person shall do both of the following:~~
~~(A) Determine if a registered professional engineer (RPE) is needed to develop criteria for the repair or adjustment. If an RPE is not needed, the employer shall ensure that the criteria are developed by the qualified person. If an RPE is needed, the employer shall ensure that the criteria are developed by an RPE.~~

~~(B) Determine if the repair or adjustment meets the criteria developed in accordance with subrule (3)(ii)(A).~~
~~(iii) The inspection shall include functional testing of the repaired or adjusted parts and other components that may be affected by the repair or adjustment.~~
~~(b) Equipment shall not be used until an inspection under this subrule demonstrates that the repair or adjustment meets the requirements of subrule (3)(a)(i) of this subrule or, where applicable, subrule (3)(a)(ii).~~
~~(4) All of the following apply to post-assembly:~~
~~(a) Upon completion of assembly, a qualified person shall inspect the equipment to ensure that it is configured in accordance with manufacturer equipment criteria.~~
~~(b) When manufacturer equipment criteria are unavailable, a qualified person shall do both of the following:~~
~~(i) Determine if an RPE who is familiar with the type of equipment involved is needed to develop criteria for the equipment configuration. If an RPE is not needed, the employer shall ensure that the criteria are developed by the qualified person. If an RPE is needed, the employer shall ensure that the criteria are developed by an RPE.~~
~~(ii) Determine if the equipment meets the criteria developed in accordance with subrule (4)(b)(i).~~
~~(c) Equipment shall not be used until an inspection under this subrule demonstrates that the equipment is configured in accordance with the applicable criteria.~~
~~(5) All of the following apply to each shift inspection:~~
~~(a) A competent person shall begin a visual inspection prior to each shift the equipment will be used. The inspection shall be completed before or during that shift and shall consist of observation for apparent deficiencies. Taking apart equipment components and booming down shall not be required as part of this inspection unless the results of the visual inspection or trial operation indicate that further investigation necessitates taking apart equipment components or booming down. Determinations made in conducting the inspection shall be reassessed in light of observations made during operation. At a minimum the inspection shall include all of the following:~~
~~(i) Control mechanisms for maladjustments interfering with proper operation.~~
~~(ii) Control and drive mechanisms for apparent excessive wear of components and contamination by lubricants, water or other foreign matter.~~
~~(iii) Air, hydraulic, and other pressurized lines for deterioration or leakage, particularly those which flex in normal operation.~~
~~(iv) Hydraulic system for proper fluid level.~~
~~(v) Hooks and latches for deformation, cracks, excessive wear, or damage such as from chemicals or heat.~~
~~(vi) Wire rope reeving for compliance with the manufacturer's specifications.~~
~~(vii) Wire rope, in accordance with R 408.41013a.~~
~~(viii) Electrical apparatus for malfunctioning, signs of apparent excessive deterioration, dirt or moisture accumulation.~~
~~(ix) Tires, when in use, for proper inflation and condition.~~
~~(x) Ground conditions around the equipment for proper support, including ground settling under and around outriggers or stabilizers and supporting foundations, ground water accumulation, or similar conditions. This subrule shall not apply to the inspection of ground conditions for railroad tracks and their underlying support when the railroad tracks are part of the general railroad system of transportation that is regulated pursuant to the Federal Railroad Administration under 49 CFR part 213.~~

~~(xi) The equipment for level position within the tolerances specified by the equipment manufacturer's recommendations, both before each shift and after each move and setup.~~
~~(xii) Operator cab windows for significant cracks, breaks, or other deficiencies that would hamper the operator's view.~~
~~(xiii) Rails, rail stops, rail clamps and supporting surfaces when the equipment has rail traveling. This subrule shall not apply to the inspection of rails, rail stops, rail clamps and supporting surfaces when the railroad tracks are part of the general railroad system of transportation that is regulated pursuant to the Federal Railroad Administration under 49 CFR part 213.~~
~~(xiv) Safety devices and operational aids for proper operation.~~
~~(b) If any deficiency in subrule (5)(a)(i) to (xiii) or in additional inspection items required to be checked for specific types of equipment in accordance with other rules of this standard is identified, a competent person shall make an immediate determination as to whether the deficiency constitutes a safety hazard. If the deficiency is determined to constitute a safety hazard, the equipment shall be taken out of service until it has been corrected, as specified in R 408.41019b.~~
~~(c) If there is any deficiency in safety devices and operational aids for proper operation identified, the action specified in R 408.41018a and R 408.41019a shall be taken prior to using the equipment.~~
~~(6) All of the following apply to monthly inspections:~~
~~(a) Each month the equipment is in service it shall be inspected in accordance with subrule (5) of this rule.~~
~~(b) Equipment shall not be used until an inspection under this subrule demonstrates that no corrective action under subrule (5)(b) and (c) is required.~~
~~(c) Documentation.~~
~~(i) The following information shall be documented and maintained by the employer that conducts the inspection:~~
~~(A) The items checked and the results of the inspection.~~
~~(B) The name and signature of the person who conducted the inspection and the date.~~
~~(ii) This document shall be retained for a minimum of 3 months.~~
~~(7) All of the following apply to annual inspections:~~
~~(a) At least every 12 months, a qualified person shall inspect the equipment in accordance with subrule (5) of this rule except that the corrective action set forth in subrules (7)(d), (e), and (f) of this rule shall apply in place of the corrective action required by subrule (5)(b) and (c) of this rule.~~
~~(b) In addition, at least every 12 months, the equipment shall be inspected by a qualified person. Disassembly shall be required, as necessary, to complete the inspection. The equipment and equipment structure including the boom and, if equipped, the jib, shall be inspected for all of the following:~~
~~(i) Deformed, cracked, or significantly corroded structural members.~~
~~(ii) Loose, failed, or significantly corroded bolts, rivets, and other fasteners.~~
~~(iii) Cracked welds.~~
~~(iv) Sheaves and drums for cracks or significant wear.~~
~~(v) Parts such as pins, bearings, shafts, gears, rollers, and locking devices for distortion, cracks, or significant wear.~~
~~(vi) Brake and clutch system parts, linings, pawls, and ratchets for excessive wear.~~
~~(vii) Safety devices and operational aids for proper operation, including significant inaccuracies.~~

~~(viii) Gasoline, diesel, electric, or other power plants for proper operation and safety-related problems or conditions, such as a leaking exhaust and an emergency shut-down feature.~~
~~(ix) Chains and chain drive sprockets for excessive wear of sprockets and excessive chain stretch.~~
~~(x) Travel steering, brakes, and locking devices, for proper operation.~~
~~(xi) Tires for damage or excessive wear.~~
~~(xii) Hydraulic, pneumatic, and other pressurized hoses, fittings, and tubing, as follows:~~
~~(A) A flexible hose or its junction with the fittings for indications of leaks.~~
~~(B) Threaded or clamped joints for leaks.~~
~~(C) Outer covering of the hose for blistering, abnormal deformation, or other signs of failure or impending failure.~~
~~(D) Outer surface of a hose, rigid tube, or fitting for indications of excessive abrasion or scrubbing.~~
~~(xiii) Hydraulic and pneumatic pumps and motors, as follows:~~
~~(A) Performance indicators for unusual noises or vibration, low operating speed, excessive heating of the fluid, or low pressure.~~
~~(B) Loose bolts or fasteners.~~
~~(C) Shaft seals and joints between pump sections for leaks.~~
~~(xiv) Hydraulic and pneumatic valves, as follows:~~
~~(A) Spools for sticking, improper return to neutral, and leaks.~~
~~(B) Leaks.~~
~~(C) Valve housing cracks.~~
~~(D) Relief valves for failure to reach correct pressure. If there is a manufacturer procedure for checking pressure, it shall be followed.~~
~~(xv) Hydraulic and pneumatic cylinders, as follows:~~
~~(A) Drifting caused by fluid leaking across the piston.~~
~~(B) Rod seals and welded joints for leaks.~~
~~(C) Cylinder rods for scores, nicks, or dents.~~
~~(D) Case or barrel for significant dents.~~
~~(E) Rod eyes and connecting joints that are loose or deformed.~~
~~(xvi) Outrigger or stabilizer pads or floats for excessive wear or cracks.~~
~~(xvii) Slider pads for excessive wear or cracks.~~
~~(xviii) Electrical components and wiring for cracked or split insulation and loose or corroded terminations.~~
~~(xix) Warning labels and decals originally supplied with the equipment by the manufacturer or otherwise required under this standard that are missing or unreadable.~~
~~(xx) Originally equipped operator seat or equivalent that are missing.~~
~~(xxi) Operator seat that is unserviceable.~~
~~(xxii) Originally equipped steps, ladders, handrails, and guards that are missing.~~
~~(xxiii) Steps, ladders, handrails, and guards that are in unusable or unsafe condition.~~
~~(c) This inspection shall include functional testing of the equipment as configured to determine if it is functioning properly.~~
~~(d) If any deficiency is identified, a qualified person shall make an immediate determination as to whether the deficiency constitutes a safety hazard or, though not yet a safety hazard, needs to be monitored in the monthly inspections.~~
~~(e) If the qualified person determines that a deficiency is a safety hazard, the equipment shall be taken out of service until it has been corrected, except when temporary alternative~~

~~measures are implemented as specified in R 408.41019a(4) or R 408.41029a(4)(c), as specified in R 408.41019b.~~
~~(f) If the qualified person determines that, though not presently a safety hazard, the deficiency needs to be monitored, the employer shall ensure that the deficiency is checked in the monthly inspections.~~
~~(g) Documentation of annual inspection. The following information shall be documented, maintained, and retained for a minimum of 12 months by the employer that conducts the inspection:~~
~~(i) The items checked and the results of the inspection.~~
~~(ii) The name and signature of the person who conducted the inspection and the date.~~
~~(iii) The employer shall maintain, on the jobsite, a copy of the records of the date and results of the latest inspection for each piece of equipment.~~
~~(8) Severe service. Where the severity of use or conditions is such that there is a reasonable probability of damage or excessive wear, such as loading, or shock loading, that may have exceeded rated capacity, or prolonged exposure to a corrosive atmosphere, the employer shall stop using the equipment and a qualified person shall do all of the following:~~
~~(a) Inspect the equipment for structural damage to determine if the equipment can continue to be used safely.~~
~~(b) In light of the use or conditions determine whether any items and conditions listed in subrule (7) of this rule need to be inspected. If an inspection is needed, the qualified person shall inspect those items and conditions.~~
~~(c) If a deficiency is found, the employer shall follow the requirements in subrules (7)(d) to (f) of this rule.~~
~~(9) Equipment not in regular use. Equipment that has been idle for 3 months or more shall be inspected by a qualified person in accordance with the requirements of subrule (6) of this rule before initial use.~~
~~(10) [Reserved.]~~
~~(11) Any part of a manufacturer's procedures regarding inspections that relate to safe operation that is more comprehensive or has a more frequent schedule of inspection than the requirements of this rule shall be followed.~~
~~(12) All documents produced under this rule shall be available, during the applicable document retention period, to all persons who conduct inspections under this rule.~~

R 408.41013a ~~Wire rope inspection.~~ **Rescinded.**
~~Rule 1013a. (1) A wire rope that is in continuous service shall be visually inspected by a competent person prior to each shift. A visual inspection shall consist of observing all rope, including running and standing, that can be expected to be in use during the day's operations. The purpose of the visual observations shall be to discover damage that may be an immediate hazard. Untwisting or opening of wire rope or booming down is not required as part of this inspection.~~
~~(2) The frequency of wire rope inspection shall be determined by a qualified person and shall be based on all of the following factors:~~
~~(a) Expected rope life as determined through experience on the particular installation or similar installations.~~
~~(b) Severity of the environment.~~
~~(c) Percentage of capacity lifts.~~
~~(d) Frequency rates of operation.~~

~~(e) Exposure to shock loads. Inspections need not be at equal calendar intervals and shall be more frequent as the rope approaches the end of its useful life.~~
~~(3) Category I. Apparent deficiencies in this category include any of the following:~~
~~(a) Significant distortion of the rope, including any of the following:~~
~~(i) Kinking.~~
~~(ii) Crushing.~~
~~(iii) Unstranding.~~
~~(iv) Birdcaging.~~
~~(v) Main strand displacement.~~
~~(vi) Signs of core failure or steel core protrusion between the outer strands.~~
~~(b) Electric arc damage, from a source other than power lines, or heat damage.~~
~~(c) Improperly applied end connections.~~
~~(d) Significantly corroded, cracked, bent, or worn end connections, such as from severe service.~~
~~(4) Category II. Apparent deficiencies in this category are any of the following:~~
~~(a) Broken or cut strands.~~
~~(b) In running wire ropes, 6 randomly distributed broken wires in 1 rope lay or 3 broken wires in 1 strand in 1 rope lay, where a rope lay is the length along the rope in which 1 strand makes a complete revolution around the rope.~~
~~(c) In rotation-resistant ropes, 2 randomly distributed broken wires in 6 rope diameters or 4 randomly distributed broken wires in 30 rope diameters.~~
~~(d) In standing ropes, there are more than 2 broken wires in 1 rope lay in sections beyond end connections or more than 1 broken wire at an end connection.~~
~~(e) A diameter reduction of more than 5% from nominal diameter.~~
~~(5) Category III. Apparent deficiencies in this category include any of the following:~~
~~(a) In rotation resistant wire rope, core protrusion or other distortion indicating core failure.~~
~~(b) Prior electrical contact with a power line.~~
~~(c) A broken strand.~~
~~(6) Critical review items. The competent person shall give particular attention to all of the following:~~
~~(a) Rotation resistant wire rope in use.~~
~~(b) Wire rope being used for boom hoists and luffing hoists, particularly at reverse bends.~~
~~(c) Wire rope at flange points, crossover points and repetitive pickup points on drums.~~
~~(d) Wire rope at or near terminal ends.~~
~~(e) Wire rope in contact with saddles, equalizer sheaves or other sheaves where rope travel is limited.~~
~~(7) Removal from service.~~
~~(a) If a deficiency in Category I is identified, a competent person shall make an immediate determination as to whether the deficiency constitutes a safety hazard. If the deficiency is determined to constitute a safety hazard, operations involving use of the wire rope in question shall be prohibited until 1 of the following occurs:~~
~~(i) The wire rope is replaced, as specified in R 408.41019b.~~
~~(ii) If the deficiency is localized, the problem shall be corrected by severing the wire rope in 2. The undamaged portion may continue to be used. Joining lengths of wire rope by splicing shall be prohibited. If a rope is shortened under this subrule, the employer shall ensure that the drum will have 2 wraps of wire when the load, boom, or both is in the lowest position.~~
~~(iii) The defective portion of a wire rope that is removed shall not be used for other load-carrying service.~~

~~(b) If a deficiency in Category II is identified, operations involving use of the wire rope in question shall be prohibited until 1 of the following occurs:~~
~~(i) The employer complies with either the wire rope manufacturer's established criterion for removal from service or a different criterion that the wire rope manufacturer has approved in writing for that specific wire rope, as specified in R 408.41019b.~~
~~(ii) The wire rope is replaced, as specified in R 408.41019b.~~
~~(iii) If the deficiency is localized, the problem shall be corrected by severing the wire rope in 2. The undamaged portion may continue to be used. Joining lengths of wire rope by splicing shall be prohibited. If a rope is shortened under this subrule, the employer shall ensure that the drum will have 2 wraps of wire when the load, boom, or both is in the lowest position.~~
~~(c) If a deficiency in Category III is identified, operations involving use of the wire rope in question shall be prohibited until 1 of the following occurs:~~
~~(i) The wire rope is replaced, as specified in R 408.41019b.~~
~~(ii) If the deficiency, other than power line contact, is localized, the problem is corrected by severing the wire rope in 2. The undamaged portion may continue to be used. Joining lengths of wire rope by splicing shall be prohibited. Repair of wire rope that contacted an energized power line shall also be prohibited. If a rope is shortened under this subrule, the employer shall ensure that the drum will have 2 wraps of wire when the load, boom, or both is in the lowest position. The defective portion of a wire rope that is removed shall not be used for other load-carrying service.~~
~~(d) Where a wire rope is required to be removed from service under this rule, either the equipment as a whole or the hoist with that wire rope shall be tagged-out, in accordance with R 408.41019b(5)(a), until the wire rope is repaired or replaced.~~
~~(8) All of the following apply to monthly inspections:~~
~~(a) Each month an inspection shall be conducted in accordance with subrule (1) of this rule~~
~~(b) The inspection shall include any deficiencies that the qualified person who conducts the annual inspection determines under subrule (9)(c)(ii) of this rule shall be monitored.~~
~~(c) Wire ropes on equipment shall not be used until an inspection under this paragraph demonstrates that no corrective action under subrule (7) of this rule is required.~~
~~(d) The inspection shall be documented according to R 408.41012a(6)(c).~~
~~(9) All of the following apply to annual inspections:~~
~~(a) At least every 12 months, wire ropes in use on equipment shall be inspected by a qualified person in accordance with subrule (1) of this rule.~~
~~(b) In addition, at least every 12 months, the wire ropes in use on equipment shall be inspected by a qualified person, as follows:~~
~~(i) The inspection shall be for deficiencies of the types listed in subrule (3) of this rule.~~
~~(ii) The inspection shall be complete and thorough, covering the surface of the entire length of the wire ropes, with particular attention given to all of the following:~~
~~(A) Critical review items listed in subrule (6) of this rule.~~
~~(B) Those sections that are normally hidden during shift and monthly inspections.~~
~~(C) Wire rope subject to reverse bends.~~
~~(D) Wire rope passing over sheaves.~~
~~(iii) Exception. If an inspection under subrule (9)(b) of this rule is not feasible due to existing set-up and configuration of the equipment, such as where an assist crane is needed, or due to site conditions, such as a dense urban setting, these inspections shall be conducted as soon as it becomes feasible, but no longer than an additional 6 months for running ropes and at the time of disassembly for standing ropes.~~

~~(c) If a deficiency is identified, a qualified person shall make an immediate determination as to whether the deficiency constitutes a safety hazard.~~
~~(i) If the deficiency is determined to constitute a safety hazard, operations involving use of the wire rope in question shall be prohibited until 1 of the following occurs:~~
~~(A) The wire rope is replaced, as specified in R 408.41019b.~~
~~(B) If the deficiency is localized, the problem is corrected by severing the wire rope in 2. The undamaged portion may continue to be used. Joining lengths of wire rope by splicing shall be prohibited. If a rope is shortened under this subrule, the employer shall ensure that the drum will have 2 wraps of wire when the load, boom, or both is in its lowest position.~~
~~(ii) If the qualified person determines that, though not presently a safety hazard, the deficiency needs to be monitored, the employer shall ensure that the deficiency is checked in the monthly inspections.~~
~~(d) The inspection shall be documented according to R 408.41012a(7)(g).~~
~~(10) Rope lubricants that are of the type that hinder inspection shall not be used.~~
~~(11) All documents produced under this rule shall be available, during the applicable document retention period, to all persons who conduct inspections under this rule.~~

R 408.41014a ~~Wire rope selection and installation criteria.~~ **Rescinded.**
~~Rule 1014a. (1) Original equipment wire rope and replacement wire rope shall be selected and installed in accordance with this rule. Selection of replacement wire rope shall be in accordance with the recommendations of the wire rope manufacturer, the equipment manufacturer, or a qualified person.~~
~~(2) Wire rope design criteria. Wire rope, other than rotation resistant rope, shall comply with either of the following:~~
~~(a) Option (1). Wire rope shall comply with section 5-1.7.1 of ANSI/ASME B30.5 "Mobile and Locomotive Cranes," 2004 edition, which is adopted by reference in R 408.41003a, except that section 5-1.7.1 paragraph (c) shall not apply.~~
~~(b) Option (2). Wire rope shall be designed to have, in relation to the equipment's rated capacity, a sufficient minimum breaking force and design factor so that compliance with the applicable inspection provisions in R 408.41013a will be an effective means of preventing sudden rope failure.~~
~~(3) Wire rope shall be compatible with the safe functioning of the equipment.~~
~~(4) Both of the following apply to boom hoist reeving:~~
~~(a) Fiber core ropes shall not be used for boom hoist reeving, except for derricks.~~
~~(b) Rotation resistant ropes shall be used for boom hoist reeving only where the requirements of subrule (5)(d)(ii) of this rule are met.~~
~~(5) All of the following apply to rotation resistant ropes:~~
~~(a) The following definitions apply:~~
~~(i) Type I rotation resistant wire rope (Type I) means stranded rope constructed to have little or no tendency to rotate or, if guided, transmits little or no torque. It has at least 15 outer strands and comprises an assembly of at least 3 layers of strands laid helically over a center in 2 operations. The direction of lay of the outer strands is opposite to that of the underlying layer.~~
~~(ii) Type II rotation resistant wire rope (Type II) means stranded rope constructed to have significant resistance to rotation. It has at least 10 outer strands and comprises an assembly of 2 or more layers of strands laid helically over a center in 2 or 3 operations. The direction of lay of the outer strands is opposite to that of the underlying layer.~~

~~(iii) Type III rotation resistant wire rope (Type III) means stranded rope constructed to have limited resistance to rotation. It has no more than 9 outer strands, and comprises an assembly of 2 layers of strands laid helically over a center in 2 operations. The direction of lay of the outer strands is opposite to that of the underlying layer.~~

~~(b) The following requirements apply:~~

~~(i) Types II and III with an operating design factor of less than 5 shall not be used for duty cycle or repetitive lifts.~~

~~(ii) Rotation resistant ropes, including Types I, II and III, shall have an operating design factor of not less than 3.5.~~

~~(iii) Type I shall have an operating design factor of not less than 5, except where the wire rope manufacturer and the equipment manufacturer approves the design factor, in writing.~~

~~(iv) Types II and III shall have an operating design factor of not less than 5, except where the requirements of subrule (5)(c) of this rule are met.~~

~~(c) When Types II and III with an operating design factor of less than 5 are used for non-duty cycle, non-repetitive lifts, the following requirements shall be met for each lifting operation:~~

~~(i) A qualified person shall inspect the rope in accordance with R 408.41013a(1). The rope shall be used only if the qualified person determines that there are no deficiencies constituting a hazard. In making this determination, more than 1 broken wire in any 1 rope lay shall be considered a hazard.~~

~~(ii) Operations shall be conducted in a manner and at speeds so as to minimize dynamic effects.~~

~~(iii) Each lift made under subrule (5)(c) of this rule shall be recorded in the monthly and annual inspection documents. Prior uses shall be considered by the qualified person in determining whether to use the rope again.~~

~~(d) The following are additional requirements for rotation resistant ropes for boom hoist reeving:~~

~~(i) Rotation resistant ropes shall not be used for boom hoist reeving, except where the requirements of subrule (5)(d)(ii) of this rule are met.~~

~~(ii) Rotation resistant ropes may be used as boom hoist reeving when load hoists are used as boom hoists for attachments, such as luffing attachments or boom and mast attachment systems. Under these conditions, all of the following requirements shall be met:~~

~~(A) The drum shall provide a first layer rope pitch diameter of not less than 18 times the nominal diameter of the rope used.~~

~~(B) The requirements in R 408.41024a(1), irrespective of the date of manufacture of the equipment, and R 408.41024a(2).~~

~~(C) The requirements in ANSI/ASME B30.5 "Mobile and Locomotive Cranes," 2004 edition, sections 5-1.3.2(a), (a)(2) through (a)(4), (b) and (d), which is adopted by reference in R 408.41003a, except that the minimum pitch diameter for sheaves used in multiple rope reeving is 18 times the nominal diameter of the rope used, instead of the value of 16 specified in section 5-1.3.2(d).~~

~~(D) All sheaves used in the boom hoist reeving system shall have a rope pitch diameter of not less than 18 times the nominal diameter of the rope used.~~

~~(E) The operating design factor for the boom hoist reeving system shall be not less than 5.~~

~~(F) The operating design factor for these ropes shall be the total minimum breaking force of all parts of rope in the system divided by the load imposed on the rope system when supporting the static weights of the structure and the load within the equipment's rated capacity.~~

~~(G) When provided, a power-controlled lowering system shall be capable of handling rated capacities and speeds as specified by the manufacturer.~~
~~(6) Wire rope clips used in conjunction with wedge sockets shall be attached to the unloaded dead end of the rope only, except that the use of devices specifically designed for dead-ending rope in a wedge socket shall be permitted.~~
~~(7) Socketing shall be done in the manner specified by the manufacturer of the wire rope or fitting.~~
~~(8) Prior to cutting a wire rope, seizings shall be placed on each side of the point to be cut. The length and number of seizings shall be in accordance with the wire rope manufacturer's instructions.~~

R 408.41015a ~~Assembly or disassembly.~~ **Rescinded.**
~~Rule 1015a. (1) When selecting manufacture or employer procedures for assembling or disassembling equipment or attachments, the employer shall comply with all applicable manufacturer prohibitions and with either of the following:~~
~~(a) Manufacturer procedures applicable to assembly and disassembly.~~
~~(b) Employer procedures for assembly or disassembly. Employer procedures may be used only where the employer can demonstrate that the procedures used meet the requirements in subrule (4) of this rule. The employer shall follow manufacturer procedures when an employer uses synthetic slings during assembly or disassembly rigging, as specified in subrule (2)(r) of this rule.~~
~~(2) General requirements. These requirements shall apply to all assembly and disassembly operations:~~
~~(a) Supervision by a competent and qualified person. Both of the following criteria apply to this person:~~
~~(i) Assembly or disassembly shall be directed by a person who meets the criteria of an A/D director.~~
~~(ii) Where the assembly or disassembly is being performed by only 1 person, that person shall meet the criteria for both a competent person and a qualified person. For purposes of this standard, that person is considered the A/D director.~~
~~(b) Knowledge of procedures. The A/D director shall understand the applicable assembly or disassembly procedures.~~
~~(c) Review of procedures. The A/D director shall review the applicable assembly or disassembly procedures immediately prior to the commencement of assembly or disassembly unless the A/D director understands the procedures and has applied them to the same type and configuration of equipment, including accessories, if any.~~
~~(d) Both of the following apply to crew instructions:~~
~~(i) Before commencing assembly or disassembly operations, the A/D director shall ensure that the crew members understand all of the following:~~
~~(A) Their tasks.~~
~~(B) The hazards associated with their tasks.~~
~~(C) The hazardous positions and locations that crew members need to avoid.~~
~~(ii) During assembly or disassembly operations, before a crew member takes on a different task, or when adding new personnel during the operations, the requirements in subrule (2)(d)(i)(A) to (C) of this rule shall be met.~~
~~(e) Protecting assembly or disassembly crew members out of operator view.~~

~~(i) Before a crew member goes to a location that is out of view of the operator and is either in, on, or under the equipment, or near the equipment or load where the crew member could be injured by movement of the equipment or load, the crew member shall inform the operator that he or she is going to that location.~~
~~(ii) Where the operator knows that a crew member went to a location covered by subrule (2)(e)(i) of this rule, the operator shall not move any part of the equipment or load until the operator is informed in accordance with a prearranged system of communication that the crew member is in a safe position.~~
~~(f) When working under the boom, jib, or other components, the following apply:~~
~~(i) When pins or similar devices are being removed, employees shall not be under the boom, jib, or other components, except where the requirements of subrule (2)(f)(ii) of this rule are met.~~
~~(ii) Exception. When the employer demonstrates that site constraints require 1 or more employees to be under the boom, jib, or other components when pins or similar devices are being removed, the A/D director shall implement procedures that minimize the risk of unintended dangerous movement and minimize the duration and extent of exposure under the boom. See Non-mandatory Appendix B of this standard for an example.~~
~~(g) Capacity limits. During all phases of assembly or disassembly, rated capacity limits for loads imposed on the equipment, equipment components including rigging, lifting lugs, and equipment accessories shall not be exceeded for the equipment being assembled or disassembled.~~
~~(h) Addressing specific hazards. The A/D director who supervises the assembly or disassembly operation shall address the hazards associated with the operation, which include all of the following:~~
~~(i) Site and ground bearing conditions. Site and ground conditions shall be adequate for safe assembly or disassembly operations and to support the equipment during assembly or disassembly, as specified in R 408.41017a.~~
~~(ii) Blocking material. The size, amount, condition and method of stacking the blocking shall be sufficient to sustain the loads and maintain stability.~~
~~(iii) Proper location of blocking. When used to support lattice booms or components, blocking shall be appropriately placed to do both of the following:~~
~~(A) Protect the structural integrity of the equipment.~~
~~(B) Prevent dangerous movement and collapse.~~
~~(iv) Verifying assist crane loads. When using an assist crane, the loads that will be imposed on the assist crane at each phase of assembly or disassembly shall be verified in accordance with R 408.41019b(14)(c) before assembly or disassembly begins.~~
~~(v) Boom and jib pick points. The points of attachment of rigging to a boom, or boom sections or jib or jib sections, shall be suitable for preventing structural damage and facilitating safe handling of these components.~~
~~(vi) The following apply to center of gravity:~~
~~(A) The center of gravity of the load shall be identified if that is necessary for the method used for maintaining stability.~~
~~(B) When there is insufficient information to accurately identify the center of gravity, measures designed to prevent unintended dangerous movement resulting from an inaccurate identification of the center of gravity shall be used. See Non-mandatory Appendix B of this standard for an example.~~

~~(vii) Stability upon pin removal. The boom sections, boom suspension systems, such as gantry A-frames and jib struts, and components shall be rigged or supported to maintain stability upon the removal of the pins.~~
~~(viii) Snagging. Suspension ropes and pendants shall not be allowed to catch on the boom or jib connection pins or cotter pins, including keepers and locking pins.~~
~~(ix) Struck by counterweights. Address potential for unintended movement from inadequately supported counterweights and from hoisting counterweights.~~
~~(x) Boom hoist brake failure. Each time reliance is to be placed on the boom hoist brake to prevent boom movement during assembly or disassembly, the brake shall be tested prior to such reliance to determine if it is sufficient to prevent boom movement. If it is not sufficient, a boom hoist pawl, other locking device or back-up braking device, or another method of preventing dangerous movement of the boom, such as blocking or using an assist crane, from a boom hoist brake failure shall be used.~~
~~(xi) Loss of backward stability. Address backward stability before swinging the upperworks, travel, and when attaching or removing equipment components.~~
~~(xii) Wind speed and weather. Address the effect of wind speed and weather on the equipment.~~
~~(i) [Reserved.]~~
~~(j) Cantilevered boom sections. Manufacturer limitations on the maximum amount of boom supported only by cantilevering shall not be exceeded. When these are unavailable, a registered professional engineer familiar with the type of equipment involved shall determine in writing this limitation, which shall not be exceeded.~~
~~(k) Weight of components. The weight of each of the components shall be readily available.~~
~~(l) [Reserved.]~~
~~(m) The following apply to components and configuration:~~
~~(i) The selection of components, and configuration of the equipment, that affect the capacity or safe operation of the equipment shall be in accordance with 1 of the following:~~
~~(A) Manufacturer instructions, prohibitions, limitations, and specifications. When these are unavailable, a registered professional engineer familiar with the type of equipment involved shall approve, in writing, the selection and configuration of components.~~
~~(B) Approved modifications that meet the requirements of R 408.41028a.~~
~~(ii) Post-assembly inspection. Upon completion of assembly, the equipment shall be inspected to ensure compliance with subrule (2)(m)(i) of this rule as specified in R 408.41012a(4).~~
~~(n) [Reserved.]~~
~~(o) Shipping pins. Reusable shipping pins, straps, links, and similar equipment shall be removed. After they are removed, they shall either be stowed or otherwise stored so that they do not present a falling object hazard.~~
~~(p) Pile driving. Equipment used for pile driving shall not have a jib attached during pile driving operations.~~
~~(q) Outriggers and stabilizers. When the load to be handled and the operating radius require the use of outriggers or stabilizers, or at any time when outriggers or stabilizers are used, all of the following requirements shall be met, except as otherwise indicated:~~
~~(i) The outriggers or stabilizers shall be either fully extended or, if the manufacturer's procedures permit, deployed as specified in the load chart.~~
~~(ii) The outriggers shall be set to remove the equipment weight from the wheels, except for locomotive cranes. For use of outriggers on locomotive cranes, see subdivision (q)(vi) of this subrule. This provision does not apply to stabilizers.~~

~~(iii) When outrigger floats are used, they shall be attached to the outriggers. When stabilizer floats are used, they shall be attached to the stabilizers.~~
~~(iv) Each outrigger or stabilizer shall be visible to the operator or to a signal person during extension and setting.~~
~~(v) Outrigger and stabilizer blocking shall comply with both of the following:~~
~~(A) Meet the requirements in subdivision (h)(ii) and (iii) of this subrule.~~
~~(B) Be placed only under the outrigger or stabilizer float or pad of the jack or, where the outrigger or stabilizer is designed without a jack, under the outer bearing surface of the extended outrigger or stabilizer beam.~~
~~(vi) For locomotive cranes, when using outriggers or stabilizers to handle loads, the manufacturer's procedures shall be followed. When lifting loads without using outriggers or stabilizers, the manufacturer's procedures shall be met regarding truck wedges or screws.~~
~~(r) Rigging. In addition to following the requirements in construction safety standard Part 8 "Handling and Storage of Materials," as referenced in R 408.41003a, and other requirements in this and other standards applicable to rigging, when rigging is used for assembly or disassembly, the employer shall ensure all of the following:~~
~~(i) The rigging work is done by a qualified rigger.~~
~~(ii) Synthetic slings are protected from abrasive, sharp, or acute edges, and configurations that could cause a reduction of the sling's rated capacity, such as distortion or localized compression. Requirements for the protection of wire rope slings are contained in construction safety standard Part 8 "Handling and Storage of Materials," as referenced in R 408.41003a.~~
~~(iii) When synthetic slings are used, the synthetic sling manufacturer's instructions, limitations, specifications, and recommendations shall be followed.~~
~~(3) Disassembly. Additional requirements for dismantling of booms and jibs applies to both the use of manufacturer procedures and employer procedures. Dismantling, including dismantling for changing the length of, booms and jibs shall comply with all of the following:~~
~~(a) None of the pins in the pendants shall be removed, either partly or completely, when the pendants are in tension.~~
~~(b) None of the pins at the top or bottom of the boom sections located between the pendant attachment points and the crane or derrick body shall be removed, either partly or completely, when the pendants are in tension.~~
~~(c) None of the pins at the top or bottom on boom sections located between the uppermost boom section and the crane or derrick body shall be removed, either partly or completely, when the boom is being supported by the uppermost boom section resting on the ground or other support.~~
~~(d) None of the top pins on boom sections located on the cantilevered portion of the boom being removed, for example the portion being removed ahead of the pendant attachment points, shall not be removed, either partly or completely, until the cantilevered section to be removed is fully supported.~~
~~(4) Assembly or disassembly—employer procedures—general requirements. All of the following apply:~~
~~(a) When using employer procedures instead of manufacturer procedures for assembly or disassembly, the employer procedures shall ensure all of the following:~~
~~(i) Prevent unintended dangerous movement, and prevent collapse, of any part of the equipment.~~
~~(ii) Provide adequate support and stability of all parts of the equipment.~~

~~(iii) Position employees involved in the assembly or disassembly operation so that their exposure to unintended movement or collapse of part or all of the equipment is minimized.~~
~~(b) Qualified person. Employer procedures shall be developed by a qualified person.~~

R 408.41016a ~~Power line safety up to 350 kV; assembly and disassembly.~~ **Rescinded.**
~~Rule 1016a. (1) Before assembling or disassembling equipment, the employer shall determine if any part of the equipment, load line, or load, including rigging and lifting accessories, could get closer than 20 feet to a power line during the assembly or disassembly process. If this could occur, the employer shall meet the requirements in 1 of the following options:~~
~~(a) Option (1) – Deenergize and ground. Confirm from the utility owner or operator that the power line has been deenergized and visibly grounded at the worksite. Employers choosing this option shall not proceed with this option if the electric utility does not deenergize the power line. This standard does not require utility companies to deenergize power lines.~~
~~(b) Option (2) – 20 foot clearance. Ensure that no part of the equipment, load line or load, including rigging and lifting accessories, gets closer than 20 feet to the power line by implementing the measures specified in subrule (2) of this rule.~~
~~(c) Option (3) – Table A clearance. All of the following apply:~~
~~(i) Determine the line's voltage and the minimum clearance distance permitted under Table A, as specified in R 408.41016b.~~
~~(ii) Determine if any part of the equipment, load line, or load, including rigging and lifting accessories, could get closer than the minimum clearance distance to the power line permitted under Table A, as specified in R 408.41016b. If this could occur, then the employer shall follow the requirements in subrule (2) of this rule to ensure that no part of the equipment, load line, or load, including rigging and lifting accessories, gets closer to the line than the minimum clearance distance.~~
~~(2) Preventing encroachment and electrocution. When encroachment precautions are required under Option (2) or Option (3) of subrule (1) of this rule, all of the following requirements shall be met:~~
~~(a) Conduct a planning meeting with the A/D director, operator, assembly or disassembly crew and the other workers who will be in the assembly or disassembly area to review the location of the power lines and the steps that will be implemented to prevent encroachment and electrocution.~~
~~(b) If tag lines are used, they shall be nonconductive.~~
~~(c) At least 1 of the following additional measures shall be in place. The measure selected shall be effective in preventing encroachment.~~
~~(i) Use a dedicated spotter who is in continuous contact with the equipment operator. The dedicated spotter shall comply with all the following:~~
~~(A) Be equipped with a visual aid to assist in identifying the minimum clearance distance. Examples of a visual aid include, but are not limited to the following:~~
~~(I) A clearly visible line painted on the ground.~~
~~(II) A clearly visible line of stanchions.~~
~~(III) A set of clearly visible line-of-sight landmarks, such as a fence post behind the dedicated spotter and a building corner ahead of the dedicated spotter.~~
~~(B) Be positioned to effectively gauge the clearance distance.~~
~~(C) Where necessary, use equipment that enables the dedicated spotter to communicate directly with the operator.~~

~~(D) Give timely information to the operator so that the required clearance distance can be maintained.~~
~~(ii) Use a proximity alarm set to give the operator sufficient warning to prevent encroachment.~~
~~(iii) Use a device that automatically warns the operator when to stop movement, such as a range control warning device. Such a device shall be set to give the operator sufficient warning to prevent encroachment.~~
~~(iv) Use a device that automatically limits range of movement and that is set to prevent encroachment.~~
~~(v) Use an elevated warning line, barricade, or line of signs, in view of the operator, equipped with flags or similar high-visibility markings.~~
~~(3) Assembly or disassembly below power lines shall be prohibited. No part of a crane or derrick, load line, or load, including rigging and lifting accessories, whether partially or fully assembled, is allowed below a power line unless the employer has confirmed that the utility owner or operator has deenergized and visibly grounded the power line at the worksite.~~
~~(4) Assembly or disassembly inside Table A clearance shall be prohibited. No part of a crane or derrick, load line, or load, including rigging and lifting accessories, whether partially or fully assembled, shall be closer than the minimum approach distance under Table A, as specified in R 408.41016b, to a power line unless the employer has confirmed that the utility owner or operator has deenergized and visibly grounded the power line at the worksite.~~
~~(5) Voltage information. When Option (3) of subrule (1) of this rule is used, the utility owner or operator of the power lines shall provide the requested voltage information within 2 working days of the employer's request.~~
~~(6) Power lines presumed energized. The employer shall assume that all power lines are energized unless the utility owner or operator confirms that the power line has been and continues to be deenergized and visibly grounded at the worksite.~~
~~(7) Posting of electrocution warnings. At least 1 electrocution hazard warning shall be conspicuously posted in the cab so that it is in view of the operator and, except for overhead gantry and tower cranes, at least 2 on the outside of the equipment.~~

R 408.41016b ~~Power line safety up to 350 kV; equipment operations.~~ **Rescinded.**
~~Rule 1016b. (1) Hazard assessments and precautions inside the work zone. Before beginning equipment operations, the employer shall do both of the following:~~
~~(a) Identify the work zone by either of the following means:~~
~~(i) Demarcating boundaries, such as with flags, or a device such as a range limit device or range control warning device, and prohibiting the operator from operating the equipment past those boundaries.~~
~~(ii) Defining the work zone as the area 360 degrees around the equipment, up to the equipment's maximum working radius.~~
~~(b) Determine if any part of the equipment, load line, or load, including rigging and lifting accessories, if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet to a power line. If this could occur, the employer shall meet the requirements in 1 of the following:~~
~~(i) Option (1)—Deenergize and ground. Confirm from the utility owner or operator that the power line has been deenergized and visibly grounded at the worksite.~~

~~(ii) Option (2) – 20 foot clearance. Ensure that no part of the equipment, load line, or load, including rigging and lifting accessories, gets closer than 20 feet to the power line by implementing the measures specified in subrule (2) of this rule.~~
~~(iii) Option (3) – Table A clearance. The following apply:~~
~~(A) Determine the line's voltage and the minimum approach distance permitted under Table A of this rule.~~
~~(B) Determine if any part of the equipment, load line, or load, including rigging and lifting accessories, while operating up to the equipment's maximum working radius in the work zone, could get closer than the minimum approach distance of the power line permitted under Table A. If this could occur, the employer shall follow the requirements in subrule (2) of this rule to ensure that no part of the equipment, load line, or load, including rigging and lifting accessories, gets closer to the line than the minimum approach distance.~~
~~(2) Preventing encroachment or electrocution. Where encroachment precautions are required under Option (2) or Option (3) of this rule, all of the following requirements shall be met:~~
~~(a) Conduct a planning meeting with the operator and the other workers who will be in the area of the equipment or load to review the location of the power lines, and the steps that shall be implemented to prevent encroachment or electrocution.~~
~~(b) If tag lines are used, they shall be nonconductive.~~
~~(c) Erect and maintain an elevated warning line, barricade, or line of signs, in view of the operator, equipped with flags or similar high-visibility markings, at 20 feet from the power line, if using Option (2) of this rule, or at the minimum approach distance under Table A, if using Option (3) of this rule. If the operator is unable to see the elevated warning line, a dedicated spotter shall be used as described in subrule (1)(d)(ii) of this rule in addition to implementing 1 of the measures described in subrule (1)(d)(i), (iii), (iv) and (v) of this rule.~~
~~(d) Implement at least 1 of the following measures:~~
~~(i) Set a proximity alarm to give the operator sufficient warning to prevent encroachment.~~
~~(ii) Use a dedicated spotter as specified in R 408.41016a(2)(c)(i).~~
~~(iii) Use a device that automatically warns the operator when to stop movement, such as a range control warning device. This device shall be set to give the operator sufficient warning to prevent encroachment.~~
~~(iv) Use of a device that automatically limits range of movement shall be set to prevent encroachment.~~
~~(v) Use of an insulating link or device, as defined in R 408.41004a, shall be installed at a point between the end of the load line, or below, and the load.~~
~~(e) The requirements of subrule (2)(d) of this rule do not apply to work covered by construction safety standard Part 16 "Power Transmission and Distribution," as referenced in R 408.41003a.~~
~~(3) Voltage information. When Option (3) of this rule is used, the utility owner or operator of the power lines shall provide the requested voltage information within 2 working days of the employer's request. See Appendix D.~~
~~(4) Operations below power lines. The following apply:~~
~~(a) No part of the equipment, load line, or load, including rigging and lifting accessories, is allowed below a power line unless the employer has confirmed that the utility owner or operator has deenergized and visibly grounded the power line at the worksite.~~
~~(b) Exceptions. Subrule (4)(a) of this rule shall be inapplicable when the employer demonstrates that 1 of the following applies:~~

~~(i) The work is covered by construction safety standard Part 16 "Power Transmission and Distribution," as referenced in R 408.41003a.~~
~~(ii) For equipment with nonextensible booms, the uppermost part of the equipment, with the boom at true vertical, would be more than 20 feet below the plane of the power line or more than the Table A of this rule minimum clearance distance below the plane of the power line.~~
~~(iii) For equipment with articulating or extensible booms, the uppermost part of the equipment, with the boom in the fully extended position, at true vertical, would be more than 20 feet below the plane of the power line or more than the Table A of this rule minimum clearance distance below the plane of the power line.~~
~~(iv) The employer demonstrates that compliance is infeasible and meets the requirements of R 408.41016d.~~
~~(5) Power lines presumed energized. The employer shall assume that all power lines are energized unless the utility owner or operator confirms that the power line has been and continues to be deenergized and visibly grounded at the worksite.~~
~~(6) When working near transmitter or communication towers where the equipment is close enough for an electrical charge to be induced in the equipment or materials being handled, the transmitter shall be deenergized or both of the following precautions shall be taken:~~
~~(a) The equipment shall be provided with an electrical ground.~~
~~(b) If tag lines are used, they shall be non-conductive.~~
~~(7) All of the following apply to training:~~
~~(a) The employer shall train each operator and crew member assigned to work with the equipment on all of the following:~~
~~(i) The procedures to be followed in the event of electrical contact with a power line, including all of the following:~~
~~(A) Information regarding the danger of electrocution from the operator simultaneously touching the equipment and the ground.~~
~~(B) The importance to the operator's safety of remaining inside the cab except where there is an imminent danger of fire, explosion, or other emergency that necessitates leaving the cab.~~
~~(C) The safest means of evacuating from equipment that may be energized.~~
~~(D) The danger of the potentially energized zone around the equipment, step potential.~~
~~(E) The need for crew in the area to avoid approaching or touching the equipment and the load.~~
~~(F) Safe clearance distance from power lines.~~
~~(ii) Power lines are presumed to be energized unless the utility owner or operator confirms that the power line has been and continues to be deenergized and visibly grounded at the worksite.~~
~~(iii) Power lines are presumed to be uninsulated unless the utility owner or operator or a registered engineer who is a qualified person with respect to electrical power transmission and distribution confirms that a line is insulated.~~
~~(iv) The limitations of an insulating link or device, proximity alarm, and any range control devices, if used.~~
~~(v) The procedures to be followed to properly ground equipment and the limitations of grounding.~~
~~(b) Employees working as dedicated spotters shall be trained to enable them to effectively perform their task, including training on the applicable requirements of this rule.~~
~~(c) Training under this rule shall be administered in accordance with R 408.41009a(g).~~

~~(8) Devices originally designed by the manufacturer for use as a safety device, as specified in R 408.41018a, operational aid, or a means to prevent power line contact or electrocution, when used to comply with this rule, shall meet the manufacturer's procedures for use and conditions of use.~~

~~TABLE A – MINIMUM CLEARANCE DISTANCES~~	
~~Voltage (nominal, kV, alternating current)~~	~~Minimum clearance distance (feet)~~
~~up to 50~~	~~10~~
~~over 50 to 200~~	~~15~~
~~over 200 to 350~~	~~20~~
~~over 350 to 500~~	~~25~~
~~over 500 to 750~~	~~35~~
~~over 750 to 1,000~~	~~45~~
~~over 1,000~~	~~(as established by the utility owner or operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).~~

~~Note: The value that follows ''to'' is up to and includes that value.~~
~~For example, over 50 to 200 means up to and including 200kV.~~

R 408.41016c ~~Power line safety over 350 kV.~~ **Rescinded.**
~~Rule 1016c. The requirements of R 408.41016a and R 408.41016b shall apply to power lines over 350 kV except for the following:~~
~~(a) For power lines at or below 1000 kV, wherever the distance ''20 feet'' is specified, the distance ''50 feet'' shall be substituted.~~
~~(b) For power lines over 1000 kV, the minimum clearance distance shall be established by the utility owner or operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution.~~

R 408.41016d ~~Power line safety for all voltages for equipment operations closer than the Table A zone.~~ **Rescinded.**
~~Rule 1016d. Equipment operations in which any part of the equipment, load line, or load, including rigging and lifting accessories, is closer than the minimum approach distance under Table A in R 408.41016b to an energized power line shall be prohibited, except where the employer demonstrates that all of the following requirements are met:~~
~~(a) The employer determines that it is infeasible to do the work without breaching the minimum approach distance under Table A in R 408.41016b.~~
~~(b) The employer determines that, after consultation with the utility owner or operator, it is infeasible to deenergize and ground the power line or relocate the power line.~~
~~(c) All of the following apply to minimum clearance distances:~~

~~(i) The power line owner or operator or registered professional engineer, who is a qualified person with respect to electrical power transmission and distribution, determines the minimum clearance distance that shall be maintained to prevent electrical contact in light of the on-site conditions. The factors that shall be considered in making this determination include, but are not limited to the following:~~
~~(A) Conditions affecting atmospheric conductivity.~~
~~(B) Time necessary to bring the equipment, load line, and load, including rigging and lifting accessories, to a complete stop.~~
~~(C) Wind conditions.~~
~~(D) Degree of sway in the power line.~~
~~(E) Lighting conditions.~~
~~(F) Other conditions affecting the ability to prevent electrical contact.~~
~~(ii) Subdivision (c)(i) of this subrule does not apply to work covered by construction safety standard Part 16 "Power Transmission and Distribution," (CS Part 16) as referenced in R 408.41003a. For such work, the minimum clearance distances specified in CS Part 16 Table 1 shall apply. Employers engaged in CS Part 16 work may work closer than the distances in CS Part 16 Table 1 where both the requirements of this rule and CS Part 16 R 408.41642(2) are met.~~
~~(d) A planning meeting with the employer and utility owner or operator, or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution, is held to determine the procedures that will be followed to prevent electrical contact and electrocution. At a minimum these procedures shall include all of the following:~~
~~(i) If the power line is equipped with a device that automatically reenergizes the circuit in the event of a power line contact, before the work begins, the automatic reclosing feature of the circuit interrupting device shall be made inoperative if the design of the device permits.~~
~~(ii) Use a dedicated spotter as specified in R 408.41016a(2)(c)(i).~~
~~(iii) Use of an elevated warning line or barricade that is not attached to the crane in view of the operator, either directly or through video equipment, and equipped with flags or similar high-visibility markings to prevent electrical contact. This provision does not apply to work covered by construction safety standard Part 16 "Power Transmission and Distribution," as referenced in R 408.41003a.~~
~~(iv) The following apply to use of an insulating link or device:~~
~~(A) An insulating link or device shall be installed at a point between the end of the load line, or below, and the load.~~
~~(B) For work covered by construction safety standard Part 16 "Power Transmission and Distribution," (CS Part 16) as referenced in R 408.41003a, the requirement in subdivision (d)(iv)(A) of this subrule shall apply only when working inside the CS Part 16 Table 1 clearance distances.~~
~~(C) For work covered by construction safety standard Part 16 "Power Transmission and Distribution", as referenced in R 408.41003a, involving operations where use of an insulating link or device is infeasible, the requirements of general industry safety standard Part 86 "Electric Power Generation, Transmission, and Distribution," 1910.269(p)(4)(iii)(B) or (C), as referenced in R 408.41003a, may be substituted for the requirement in subparagraph (A).~~
~~(D) Until November 8, 2013, the following procedure may be substituted for the requirement in subparagraph (A) of this paragraph:~~

~~(I) The employer shall use a link or device manufactured on or before November 8, 2011 that meets the definition of an insulating link or device, except that it has not been approved by a nationally recognized testing laboratory, and is maintained, used, and installed in accordance with manufacturer requirements and recommendations at a point between the end of the load line, or below, and the load.~~

~~(II) All employees, excluding equipment operators located on the equipment, who may come in contact with the equipment, the load line, or the load shall be insulated or guarded from the equipment, the load line, and the load through an additional means other than the device described in subdivision (d)(iv)(D)(I). Insulating gloves rated for the voltage involved are adequate additional means of protection for the purposes of this subrule.~~

~~(v) Use of nonconductive rigging if the rigging may be within the minimum clearance distances during operation, as specified in Table A in R 408.41016b.~~

~~(vi) If the equipment is equipped with a device that automatically limits range of movement, it shall be used and set to prevent any part of the equipment, load line, or load, including rigging and lifting accessories, from breaching the minimum approach distance established under subdivision (c).~~

~~(vii) If a tag line is used, it shall be of the nonconductive type.~~

~~(viii) Use of barricades forming a perimeter at least 10 feet away from the equipment to prevent unauthorized personnel from entering the work area. In areas where obstacles prevent the barricade from being at least 10 feet away, the barricade shall be as far from the equipment as feasible.~~

~~(ix) Workers other than the operator shall be prohibited from touching the load line above the insulating link or device and crane. Operators who remotely operate the equipment from the ground shall use either wireless controls that isolate the operator from the equipment or insulating mats that insulate the operator from the ground.~~

~~(x) Only personnel essential to the operation may be in the area of the crane and load.~~

~~(xi) The equipment shall be properly grounded.~~

~~(xii) Insulating line hose or cover-up shall be installed by the utility owner or operator except where such devices are unavailable for the line voltages involved.~~

~~(e) The procedures developed to comply with subdivision (d) of this rule are documented and immediately available on-site.~~

~~(f) The equipment user and utility owner or operator, or registered professional engineer shall meet with the equipment operator and the other workers who will be in the area of the equipment or load to review the procedures that will be implemented to prevent breaching the minimum approach distance established in subdivision (c) of this subrule and prevent electrocution.~~

~~(g) The procedures developed to comply with subdivision (d) of this subrule are implemented.~~

~~(h) The utility owner or operator, or registered professional engineer and all employers of employees involved in the work shall identify 1 person who will direct the implementation of the procedures. The person identified in accordance with this subrule shall direct the implementation of the procedures and shall have the authority to stop work at any time to ensure safety.~~

~~(i) [Reserved.]~~

~~(j) If a problem occurs implementing the procedures being used to comply with subdivision (d) of this subrule, or indicating that those procedures are inadequate to prevent electrocution, the employer shall safely stop operations and either develop new procedures to~~

~~comply with subdivision (d) of this subrule or have the utility owner or operator deenergize and visibly ground or relocate the power line before resuming work.~~
~~(k) Devices originally designed by the manufacturer for use as a safety device, as specified in R 408.41018a, operational aid, or a means to prevent power line contact or electrocution, when used to comply with this rule, shall comply with the manufacturer's procedures for use and conditions of use.~~
~~(l) [Reserved.]~~
~~(m) The employer shall train each operator and crew member assigned to work with the equipment in accordance with R 408.41016b(7).~~

R 408.41016e ~~Power line safety while traveling under or near power lines with no load.~~
Rescinded.
~~Rule 1016e. (1) This rule establishes procedures and criteria that shall be met for equipment traveling under or near a power line on a construction site with no load. Equipment traveling on a construction site with a load shall comply with R 408.41016b, R 408.41016c, or R 408.41016d, whichever is appropriate, and R 408.41019b(19).~~
~~(2) The employer shall ensure that all of the following are met:~~
~~(a) The boom or mast and boom or mast support system are lowered sufficiently to meet the requirements of this rule.~~
~~(b) The clearances specified in Table T of this rule are maintained.~~
~~(c) The effects of speed and terrain on equipment movement, including movement of the boom or mast, are considered so that those effects do not cause the minimum clearance distances specified in Table T of this rule to be breached.~~
~~(d) Dedicated spotter. If any part of the equipment while traveling will get closer than 20 feet to the power line, the employer shall ensure that a dedicated spotter who is in continuous contact with the driver or operator is used. The dedicated spotter shall do all of the following:~~
~~(i) Be positioned to effectively gauge the clearance distance.~~
~~(ii) Where necessary, use equipment that enables the dedicated spotter to communicate directly with the operator.~~
~~(iii) Give timely information to the operator so that the required clearance distance can be maintained.~~
~~(e) Additional precautions for traveling in poor visibility. When traveling at night or in conditions of poor visibility, in addition to the measures specified in subdivisions (a) to (d), the employer shall ensure the following:~~
~~(i) The power lines are illuminated or another means of identifying the location of the lines is used.~~
~~(ii) A safe path of travel is identified and used.~~

~~TABLE T—~~
~~MINIMUM CLEARANCE DISTANCES WHILE TRAVELING WITH NO LOAD~~

~~Voltage (nominal, kV, alternating current)~~	~~While traveling—minimum clearance distance (feet)~~
~~Up to 0.75~~	~~4~~
~~Over .75 to 50~~	~~6~~
~~Over 50 to 345~~	~~10~~
~~Over 345 to 750~~	~~16~~

~~Over 750 to 1,000~~	~~20~~
~~Over 1,000~~	~~(as established by the utility owner or operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).~~

R 408.41017a ~~Ground conditions.~~ **Rescinded.**

~~Rule 1017a. (1) The equipment shall not be assembled or used unless ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction with the use of supporting materials if necessary, the equipment manufacturer's specifications for adequate support and degree of level of the equipment are met. The requirement for the ground to be drained does not apply to marshes or wetlands.~~

~~(2) The controlling entity shall do both of the following:~~

~~(a) Ensure that ground preparations necessary to meet the requirements in subrule (1) of this rule are provided.~~

~~(b) Inform the user of the equipment and the operator of the location of hazards beneath the equipment set-up area, such as voids, tanks, and utilities, if those hazards are identified in documents, such as site drawings, as-built drawings, and soil analyses, that are in the possession of the controlling entity, whether at the site or off-site, or the hazards are otherwise known to that controlling entity.~~

~~(3) If there is no controlling entity for the project, the requirement in subrule (2)(a) of this rule shall be met by the employer who has authority at the site to make or arrange for ground preparations needed to meet subrule (1) of this rule.~~

~~(4) If the A/D director or the operator determines that ground conditions do not meet the requirements in subrule (1) of this rule, that person's employer shall have a discussion with the controlling entity regarding the ground preparations that are needed so that the requirements in subrule (1) of this rule can be met with the use of suitable supporting materials or devices, if necessary.~~

~~(5) This rule does not apply to cranes designed for use on railroad tracks when used on railroad tracks that are part of the general railroad system of transportation that is regulated pursuant to the Federal Railroad Administration under 49 CFR part 213 and that comply with applicable Federal Railroad Administration requirements.~~

R 408.41018a ~~Safety devices.~~ **Rescinded.**

~~Rule 1018a. (1) The following safety devices shall be required on all equipment covered by this part, unless otherwise specified:~~

~~(a) The following apply to crane level indicators:~~

~~(i) The equipment shall have a crane level indicator that is either built into the equipment or is available on the equipment.~~

~~(ii) If a built-in crane level indicator is not working properly, it shall be tagged-out or removed. If a removable crane level indicator is not working properly, it shall be removed.~~

~~(iii) This requirement shall not apply to portal cranes, derricks, floating cranes or derricks and land cranes or derricks on barges, pontoons, vessels or other means of flotation.~~

~~(b) Boom stops, except for derricks and hydraulic booms.~~

~~(c) Jib stops, if a jib is attached, except for derricks.~~

~~(d) Equipment with foot pedal brakes shall have locks.~~

~~(e) Hydraulic outrigger jacks and hydraulic stabilizer jacks shall have an integral holding device or check valve.~~
~~(f) Equipment on rails shall have rail clamps and rail stops, except for portal cranes.~~
~~(g) Both of the following apply to horns:~~
~~(i) The equipment shall have a horn that is either built into the equipment or is on the equipment and immediately available to the operator.~~
~~(ii) If a built-in horn is not working properly, it shall be tagged-out or removed. If a removable horn is not working properly, it shall be removed.~~
~~(2) Proper operation required. Operations shall not begin unless all of the devices listed in subrule (1) of this rule are in proper working order. If a device stops working properly during operations, the operator shall safely stop operations. If any of the devices listed in subrule (1) of this rule are not in proper working order, the equipment shall be taken out of service and operations shall not resume until the device is again working properly as specified in R 408.41019b. Alternative measures shall not be used.~~

R 408.41019a ~~Operational aids.~~ **Rescinded.**
~~Rule 1019a. (1) The devices listed in this rule are required on all equipment covered by this part, unless otherwise specified.~~
~~(a) The requirements in subrule (5)(a), (b), and (c) do not apply to articulating cranes.~~
~~(b) The requirements in subrules (4)(c), (5)(a) and (d) apply only to those digger derricks manufactured after November 8, 2011.~~
~~(2) Operations shall not begin unless the listed operational aids are in proper working order, except when an operational aid is being repaired the employer shall use the specified temporary alternative measures. The time periods permitted for repairing defective operational aids are specified in subrules (4) and (5) of this rule. More protective alternative measures specified by the crane or derrick manufacturer, if any, shall be followed.~~
~~(3) If a listed operational aid stops working properly during operations, the operator shall safely stop operations until the temporary alternative measures are implemented or the device is again working properly. If a replacement part is no longer available, the use of a substitute device that performs the same type of function shall be permitted and shall not be considered a modification under R 408.41028a.~~
~~(4) Category I operational aids and alternative measures. Operational aids listed in this subrule that are not working properly shall be repaired not later than 7 calendar days after the deficiency occurs. Exception: If the employer documents that it has ordered the necessary parts within 7 calendar days of the occurrence of the deficiency, the repair shall be completed within 7 calendar days of receipt of the parts. See R 408.41019b(9) for additional requirements.~~
~~(a) The following apply to boom hoist limiting devices:~~
~~(i) For equipment manufactured after December 16, 1969, a boom hoist limiting device shall be required. If temporary alternative measures are necessary, 1 or more of the following methods shall be used:~~
~~(A) Use a boom angle indicator.~~
~~(B) Clearly mark the boom hoist cable so that it can easily be seen by the operator at a point that shall give the operator sufficient time to stop the hoist to keep the boom within the minimum allowable radius. In addition, install mirrors or remote video cameras and displays if necessary for the operator to see the mark.~~

~~(C) Clearly mark the boom hoist cable so that it can easily be seen by a spotter at a point that shall give the spotter sufficient time to signal the operator and have the operator stop the hoist to keep the boom within the minimum allowable radius.~~

~~(ii) If the equipment was manufactured on or before December 16, 1969 and is not equipped with a boom hoist limiting device, at least 1 of the measures in subrule (4)(a)(i)(A) to (C) of this rule shall be used.~~

~~(b) Luffing jib limiting device. Equipment with a luffing jib shall have a luffing jib limiting device. Temporary alternative measures shall be the same as in subrule (4)(a)(i), except to limit the movement of the luffing jib rather than the boom hoist.~~

~~(c) The following apply to anti two-blocking devices:~~

~~(i) Telescopic boom cranes manufactured after February 28, 1992 shall be equipped with a device that automatically prevents damage from contact between the load block, overhaul ball, or similar component, and the boom tip or fixed upper block or similar component. The device shall prevent this damage at all points where two-blocking could occur. Temporary alternative measures: Clearly mark the cable so that it can easily be seen by the operator at a point that shall give the operator sufficient time to stop the hoist to prevent two-blocking, and use a spotter when extending the boom.~~

~~(ii) The following apply to lattice boom cranes:~~

~~(A) Lattice boom cranes manufactured after February 28, 1992 shall be equipped with a device that either automatically prevents damage and load failure from contact between the load block, overhaul ball, or similar component, and the boom tip or fixed upper block or similar component, or warns the operator in time for the operator to prevent two-blocking. The device shall either prevent this damage or failure, or provide adequate warning for all points where two-blocking may occur.~~

~~(B) Lattice boom cranes and derricks manufactured after November 8, 2011 shall be equipped with a device that automatically prevents damage and load failure from contact between the load block, overhaul ball, or similar component, and the boom tip or fixed upper block or similar component. The device shall prevent this damage or failure at all points where two-blocking may occur.~~

~~(C) Exception. The requirements in subrule (4)(c)(ii)(A) and (B) of this rule shall not apply to lattice boom equipment when used for dragline, clamshell or grapple, magnet, drop ball, container handling, concrete bucket, marine operations that do not involve hoisting personnel and pile driving work.~~

~~(D) Temporary alternative measures. Clearly mark the cable so that it can easily be seen by the operator at a point that shall give the operator sufficient time to stop the hoist to prevent two-blocking, or use a spotter.~~

~~(iii) Articulating cranes manufactured after December 31, 1999 that are equipped with a load hoist shall be equipped with a device that automatically prevents damage from contact between the load block, overhaul ball, or similar component, and the boom tip or fixed upper block or similar component. The device shall prevent this damage at all points where two-blocking may occur. Temporary alternative measures: When two-blocking may only occur with movement of the load hoist, clearly mark the cable so that it can easily be seen by the operator at a point that shall give the operator sufficient time to stop the hoist to prevent two-blocking, or use a spotter. When two-blocking may occur without movement of the load hoist, clearly mark the cable so that it can easily be seen by the operator at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, and use a spotter when extending the boom.~~

~~(5) Category II operational aids and alternative measures. Operational aids listed in this subrule that are not working properly shall be repaired not later than 30 calendar days after the deficiency occurs. Exception: If the employer documents that it has ordered the necessary parts within 7 calendar days of the occurrence of the deficiency and the part is not received in time to complete the repair in 30 calendar days, the repair shall be completed within 7 calendar days of receipt of the parts. See R 408.41019b(9) for additional requirements. All of the following apply:~~

~~(a) Boom angle or radius indicator. The equipment shall have a boom angle or radius indicator readable from the operator's station. Temporary alternative measures: Radii or boom angle shall be determined by measuring the radii or boom angle with a measuring device.~~

~~(b) Jib angle indicator if the equipment has a luffing jib. Temporary alternative measures: Radii or jib angle shall be determined by ascertaining the main boom angle and then measuring the radii or jib angle with a measuring device.~~

~~(c) Boom length indicator if the equipment has a telescopic boom, except where the rated capacity is independent of the boom length. Temporary alternative measures: One or more of the following methods shall be used:~~

~~(i) Mark the boom with measured marks to calculate boom length.~~

~~(ii) Calculate boom length from boom angle and radius measurements.~~

~~(iii) Measure the boom with a measuring device.~~

~~(d) The following apply to load weighing and similar devices:~~

~~(i) Equipment, other than derricks and articulating cranes, manufactured after March 29, 2003 with a rated capacity over 6,000 pounds shall have at least 1 of the following: a load weighing device, a load moment or rated capacity indicator, or a load moment or rated capacity limiter. Temporary alternative measures: The weight of the load shall be determined from a source recognized by the industry, such as the load's manufacturer, or by a calculation method recognized by the industry, such as calculating a steel beam from measured dimensions and a known per foot weight. This information shall be provided to the operator prior to the lift.~~

~~(ii) Articulating cranes manufactured after November 8, 2011 shall have at least 1 of the following: an automatic overload prevention device, a load weighing device, a load moment or rated capacity indicator, or a load moment rated capacity limiter. Temporary alternative measures: The weight of the load shall be determined from a source recognized by the industry, such as the load's manufacturer, or by a calculation method recognized by the industry, such as calculating a steel beam from measured dimensions and a known per foot weight. This information shall be provided to the operator prior to the lift.~~

~~(e) Both of the following devices shall be required on equipment manufactured after November 8, 2011:~~

~~(i) Outrigger or stabilizer position, horizontal beam extension, sensor or monitor if the equipment has outriggers or stabilizers. Temporary alternative measures: The operator shall verify that the position of the outriggers or stabilizers is correct in accordance with manufacturer procedures before beginning operations requiring outrigger or stabilizer deployment.~~

~~(ii) Hoist drum rotation indicator if the equipment has a hoist drum not visible from the operator's station. Temporary alternative measures: Mark the drum to indicate the rotation of the drum. In addition, install mirrors or remote video cameras and displays if necessary for the operator to see the mark.~~

R 408.41019b ~~Operations.~~ **Rescinded.**

~~Rule 1019b. (1) The employer shall comply with all manufacturer procedures applicable to the operational functions of equipment, including its use with attachments.~~

~~(2) The following apply to unavailable operation procedures:~~

~~(a) When the manufacturer procedures are unavailable, the employer shall develop and ensure compliance with all procedures necessary for the safe operation of the equipment and attachments.~~

~~(b) Procedures for the operational controls shall be developed by a qualified person.~~

~~(c) Procedures related to the capacity of the equipment shall be developed and signed by a registered professional engineer familiar with the equipment.~~

~~(3) The following apply to accessibility of procedures:~~

~~(a) The procedures applicable to the operation of the equipment, including rated capacities, load charts, recommended operating speeds, special hazard warnings, instructions, and operator's manual, shall be readily available in the cab at all times for use by the operator.~~

~~(b) When rated capacities are available in the cab only in electronic form and in the event of a failure that makes the rated capacities inaccessible, the operator shall immediately cease operations or follow safe shut-down procedures until the rated capacities, in electronic or other form, are available.~~

~~(c) The operator shall not engage in any practice or activity that diverts his or her attention while actually engaged in operating the equipment, such as the use of cellular phones other than when used for signal communications.~~

~~(4) The following apply to leaving the equipment unattended:~~

~~(a) The operator shall not leave the controls while the load is suspended, except when all of the following are met:~~

~~(i) The operator remains adjacent to the equipment and is not engaged in any other duties.~~

~~(ii) The load is to be held suspended for a period of time exceeding normal lifting operations.~~

~~(iii) The competent person determines that it is safe and implements measures necessary to restrain the boom hoist and telescoping, load, swing, and outrigger or stabilizer functions.~~

~~(iv) Barricades or caution lines, and notices, are erected to prevent all employees from entering the fall zone. No employees, including those listed in R 408.41023a(2)(a) to (c) and R 408.41023a(4) or (5), are permitted in the fall zone.~~

~~(b) The provisions in subrule (4)(a) of this rule do not apply to working gear, such as slings, spreader bars, ladders, and welding machines, where the weight of the working gear is negligible relative to the lifting capacity of the equipment as positioned, and the working gear is suspended over an area other than an entrance or exit.~~

~~(5) The following apply to tag-out:~~

~~(a) Tagging out of service equipment and functions. When the employer has taken the equipment out of service, a tag shall be placed in the cab stating that the equipment is out of service and is not to be used. When the employer has taken a function out of service, a tag shall be placed in a conspicuous position stating that the function is out of service and shall not be used.~~

~~(b) The following apply to response to ''do not operate'' and tag-out signs:~~

~~(i) If there is a warning sign, such as a tag-out or maintenance, and do not operate, on the equipment or starting control, the operator shall not activate the switch or start the equipment until the sign has been removed by a person authorized to remove it, or until the operator has verified both of the following:~~

~~(A) No one is servicing, working on, or otherwise in a dangerous position on the machine.~~
~~(B) The equipment has been repaired and is working properly.~~
~~(ii) If there is a warning sign, tag-out or maintenance, and do not operate, on any other switch or control, the operator shall not activate that switch or control until the sign has been removed by a person authorized to remove it, or until the operator has verified that the requirements in subrule (5)(b)(i)(A) and (B) of this rule have been met.~~
~~(6) Before starting the engine, the operator shall verify that all controls are in the proper starting position and that all personnel are in the clear.~~
~~(7) All controls shall be tested by an operator before beginning a new shift. Any controls that do not operate properly shall be adjusted or repaired before operations are begun.~~
~~(8) Storm warning. When a local storm warning has been issued, the competent person shall determine whether it is necessary to implement manufacturer recommendations for securing the equipment.~~
~~(9) If equipment adjustments or repairs are necessary both of the following shall be done:~~
~~(a) The operator shall, in writing, promptly inform the person designated by the employer to receive such information and, where there are successive shifts, to the next operator.~~
~~(b) The employer shall notify all affected employees, at the beginning of each shift, of the necessary adjustments or repairs and all alternative measures.~~
~~(10) Safety devices and operational aids shall not be used as a substitute for the exercise of professional judgment by the operator.~~
~~(11) If the competent person determines that there is a slack rope condition requiring re-spooling of the rope, it shall be verified before starting to lift that the rope is seated on the drum and in the sheaves as the slack is removed.~~
~~(12) Before starting to hoist, an operator shall do all of the following:~~
~~(a) Make sure the hoist rope is not kinked.~~
~~(b) Make sure the multiple part lines are not twisted around each other.~~
~~(c) Make sure the hook is not swinging when brought over the load.~~
~~(13) The competent person shall adjust the equipment, or operations, or both, to address the effect of wind, ice, and snow on equipment stability and rated capacity.~~
~~(14) The following apply to compliance with rated capacity:~~
~~(a) The equipment shall not be operated in excess of its rated capacity.~~
~~(b) The operator shall not be required to operate the equipment in a manner that would violate subrule (14)(a) of this rule.~~
~~(c) Load weight. The operator shall verify that the load is within the rated capacity of the equipment by not less than 1 of the following methods:~~
~~(i) The weight of the load shall be determined from a source recognized by the industry such as the load's manufacturer, or by a calculation method recognized by the industry such as calculating a steel beam from measured dimensions and a known per foot weight, or by other equally reliable means. In addition, when requested by the operator, this information shall be provided to the operator prior to the lift.~~
~~(ii) The operator shall begin hoisting the load to determine if it exceeds 75% of the maximum rated capacity at the longest radius that will be used during the lift operation by using a load weighing device, load moment indicator, rated capacity indicator, or rated capacity limiter. If it does, the operator shall not proceed with the lift until he or she verifies the weight of the load in accordance with subrule (14)(c)(i) of this rule.~~
~~(15) The boom or other parts of the equipment shall not contact any obstruction.~~
~~(16) The equipment shall not be used to drag or pull loads sideways.~~

~~(17) On wheel-mounted equipment, no loads shall be lifted over the front area, except as permitted by the manufacturer.~~
~~(18) The operator shall test the brakes each time a load that is 90% or more of the maximum line pull is handled by lifting the load a few inches and applying the brakes. In duty cycle and repetitive lifts where each lift is 90% or more of the maximum line pull, this requirement shall apply to the first lift but not to successive lifts.~~
~~(19) Neither the load nor the boom shall be lowered below the point where less than 2 full wraps of rope remain on their respective drums.~~
~~(20) The following apply to traveling with a load:~~
~~(a) Traveling with a load shall be prohibited if the practice is prohibited by the manufacturer.~~
~~(b) Where traveling with a load, the employer shall ensure all of the following:~~
~~(i) A competent person supervises the operation, determines if it is necessary to reduce rated capacity, and makes determinations regarding load position, boom location, ground support, travel route, overhead obstructions, and speed of movement necessary to ensure safety.~~
~~(ii) The determinations of the competent person required in subrule (20)(b)(i) of this rule are implemented.~~
~~(iii) For equipment with tires, tire pressure specified by the manufacturer shall be maintained.~~
~~(21) Rotational speed of the equipment shall be such that the load does not swing out beyond the radius at which it can be controlled.~~
~~(22) A tag or restraint line shall be used if necessary to prevent rotation of the load that would be hazardous.~~
~~(23) The brakes shall be adjusted in accordance with manufacturer procedures to prevent unintended movement.~~
~~(24) A load in an elevated position shall not be detached from the load line of a crane, derrick, or excavation equipment until the load has been secured to prevent unintentional movement.~~
~~(25) A fuel tank filler pipe for an internal combustion engine that powers a crane or derrick shall be located or guarded to prevent the spillage of fuel onto a hot surface or electrical equipment.~~
~~(26) Fuels shall be transported, stored, and handled as prescribed in construction safety standard part 18 "Fire Protection and Prevention," as referenced in R 408.41003a.~~
~~(27) A load line shall not be wrapped around the material being lifted.~~
~~(28) A load shall be secured and balanced before the load is lifted more than 6 inches.~~
~~(29) Clothing, personal belongings, tools, and other articles within a cab or operating enclosure shall be stored in cabinets, boxes, or by other means so as not to interfere with access or operations.~~
~~(30) A portable fire extinguisher that has a rating of not less than 10 BC shall be kept in the cab or operating enclosure. When there is no cab or enclosure, it shall be kept on the jobsite within a 200-foot radius of the equipment and shall be readily available. The operator and maintenance employees shall be trained in the use of the fire extinguisher.~~
~~(31) When night operations are carried out, lighting shall illuminate the immediate working area to a minimum of 10 footcandles and shall not interfere with the operator's vision.~~
~~(32) A rope shall not be used to carry current or as a ground on any crane or derrick.~~
~~(33) An employee shall not ride the bare hook or on a load of material suspended from the hook.~~

~~(34) The operator shall obey a stop or emergency stop signal, irrespective of who gives it.~~
~~(35) Swinging locomotive cranes. A locomotive crane shall not be swung into a position where railway cars on an adjacent track could strike it, until it is determined that cars are not being moved on the adjacent track and that proper flag protection has been established.~~
~~(36) The following apply to counterweights and ballasts:~~
~~(a) The following applies to equipment other than tower cranes:~~
~~(i) Equipment shall not be operated without the counterweight or ballast in place as specified by the manufacturer.~~
~~(ii) The maximum counterweight or ballast specified by the manufacturer for the equipment shall not be exceeded.~~
~~(b) Counterweight and ballast requirements for tower cranes are specified in R 408.41029a(2)(h).~~

R 408.41019c ~~Authority to stop operation.~~ **Rescinded.**
~~Rule 1019c. Each equipment operator shall be responsible for those operations that are under the operator's direct control. When there is a concern about safety, the operator may stop and refuse to handle loads until a qualified person has determined that safety has been assured.~~

R 408.41020a ~~Fall protection.~~ **Rescinded.**
~~Rule 1020a. (1) All of the following apply to application of rules:~~
~~(a) Subrules (2), (3)(c), (5) and (6) of this rule shall apply to all equipment covered by this standard except tower cranes.~~
~~(b) Subrules (3)(a) and (b), (4), (7), (10) and (11) of this rule shall apply to all equipment covered by this standard.~~
~~(c) Subrules (3)(d) and (8) of this rule shall apply only to tower cranes.~~
~~(2) The following apply to boom walkways:~~
~~(a) Equipment manufactured after November 8, 2011 with lattice booms shall be equipped with walkways on the boom or booms if the vertical profile of the boom, from cord centerline to cord centerline, is 6 feet or more.~~
~~(b) The following apply to boom walkway criteria:~~
~~(i) The walkways shall be at least 12 inches wide.~~
~~(ii) All of the following apply to guardrails, railings, and other permanent fall protection attachments along walkways:~~
~~(A) Not required.~~
~~(B) Prohibited on booms supported by pendant ropes or bars if guardrails, railings, or attachments could be snagged by the ropes or bars.~~
~~(C) Prohibited if they are of the removable type or designed to be installed and removed each time the boom is assembled or disassembled.~~
~~(D) Where not prohibited, guardrails or railings may be of any height up to, but not more than, 45 inches.~~
~~(3) The following apply to steps, handholds, ladders, grabrails, guardrails, and railings:~~
~~(a) Construction safety standard part 45 "Fall Protection," 1926.502(b), as referenced in R 408.41003a, does not apply to equipment covered by this standard.~~
~~(b) The employer shall maintain in good condition originally-equipped steps, handholds, ladders and guardrails, railings, or grabrails.~~

~~(c) Equipment manufactured after November 8, 2011 shall be equipped so as to provide safe access and egress between the ground and the operator work station, including the forward and rear positions, by the provision of devices such as steps, handholds, ladders, and guardrails, railings, or grabrails. These devices shall meet both of the following criteria:~~
~~(i) Steps, handholds, ladders and guardrails, railings, or grabrails shall meet the criteria of the Society of Automotive Engineers (SAE) J185 "Access Systems for Off-Road Machines," May 2003 edition, which is adopted by reference in R 408.41003a , or the International Organization for Standardization (ISO) 11660-2 "Cranes – Access, Guards and Restraints – Part 2: Mobile Cranes," 1994 edition, which is adopted by reference in R 408.41003a, except where infeasible.~~
~~(ii) Walking or stepping surfaces, except for crawler treads, shall have slip-resistant features or properties, such as diamond plate metal, strategically placed grip tape, expanded metal, or slip-resistant paint.~~
~~(d) Tower cranes manufactured after November 8, 2011 shall be equipped so as to provide safe access and egress between the ground and the cab, machinery platforms, and tower or mast, by the provision of devices such as steps, handholds, ladders, and guardrails, railings, or grabrails. These devices shall meet both of the following criteria:~~
~~(i) Steps, handholds, ladders, and guardrails, railings, or grabrails shall meet the criteria of ISO 11660-1 "Cranes – Access, Guards and Restraints – Part 1: General," 2008 edition, and ISO 11660-3 "Cranes – Access, Guards and Restraints – Part 3: Tower Cranes," 2008 edition, or SAE J185 "Access Systems for Off-Road Machines," May 2003 edition, all of which are adopted by reference in R 408.41003a, except where infeasible.~~
~~(ii) Walking or stepping surfaces shall have slip-resistant features or properties, such as diamond plate metal, strategically placed grip tape, expanded metal, or slip-resistant paint.~~
~~(4) Personal fall arrest and fall restraint systems. Personal fall arrest system components shall be used in personal fall arrest and fall restraint systems and shall conform to the criteria in construction safety standard part 45 "Fall Protection," 1926.502(d), as referenced in R 408.41003a, except that 1926.502(d)(15) shall not apply to components used in personal fall arrest and fall restraint systems. Either body belts or body harnesses shall be used in personal fall arrest and fall restraint systems.~~
~~(5) For non-assembly or disassembly work, the employer shall provide and ensure the use of fall protection equipment for employees who are on a walking or working surface with an unprotected side or edge more than 6 feet above a lower level. The following apply:~~
~~(a) When moving point-to-point, equipment shall be provided for the following:~~
~~(i) On non-lattice booms, whether horizontal or not horizontal.~~
~~(ii) On lattice booms that are not horizontal.~~
~~(iii) On horizontal lattice booms where the fall distance is 15 feet or more.~~
~~(b) While at a work station on any part of the equipment, including any type of boom, except when the employee is at or near draw-works when the equipment is running, in the cab, or on the deck.~~
~~(6) For assembly or disassembly work, the employer shall provide and ensure the use of fall protection equipment for employees who are on a walking or working surface with an unprotected side or edge more than 15 feet above a lower level, except when the employee is at or near draw-works when the equipment is running, in the cab, or on the deck.~~
~~(7) The following apply to anchorage criteria:~~
~~(a) Construction safety standard part 45 "Fall Protection," 1926.502(d)(15) and 1926.502(e)(2), as referenced in R 408.41003a, shall apply to equipment covered by this standard only to the extent delineated in subrule (7)(b) of this rule.~~

~~(b) The following apply to anchorages for personal fall arrest and positioning device systems:~~
~~(i) Personal fall arrest systems shall be anchored to any apparently substantial part of the equipment unless a competent person, from a visual inspection, without an engineering analysis, would conclude that the criteria in construction safety standard part 45 "Fall Protection," 1926.502(d)(15), as referenced in R 408.41003a, would not be met.~~
~~(ii) Positioning device systems shall be anchored to any apparently substantial part of the equipment unless a competent person, from a visual inspection, without an engineering analysis, would conclude that the criteria in construction safety standard part 45 "Fall Protection," 1926.502(e)(2), as referenced in R 408.41003a, would not be met.~~
~~(iii) Attachable anchor devices, portable anchor devices that are attached to the equipment, shall meet the anchorage criteria in construction safety standard part 45 "Fall Protection," 1926.502(d)(15) for personal fall arrest systems and 1926.502(e)(2) for positioning device systems, as referenced in R 408.41003a.~~
~~(c) Anchorages for fall restraint systems. Fall restraint systems shall be anchored to any part of the equipment that is capable of withstanding twice the maximum load that an employee may impose on it during reasonably anticipated conditions of use.~~
~~(8) The following apply to tower cranes:~~
~~(a) For work other than erecting, climbing, and dismantling, the employer shall provide and ensure the use of fall protection equipment for employees who are on a walking or working surface with an unprotected side or edge more than 6 feet above a lower level, except when the employee is at or near draw-works when the equipment is running, in the cab, or on the deck.~~
~~(b) For erecting, climbing, and dismantling work, the employer shall provide and ensure the use of fall protection equipment for employees who are on a walking or working surface with an unprotected side or edge more than 15 feet above a lower level.~~
~~(9) [Reserved.]~~
~~(10) Anchoring to the load line. A personal fall arrest system may be anchored to the crane or derrick's hook, or other part of the load line, where all of the following requirements are met:~~
~~(a) A qualified person has determined that the set-up and rated capacity of the crane or derrick, including the hook, load line, and rigging, meets or exceeds the requirements in construction safety standard part 45 "Fall Protection," R 1926.502(d)(15), as referenced in R 408.41003a.~~
~~(b) The equipment operator shall be at the work site and shall be informed that the equipment is being used for this purpose.~~
~~(c) No load shall be suspended from the load line when the personal fall arrest system is anchored to the crane or derrick's hook or other part of the load line.~~
~~(11) Training. The employer shall train each employee who may be exposed to fall hazards while on, or hoisted by, equipment covered by this standard on both of the following:~~
~~(a) The requirements in this part that address fall protection.~~
~~(b) The applicable requirements in construction safety standard part 45 "Fall Protection," R 1926.500 and R 1926.502, as referenced in R 408.41003a.~~

R 408.41021a ~~Hoisting personnel.~~ **Rescinded.**
~~Rule 1021a. (1) The requirements of this rule are in addition to the other requirements in this standard and apply when 1 or more employees are hoisted. The use of equipment to hoist~~

~~employees shall be prohibited except where the employer demonstrates that the erection, use, and dismantling of conventional means of reaching the work area, such as a personnel hoist, ladder, stairway, aerial lift, elevating work platform, or scaffold, would be more hazardous, or is not possible because of the project's structural design or worksite conditions. This subrule shall not apply to work covered by construction safety standard part 28 "Personnel Hoisting in Steel Erection," as referenced in R 408.41003a.~~

~~(2) The following apply to use of personnel platforms:~~

~~(a) When using equipment to hoist employees, the employees shall be in a personnel platform that meets the requirements of subrule (6) of this rule.~~

~~(b) Exceptions. A personnel platform shall not be required for hoisting employees under the following conditions:~~

~~(i) Into and out of drill shafts that are up to and including 8 feet in diameter. See subrule (16) of this rule for requirements for hoisting these employees.~~

~~(ii) In pile driving operations. See subrule (17) of this rule for requirements for hoisting these employees.~~

~~(iii) Solely for transfer to or from a marine worksite in a marine-hoisted personnel transfer device. See subrule (19) of this rule for requirements for hoisting these employees.~~

~~(iv) In storage-tank (steel or concrete), shaft and chimney operations. See subrule (20) of this rule for requirements for hoisting these employees.~~

~~(3) The following apply to equipment set-up:~~

~~(a) The equipment shall be uniformly level, within 1% of level grade, and located on footing that a qualified person has determined to be sufficiently firm and stable.~~

~~(b) Equipment with outriggers or stabilizers shall have all of them extended and locked. The amount of extension shall be the same for all outriggers and stabilizers, and be in accordance with manufacturer procedures and load charts.~~

~~(4) The following apply to equipment criteria:~~

~~(a) Capacity: Use of suspended personnel platforms. The total load with the platform loaded, including the hook, load line and rigging, shall not exceed 50% of the rated capacity for the radius and configuration of the equipment, except during proof testing.~~

~~(b) Capacity: Use of boom-attached personnel platforms. The total weight of the loaded personnel platform shall not exceed 50% of the rated capacity for the radius and configuration of the equipment, except during proof testing.~~

~~(c) Capacity: Hoisting personnel without a personnel platform. When hoisting personnel without a personnel platform pursuant to subrule (2)(b) of this rule, the total load, including the hook, load line, rigging and any other equipment that imposes a load, shall not exceed 50% of the rated capacity for the radius and configuration of the equipment, except during proof testing.~~

~~(d) Load and boom hoist drum brakes, swing brakes, and locking devices, such as pawls or dogs, shall be engaged when the occupied personnel platform is in a stationary working position.~~

~~(5) The following apply to devices:~~

~~(a) Equipment, except for derricks and articulating cranes, with a variable angle boom shall be equipped with both of the following:~~

~~(i) A boom angle indicator, readily visible to the operator.~~

~~(ii) A boom hoist limiting device.~~

~~(b) Articulating cranes shall be equipped with a properly functioning automatic overload protection device.~~

~~(c) Equipment with a luffing jib shall be equipped with both of the following:~~

~~(i) A jib angle indicator, readily visible to the operator.~~
~~(ii) A jib hoist limiting device.~~
~~(d) An employer shall ensure that a crane that has a telescoping boom is equipped with a device to indicate clearly to the operator, at all times, the boom's extended length, or shall ensure that an accurate determination of the load radius to be used during the lift is made before hoisting personnel.~~
~~(e) An employer shall ensure the use of a positive acting device to prevent contact between the load block or overhaul ball and the boom tip, anti-2-blocking device, or a system that shall be used to deactivate the hoisting action before damage occurs in a 2-blocking situation, 2-block damage prevention feature.~~
~~(f) The load line hoist drum shall have a system or device on the powertrain, other than the load hoist brake, that regulates the lowering rate of the speed of the hoist mechanism, controlled load lowering. Free-fall is prohibited.~~
~~(g) Proper operation required. Personnel hoisting operations shall not begin unless the devices listed in subrule (5) of this rule are in proper working order. If a device stops working properly during such operations, the operator shall safely stop operations. Personnel hoisting operations shall not resume until the device is again working properly. Alternative measures are not permitted. See R 408.41019b for tag-out and related requirements.~~
~~(h) Direct attachment of a personnel platform to a luffing jib is prohibited.~~
~~(6) Personnel platform criteria. A work platform shall comply with all of the following requirements:~~
~~(a) The system used to connect the personnel platform to the equipment shall allow the platform to remain within 10 degrees of level, regardless of boom angle.~~
~~(b) The suspension system shall be designed to minimize tipping of the platform due to movement of employees occupying the platform.~~
~~(c) Be designed and constructed by qualified personnel who are designated by, and responsible to, the employer.~~
~~(d) A welder who welds work platforms shall comply with the requirements of the American Welding Society (AWS) standards AWS standard "IHS-AWSC Structural Welding Code," 2000 edition, AWS standard D14.1 "Welding of Industrial and Mill Cranes and Other Material Handling Equipment," 1997 edition, AWS standard B1.10 "Guide for the Nondestructive Inspection of Welds," 1986 edition, and AWS standard D14.4 "Class and Application of Welded Joints for Machinery Equipment," 1997 edition. These standards are adopted by reference in R 408.41003a.~~
~~(e) The personnel platform, excluding the guardrail system and personal fall arrest system anchorages, shall be capable of supporting, without failure, its own weight and at least 5 times the maximum intended load.~~
~~(f) The personnel platform shall be equipped with a guardrail system that meets the requirements of construction safety standard part 45 "Fall Protection," as referenced in R 408.41003a, and shall be enclosed at least from the toeboard to mid-rail with either solid construction material or expanded metal that have openings not greater than 1/2 inch (1.27 cm). Points to which personal fall arrest systems are attached shall meet the anchorage requirements in construction safety standard part 45 "Fall Protection."~~
~~(g) A grab rail shall be installed inside the entire perimeter of the personnel platform except for access gates/doors.~~
~~(h) Access gates or doors. If installed, access gates or doors of all types, including swinging, sliding, folding, or other types, shall not swing outward. If due to the size of the personnel platform, such as a 1-person platform, it is infeasible for the door to swing inward~~

~~and allow safe entry for the platform occupant, then the access gate or door may swing outward. Access gates and doors shall be equipped with a device that prevents accidental opening.~~

~~(i) A platform gate shall be securely fastened during all travel, and shall be opened only during egress from, or access to, the work platform. The platform shall be used only for positioning employees at otherwise inaccessible locations to perform work and shall not be used as an elevator.~~

~~(j) Headroom shall be sufficient to allow employees to stand upright in the platform.~~

~~(k) In addition to the use of hard hats, employees shall be protected by overhead protection on the personnel platform when employees are exposed to falling objects. The platform overhead protection shall not obscure the view of the operator or platform occupants, such as wire mesh that has openings up to 1/2 inch, unless full protection is necessary.~~

~~(l) The employer shall ensure that all rough edges exposed to contact by employees are surfaced or smoothed to prevent injury to employees from puncture or lacerations.~~

~~(m) Have a permanently affixed sign that shall specify all of the following information:~~

~~(i) Maximum number of passengers.~~

~~(ii) Work platform identification number.~~

~~(iii) Maximum rated load.~~

~~(iv) Weight of the platform.~~

~~(n) Be easily identifiable by high-visibility color or marking.~~

~~(7) All of the following apply to personnel platform loading:~~

~~(a) The personnel platform shall not be loaded in excess of its rated capacity.~~

~~(b) Both of the following apply to use:~~

~~(i) Personnel platforms shall be used only for employees, their tools, and the materials necessary to do their work. Platforms shall not be used to hoist materials or tools when not hoisting personnel.~~

~~(ii) Exception. Materials and tools to be used during the lift, if secured and distributed in accordance with subrule (7)(c) of this rule may be in the platform for trial lifts.~~

~~(c) Materials and tools shall comply with both of the following:~~

~~(i) Be secured to prevent displacement.~~

~~(ii) Be evenly distributed within the confines of the platform while it is suspended.~~

~~(d) The number of employees occupying the personnel platform shall not exceed the maximum number the platform was designed to hold or the number required to perform the work, whichever is less.~~

~~(8) All of the following apply to attachment and rigging:~~

~~(a) The following apply to hooks and other detachable devices:~~

~~(i) Hooks used in the connection between the hoist line and the personnel platform, including hooks on overhaul ball assemblies, lower load blocks, bridle legs, or other attachment assemblies or components, shall be the following:~~

~~(A) Of a type that can be closed and locked, eliminating the throat opening.~~

~~(B) Closed and locked when attached.~~

~~(ii) Shackles used in place of hooks shall be of the alloy anchor type, and include either of the following:~~

~~(A) A bolt, nut, and retaining pin, in place.~~

~~(B) Of the screw type, with the screw pin secured from accidental removal.~~

~~(iii) Where other detachable devices are used, they shall be of the type that can be closed and locked to the same extent as the devices addressed in subrules (8)(a)(i) and (ii) of this rule. These devices shall be closed and locked when attached.~~

~~(iv) The load line of a crane that is used to raise or lower a work platform shall be equipped with a swivel to reduce the wire rope-induced rotation of the work platform, unless the use of the swivel is not recommended by the wire rope manufacturer.~~
~~(v) Wire rope clips shall be prohibited.~~
~~(b) Rope bridle. When a rope bridle is used to suspend the personnel platform, each bridle leg shall be connected to a master link or shackle in a manner that ensures that the load is evenly divided among the bridle legs.~~
~~(c) Rigging hardware, including wire rope, shackles, rings, master links, and other rigging hardware, and hooks shall be capable of supporting, without failure, at least 5 times the maximum intended load applied or transmitted to that component. Where rotation resistant rope is used, the slings shall be capable of supporting without failure at least 10 times the maximum intended load.~~
~~(d) Eyes in wire rope slings shall be fabricated with thimbles.~~
~~(e) Bridles and associated rigging for suspending the personnel platform shall be used only for the platform and the necessary employees, their tools, and materials necessary to do their work. The bridles and associated rigging shall not have been used for any purpose other than hoisting personnel.~~
~~(9) The following apply to trial lift and inspection:~~
~~(a) A trial lift of an unoccupied personnel platform that is loaded at least to the anticipated lift weight shall be made from ground level, or any other location where employees will enter the platform, to each location to which the personnel platform is to be hoisted and positioned. The trial lift shall be performed immediately before placing personnel on the platform. The competent person shall determine that all systems, controls, and safety devices are activated and functioning properly, that interferences do not exist, and that all configurations necessary to reach the work locations will allow the operator to remain under the 50% limit of the hoist's rated capacity. Materials and tools to be used during the actual lift can be loaded in the platform as provided in subrule (7)(c) of this rule for the trial lift. A single trial lift may be performed at 1 time for all locations that are to be reached from a single setup position.~~
~~(b) The trial lift shall be repeated before hoisting employees when the crane or derrick is moved and set up in a new location or returned to a previously used location. The trial lift shall be repeated when the lift route is changed, unless the competent person determines that the route change is not significant and the route change would not affect the safety of hoisted employees.~~
~~(c) The competent person shall comply with all the following:~~
~~(i) Determine that the lift will not exceed 50% of the equipment's rated capacity at any time during the lift.~~
~~(ii) Confirm that the load radius to be used during the lift has been accurately determined.~~
~~(iii) Conduct a visual inspection of the crane or derrick, rigging, personnel platform, and the crane or derrick base support or ground immediately after the trial lift to determine whether the testing has exposed a defect or produced an adverse effect upon a component or structure.~~
~~(iv) Confirm that, upon the completion of the trial lift process, the test weight has been removed.~~
~~(d) Immediately prior to each lift the platform shall be hoisted a few inches with the personnel, materials, and tools on board and inspected by a competent person to ensure that it is secure and properly balanced. The following conditions shall be determined by a competent person to exist before the lift of personnel proceeds:~~
~~(i) Multiple part lines are not twisted around each other.~~
~~(ii) The primary attachment is centered over the platform.~~

~~(iii) The hoisting system shall be inspected if the load rope is slack to ensure that all ropes are properly seated on drums and in sheaves.~~
~~(iv) Hoist ropes shall be free of deficiencies in accordance with R 408.41013a(1).~~
~~(e) Any condition found during the trial lift and subsequent inspection that fails to meet a requirement of this standard or otherwise creates a safety hazard shall be corrected before hoisting personnel. See R 408.41019b for tag-out and related requirements.~~
~~(10) All of the following apply to load testing:~~
~~(a) Before a work platform is used after fabrication, it shall be load-tested to 2 times the maximum intended load or rated capacity.~~
~~(b) A work platform shall also be load-tested as follows:~~
~~(i) Annually, if used on a regular basis.~~
~~(ii) Before use, if the interval of time between use is more than 1 year.~~
~~(iii) After the crane or work platform has been moved to another location on the jobsite.~~
~~(c) A load test shall follow the maximum intended lift of the work platform.~~
~~(d) After any repair or modification, a platform shall be retested to 2 times its rated capacity.~~
~~(e) A record of the load test shall be maintained by the employer for the life of the platform.~~
~~(11) Both of the following apply to proof testing:~~
~~(a) At each jobsite, before hoisting employees on the personnel platform and after any repair or modification, the platform and rigging shall be proof tested, as required in subrule (10) of this rule, to 125% of the platform's rated capacity by holding it in a suspended position for 5 minutes with the test load evenly distributed on the platform. Proof testing may be done concurrently with the trial lift. After proof testing, a competent person shall inspect the platform and rigging. If a deficiency is found, it shall be corrected and another proof test shall be conducted. Personnel hoisting shall not be conducted until the proof testing requirements are satisfied.~~
~~(b) Personnel hoisting shall not be conducted until the competent person determines that the platform and rigging have successfully passed the proof test.~~
~~(12) All of the following apply to work practices:~~
~~(a) Hoisting of the personnel platform shall be performed in a slow, controlled, cautious manner, with no sudden movements of the equipment or the platform. The maximum rate of travel of a work platform shall be 100 feet per minute. Free-falling shall be prohibited when using the platform to lower personnel.~~
~~(b) Platform occupants shall comply with all of the following:~~
~~(i) Keep all parts of their bodies inside the platform during raising, lowering, and horizontal movement. This provision shall not apply to an occupant of the platform when necessary to position the platform or while performing the duties of a signal person.~~
~~(ii) Not stand, sit on, or work from the top or intermediate rail or toeboard, or use any other means or device to raise their working height.~~
~~(iii) Not pull the platform out of plumb in relation to the hoisting equipment.~~
~~(iv) Not leave the suspended work platform, except for a structural steel connector or a pile driver. If a structural steel connector or a pile driver leaves the suspended platform, a gate shall be provided as prescribed in subrule (6)(e) of this rule. The gate shall comply with the requirements of construction safety standard part 45 "Fall Protection," as referenced in R 408.41003a. The gate shall be securely fastened during all travel and opened only during access to, or egress from, the work platform.~~

~~(v) Before employees exit or enter a hoisted personnel platform that is not landed, the platform shall be secured to the structure where the work is to be performed, unless the employer can demonstrate that securing to the structure would create a greater hazard.~~
~~(c) If the platform is tied to the structure, the operator shall not move the platform until the he or she receives confirmation that it is freely suspended.~~
~~(d) Tag lines shall be used when necessary to control the platform.~~
~~(e) The operator of the crane shall remain at the controls with the engine running when an occupied work platform is in the suspended position.~~
~~(f) A crane that is used to raise or lower a work platform shall be set level on a firm base and shall have the travel lock engaged.~~
~~(g) Platforms without controls. When the platform is not equipped with controls, the equipment operator shall remain at the equipment controls, on site, and in view of the equipment, at all times while the platform is occupied.~~
~~(h) Platforms with controls. When the platform is equipped with controls, all of the following shall be met at all times while the platform is occupied:~~
~~(i) The occupant using the controls in the platform shall be a qualified person with respect to their use, including the safe limitations of the equipment and hazards associated with its operation.~~
~~(ii) The equipment operator shall be at a set of equipment controls that include boom and swing functions of the equipment, and shall be on site and in view of the equipment.~~
~~(iii) The platform operating manual shall be in the platform or on the equipment.~~
~~(i) All of the following apply to environmental conditions:~~
~~(i) Wind. When wind speed, sustained or gusts, exceeds 20 miles per hour at the personnel platform, a qualified person shall determine if, in light of the wind conditions, it is not safe to lift personnel. If it is not safe, the lifting operation shall not begin. If the lifting operation is already in progress, it shall be terminated.~~
~~(ii) Other weather and environmental conditions. A qualified person shall determine if, in light of indications of dangerous weather conditions or other impending or existing danger, it is not safe to lift personnel. If it is not safe, the lifting operation shall not begin. If the lifting operation is already in progress, it shall be terminated.~~
~~(j) Employees being hoisted shall remain in direct communication with the signal person, where used, or the operator.~~
~~(k) All of the following apply to fall protection:~~
~~(i) Except when over water, employees occupying the personnel platform shall be provided and use a personal fall arrest system. The system shall be attached to a structural member within the personnel platform. When working over or near water, the requirements of construction safety standard part 6 "Personal Protective Equipment," as referenced in R 408.41003a, shall apply.~~
~~(ii) The fall arrest system, including the attachment point or anchorage used to comply with subrule(12)(l)(i) of this rule, shall meet the requirements in construction safety standard part 45 "Fall Protection," as referenced in R 408.41003a.~~
~~(l) All of the following apply to other load lines:~~
~~(i) When a crane is being used to raise or lower persons on a work platform, another load shall not be attached to the work platform and another load shall not be raised or lowered at the same time by the same crane.~~
~~(ii) Factory-produced boom-mounted personnel platforms that incorporate a winch as original equipment. Loads may be hoisted by this winch while employees occupy the~~

~~personnel platform only where the load on the winch line does not exceed 500 pounds and does not exceed the rated capacity of the winch and platform.~~
~~(m) All of the following apply to traveling—equipment other than derricks:~~
~~(i) Hoisting of employees while the equipment is traveling is prohibited, except for either subparagraph (A) or (B) of this paragraph:~~
~~(A) Equipment that travels on fixed rails.~~
~~(B) When the employer demonstrates that there is no less hazardous way to perform the work.~~
~~(C) This exception does not apply to rubber-tired equipment.~~
~~(ii) When employees are hoisted while the equipment is traveling, all of the following criteria shall be met:~~
~~(A) Equipment travel shall be restricted to a fixed track or runway.~~
~~(B) Where a runway is used, it shall be a firm, level surface designed, prepared and designated as a path of travel for the weight and configuration of the equipment being used to lift and travel with the personnel platform. An existing surface may be used as long as it meets these criteria.~~
~~(C) Equipment travel shall be limited to boom length.~~
~~(D) The boom shall be parallel to the direction of travel, except where it is safer to do otherwise.~~
~~(E) A complete trial run must be performed to test the route of travel before employees are allowed to occupy the platform. This trial run can be performed at the same time as the trial lift required by subrule (9) of this rule which tests the lift route.~~
~~(n) Traveling—derricks. Derricks shall be prohibited from traveling while personnel are hoisted.~~
~~(13) [Reserved.]~~
~~(14) All of the following apply to pre-lift meeting:~~
~~(a) The employer shall hold a pre-lift meeting to review the appropriate requirements and procedures to be followed. The meeting shall be held before the trial lift at each new work location and shall be repeated for any employees who are newly assigned to the operation.~~
~~(b) All of the following entities shall attend the pre-lift meeting:~~
~~(i) The crane operator.~~
~~(ii) The signalperson, if necessary for the lift.~~
~~(iii) Employees to be lifted.~~
~~(iv) The person who is responsible for the task to be performed.~~
~~(15) Hoisting personnel near power lines. Hoisting personnel within 20 feet of a power line that is up to 350 kV and hoisting personnel within 50 feet of a power line that is over 350 kV shall be prohibited, except for work covered by construction safety standard part 16 "Power Transmission and Distribution," as referenced in R 408.41003a.~~
~~(16) Hoisting personnel in drill shafts. When hoisting employees into and out of drill shafts that are up to and including 8 feet in diameter, all of the following requirements shall be met:~~
~~(a) The employee shall be in either a personnel platform or on a boatswain's chair.~~
~~(b) If using a personnel platform, subrules (1) to (15) of this rule shall apply.~~
~~(c) If using a boatswain's chair all of the following requirements shall be met:~~
~~(i) The following subrules shall apply: (1), (3), (4)(a), (4)(c), (4)(d), (6)(a), (6)(c), (7)(a), (7)(b)(i), (7)(c)(i), (7)(f), (8), (9), (12)(a), (12)(h), (12)(j), (12)(k), (12)(m)(i), (14), (15) of this rule. Where the terms ''personnel platform'' or ''platform'' are used in these subrules, they shall be substituted with the term ''boatswain's chair.''~~
~~(ii) A signal person shall be stationed at the shaft opening.~~

~~(iii) The employee shall be hoisted in a slow, controlled descent and ascent.~~
~~(iv) The employee shall use personal fall protection equipment, including a full body harness, attached independent of the crane or derrick.~~
~~(v) The fall protection equipment shall meet the applicable requirements in construction safety standard part 45 "Fall Protection," as referenced in R 408.41003a.~~
~~(vi) The boatswain's chair, excluding the personal fall arrest system anchorages, shall be capable of supporting, without failure, its own weight and at least 5 times the maximum intended load.~~
~~(vii) Not more than 1 person shall be hoisted at a time.~~
~~(17) Hoisting personnel for pile driving operations. When hoisting an employee in pile driving operations all of the following requirements shall be met:~~
~~(a) The employee shall be in a personnel platform or boatswain's chair.~~
~~(b) For lattice boom cranes the cable shall be clearly marked so that it can easily be seen by the operator at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, or use a spotter who is in direct communication with the operator to inform the operator when this point is reached. For telescopic boom cranes the cable shall be clearly marked so that it can be easily seen by the operator at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, and use a spotter who is in direct communication with the operator to inform the operator when this point is reached.~~
~~(c) If using a personnel platform, subrules (2) to (15) of this rule shall apply.~~
~~(d) If using a boatswain's chair, all of the following requirements shall be met:~~
~~(i) The following subrules shall apply: (1), (3), (4)(a), (4)(c), (4)(d), (6)(a), (6)(c), (7)(a), (7)(b)(i), (7)(c)(i), (7)(f), (8), (9), (12)(a), (12)(h), (12)(j), (12)(k), (12)(m)(i), (14), (15) of this rule. Where the terms ''personnel platform'' or ''platform'' are used in these subrules, they shall be substituted with the term "boatswains chair.''~~
~~(ii) The employee shall be hoisted in a slow, controlled descent and ascent.~~
~~(iii) The employee shall use personal fall protection equipment, including a full body harness, independently attached to the lower load block or overhaul ball.~~
~~(iv) The fall protection equipment shall meet the applicable requirements in construction safety standard part 45 "Fall Protection," as referenced in R 408.41003a.~~
~~(v) The boatswain's chair, excluding the personal fall arrest system anchorages, shall be capable of supporting, without failure, its own weight and at least 5 times the maximum intended load.~~
~~(vi) Not more than 1 person shall be hoisted at a time.~~
~~(18) [Reserved.]~~
~~(19) Hoisting personnel for marine transfer. When hoisting employees solely for transfer to or from a marine worksite, the following requirements shall be met:~~
~~(a) The employee shall be in either a personnel platform or a marine-hoisted personnel transfer device.~~
~~(b) If using a personnel platform, subrules (1) to (15) of this rule shall apply.~~
~~(c) If using a marine-hoisted personnel transfer device, all of the following requirements shall be met:~~
~~(i) The following subrules shall apply: (1), (3)(b), (4)(a), (4)(c), (4)(d), (6)(a), (6)(b), (6)(c), (6)(j)(iv), (7)(a), (7)(f), (8), (9), (11), (12)(a), (12)(j), (12)(k), (12)(m)(i), (12)(n), (14), (15) of this rule. Where the terms ''personnel platform'' or ''platform'' are used in these subrules, they shall be substituted with the term ''marine-hoisted personnel transfer device.''~~
~~(ii) The transfer device shall be used only for transferring workers.~~

~~(iii) The number of workers occupying the transfer device shall not exceed the maximum number it was designed to hold.~~
~~(iv) Each employee shall wear a U.S. Coast Guard personal flotation device approved for industrial use.~~
~~(20) Hoisting personnel for steel or concrete storage-tanks, shaft and chimney operations. When hoisting an employee in steel or concrete storage tanks, shaft and chimney operations, the following requirements shall be met:~~
~~(a) The employee shall be in a personnel platform except when the employer can demonstrate that use of a personnel platform is infeasible. In this case, a boatswain's chair shall be used.~~
~~(b) If using a personnel platform, subrules (1) to (15) of this rule shall apply.~~
~~(c) If using a boatswain's chair, all of the following requirements shall be met:~~
~~(i) The following subrules shall apply: (1), (3), (4)(a), (4)(c), (4)(d), (6)(a), (6)(c), (7)(a), (7)(b)(i), (7)(c)(i), (7)(f), (8), (9), (12)(a), (12)(h), (12)(j), (12)(k), (12)(m)(i), (14), (15) of this rule. Where the terms ''personnel platform'' or ''platform'' are used in these subrules, they shall be substituted with the term ''boatswain's chair.''~~
~~(ii) The employee shall be hoisted in a slow, controlled descent and ascent.~~
~~(iii) The employee shall use personal fall protection equipment, including a full body harness, attached independent of the crane or derrick. When there is no adequate structure for attachment of personal fall arrest equipment as required in construction safety standard part 45 "Fall Protection," 1926.502(d)(15), as referenced in R 408.41003a, the attachment shall be to the lower load block or overhaul ball.~~
~~(iv) The fall protection equipment shall meet the applicable requirements in construction safety standard part 45 "Fall Protection," as referenced in R 408.41003a.~~
~~(v) The boatswain's chair, excluding the personal fall arrest system anchorages, shall be capable of supporting, without failure, its own weight and at least 5 times the maximum intended load.~~
~~(vi) Not more than 1 person shall be hoisted at a time.~~

R 408.41021b ~~Work platforms; derrick hoist machine requirements.~~ **Rescinded.**
~~Rule 1021b. (a) A derrick shall comply with the provisions of ASME standard B30.7 "Base-mounted Drum Hoists," 1994 edition, which is adopted by reference in R 408.41003a, and be inspected on the jobsite by the employer to assure compliance. A record of the inspection shall be available on the jobsite.~~
~~(b) A derrick shall have full power for raising and lowering the work platform. Free-spooling is prohibited.~~
~~(c) The controls of a derrick shall be deadman controls that will return the machine to neutral and engage the drum brakes.~~
~~(d) A derrick shall be positioned so that the distance between the drum and foot block will allow proper spooling of wire rope.~~
~~(e) A derrick base shall be properly aligned and anchored on 4 corners to prevent movement. A 3 or 4 drum hoist may be anchored by only the 2 rear corners of the base when the cables from the drums extend horizontally to the foot block, and the anchors are designed by a registered professional engineer, to resist all cable loads applied to the hoist.~~
~~(f) The foot block of a derrick shall be anchored to prevent displacement and be supported to maintain proper alignment.~~

~~(g) All wire rope running lines shall be guarded from the drum of the hoist to the foot block and vertically where accidental contact is possible.~~
~~(h) A proper fleet angle shall be maintained between the foot block and the drum of the base-mounted drum hoist.~~
~~(i) The employer shall ensure that a hoist house for a derrick has a roof to protect the operator from falling objects and is enclosed to protect the operator from the weather.~~

R 408.41022a ~~Work area control.~~ **Rescinded.**
~~Rule 1022a. (1) The following apply to swing radius hazards:~~
~~(a) The requirements in subrule (1)(b) of this rule shall apply when there are accessible areas in which the equipment's rotating superstructure, whether permanently or temporarily mounted, poses a reasonably foreseeable risk of either of the following:~~
~~(i) Striking and injuring an employee.~~
~~(ii) Pinching or crushing an employee against another part of the equipment or another object.~~
~~(b) To prevent employees from entering these hazard areas, the employer shall do all of the following:~~
~~(i) Train each employee assigned to work on or near the equipment in how to recognize struck-by and pinch or crush hazard areas posed by the rotating superstructure.~~
~~(ii) Erect and maintain control lines, warning lines, railings or similar barriers to mark the boundaries of the hazard areas. Exception: When the employer can demonstrate that it is neither feasible to erect such barriers on the ground nor on the equipment, the hazard areas shall be clearly marked by danger signs and high visibility markings on the equipment that identify the hazard areas. In addition, the employer shall train each employee to understand what these markings signify.~~
~~(iii) A danger sign, as prescribed in construction safety standard part 22 "Signals, Signs, Tags, and Barricades," as referenced in R 408.41003a, shall be affixed to the rear and sides of the house and counterweight. The additional lettering on the danger sign shall indicate that the counterweight is swinging.~~
~~(c) Both of the following apply to protecting employees in the hazard area:~~
~~(i) Before an employee goes to a location in the hazard area that is out of view of the operator, the employee, or someone instructed by the employee, shall ensure that the operator is informed that he or she is going to that location.~~
~~(ii) When the operator knows that an employee went to a location covered by subrule (1)(a) of this rule, the operator shall not rotate the superstructure until the operator is informed in accordance with a prearranged system of communication that the employee is in a safe position.~~
~~(2) When any part of a crane or derrick is within the working radius of another crane or derrick, the controlling entity shall institute a system to coordinate operations. If there is no controlling entity, the employer, if there is only 1 employer operating the multiple pieces of equipment, or employers, shall institute this system.~~

R 408.41023a ~~Keeping clear of the load.~~ **Rescinded.**
~~Rule 1023a. (1) Hoisting routes that minimize the exposure of employees to hoisted loads shall be used. An employee shall not be permitted under a suspended load.~~
~~(2) No employee shall be within the fall zone of a suspended load that is not being moved, except for employees engaged in any of the following:~~

~~(a) Hooking, unhooking or guiding a load.~~
~~(b) Initially attaching the load to a component or structure.~~
~~(c) Operating a concrete hopper or concrete bucket.~~
~~(3) When employees are engaged in hooking, unhooking, or guiding the load, or are in the initial connection of a load to a component or structure and are within the fall zone, all of the following criteria shall be met:~~
~~(a) The materials being hoisted shall be rigged to prevent unintentional displacement.~~
~~(b) Hooks with self-closing latches or their equivalent shall be used. Exception: ''J'' hooks are permitted to be used for setting wooden trusses.~~
~~(c) The materials shall be rigged by a qualified rigger.~~
~~(4) Receiving a load. Only employees needed to receive a load are permitted to be within the fall zone when a load is being landed.~~
~~(5) During a tilt-up or tilt-down operation both of the following shall be met:~~
~~(a) No employee shall be directly under the load.~~
~~(b) Only employees essential to the operation are permitted in the fall zone, but not directly under the load. An employee is essential to the operation if the employee is conducting 1 of the following operations and the employer can demonstrate it is infeasible for the employee to perform that operation from outside the fall zone:~~
~~(i) Physically guide the load.~~
~~(ii) Closely monitor and give instructions regarding the load's movement.~~
~~(iii) Either detach it from or initially attach it to another component or structure including, but not limited to, making an initial connection or installing bracing. Note: Boom free fall shall be prohibited when an employee is in the fall zone of the boom or load, and load line free fall shall be prohibited when an employee is directly under the load. See R 408.41024a.~~
~~(6) The rotational speed of a crane, derrick, or excavation equipment shall be such that the center of the load shall not swing out beyond the radius of the point sheave in use. A tag line shall be used when rotation of the load would be hazardous.~~

R 408.41024a ~~Free fall and controlled load lowering.~~ **Rescinded.**
~~Rule 1024a. (1) All of the following apply to boom free fall prohibitions:~~
~~(a) The use of equipment in which the boom is designed to free fall, live boom, shall be prohibited in each of the following circumstances:~~
~~(i) An employee is in the fall zone of the boom or load.~~
~~(ii) An employee is being hoisted.~~
~~(iii) The load or boom is directly over a power line or over any part of the area extending the Table A, of R 408.41016b, clearance distance to each side of the power line; or any part of the area extending the Table A clearance distance to each side of the power line is within the radius of vertical travel of the boom or the load.~~
~~(iv) The load is over a shaft, except where there are no employees in the shaft.~~
~~(v) The load is over a cofferdam, except where there are no employees in the fall zone of the boom or the load.~~
~~(vi) Lifting operations are taking place in a refinery or tank farm.~~
~~(b) The use of equipment in which the boom is designed to free fall, live boom, is permitted only when none of the circumstances listed in subrule (1)(a) of this rule are present and either of the following applies:~~
~~(i) The equipment was manufactured prior to October 31, 1984.~~

~~(ii) The equipment is a floating crane or derrick or a land crane or derrick on a vessel or flotation device.~~
~~(2) Preventing boom free fall. When the use of equipment with a boom that is designed to free fall, live boom, is prohibited, the boom hoist shall have a secondary mechanism or device designed to prevent the boom from falling if the primary system used to hold or regulate the boom hoist fails, as follows:~~
~~(a) Friction drums shall have both of the following:~~
~~(i) A friction clutch and, in addition, a braking device, to allow for controlled boom lowering.~~
~~(ii) A secondary braking or locking device, which is manually or automatically engaged, to back-up the primary brake while the boom is held, such as a secondary friction brake or a ratchet and pawl device.~~
~~(b) Hydraulic drums shall have an integrally mounted holding device or internal static brake to prevent boom hoist movement in the event of hydraulic failure.~~
~~(c) Neither clutches nor hydraulic motors shall be considered brake or locking devices for purposes of this standard.~~
~~(d) Hydraulic boom cylinders shall have an integrally mounted holding device.~~
~~(3) Preventing uncontrolled retraction. Hydraulic telescoping booms shall have an integrally mounted holding device to prevent the boom from retracting in the event of hydraulic failure.~~
~~(4) Load line free fall. In each of the following circumstances, controlled load lowering shall be required and free fall of the load line hoist shall be prohibited:~~
~~(a) An employee is directly under the load.~~
~~(b) An employee is being hoisted.~~
~~(c) The load is directly over a power line, or over any part of the area extending the Table A, of R 408.41016b, clearance distance to each side of the power line, or any part of the area extending the Table A clearance distance to each side of the power line is within the radius of vertical travel of the load.~~
~~(d) The load is over a shaft.~~
~~(e) The load is over a cofferdam, except when there are no employees in the fall zone of the load.~~

R 408.41025a ~~Derricks.~~ **Rescinded.**
~~Rule 1025a. (1) This rule contains supplemental requirements for derricks, whether temporarily or permanently mounted. All provisions of this standard apply to derricks unless specified otherwise.~~
~~(2) All of the following apply to operation procedures:~~
~~(a) R 408.41019b shall apply, except for R 408.41019b(3).~~
~~(b) Load chart contents. Load charts shall contain at least all the following information:~~
~~(i) Rated capacity at corresponding ranges of boom angle or operating radii.~~
~~(ii) Specific lengths of components to which the rated capacities apply.~~
~~(iii) Required parts for hoist reeving.~~
~~(iv) Size and construction of rope, which also may be included in the operating manual.~~
~~(c) Load chart location. An employer shall ensure that a durable and legible rating chart is at the operation station for all derricks.~~
~~(3) All of the following apply to construction:~~
~~(a) General requirements consist of the following:~~

~~(i) Derricks shall be constructed to meet all stresses imposed on members and components when installed and operated in accordance with the manufacturer's or builder's procedures and within its rated capacity.~~
~~(ii) Welding of load sustaining members shall conform to recommended practices in ANSI/AWS D14.3 "Specification for Welding Earthmoving and Construction Equipment," 1994 edition, which is adopted by reference in R 408.41003a, or AWS D1.1/D1.1M "Structural Welding Code – Steel Updates Every 5 Years," 2002 edition, which is adopted by reference in R 408.41003a.~~
~~(b) All of the following apply to guy derricks:~~
~~(i) The minimum number of guys shall be 6, with equal spacing, except where a qualified person or derrick manufacturer approves variations from these requirements and revises the rated capacity to compensate for such variations.~~
~~(ii) Guy derricks shall not be used unless the employer has the following guy information from the manufacturer or a qualified person when not available from the manufacturer:~~
~~(A) The number of guys.~~
~~(B) The spacing around the mast.~~
~~(C) The size, grade, and construction of rope to be used for each guy.~~
~~(iii) For guy derricks manufactured after December 18, 1970, in addition to the information required in subdivision (b)(ii) of this subrule, the employer shall have the following guy information from the manufacturer or a qualified person, when not available from the manufacturer:~~
~~(A) The amount of initial sag or tension.~~
~~(B) The amount of tension in guy line rope at anchor.~~
~~(iv) The mast base shall permit the mast to rotate freely with allowance for slight tilting of the mast caused by guy slack.~~
~~(v) The mast cap shall comply with all of the following:~~
~~(A) Permit the mast to rotate freely.~~
~~(B) Withstand tilting and cramping caused by the guy loads.~~
~~(C) Be secured to the mast to prevent disengagement during erection.~~
~~(D) Be provided with means for attaching guy ropes.~~
~~(c) All of the following apply to stiffleg derricks:~~
~~(i) The mast shall be supported in the vertical position by at least 2 stifflegs. One end of each stiffleg shall be connected to the top of the mast and the other end securely anchored.~~
~~(ii) The stifflegs shall be capable of withstanding the loads imposed at any point of operation within the load chart range.~~
~~(iii) The mast base shall comply with both of the following:~~
~~(A) Permit the mast to rotate freely, when necessary.~~
~~(B) Permit deflection of the mast without binding.~~
~~(iv) The mast shall be prevented from lifting out of its socket when the mast is in tension.~~
~~(v) The stiffleg connecting member at the top of the mast shall comply with all of the following:~~
~~(A) Permit the mast to rotate freely, when necessary.~~
~~(B) Withstand the loads imposed by the action of the stifflegs.~~
~~(C) Be secured so as to oppose separating forces.~~
~~(d) All of the following apply to gin pole derricks:~~
~~(i) Guy lines shall be sized and spaced so as to make the gin pole stable in both boomed and vertical positions. Exception: When the size, spacing, or both, of guy lines do not result in~~

~~the gin pole being stable in both boomed and vertical positions, the employer shall ensure that the derrick is not used in an unstable position.~~
~~(ii) The base of the gin pole shall permit movement of the pole, when necessary.~~
~~(iii) The gin pole shall be anchored at the base against horizontal forces, when such forces are present.~~
~~(e) Chicago boom derricks. The fittings for stepping the boom and for attaching the topping lift shall be arranged to comply with all of the following:~~
~~(i) Permit the derrick to swing at all permitted operating radii and mounting heights between fittings.~~
~~(ii) Accommodate attachment to the upright member of the host structure.~~
~~(iii) Withstand the forces applied when configured and operated in accordance with the manufacturer's or builder's procedures and within its rated capacity.~~
~~(iv) Prevent the boom or topping lift from lifting out under tensile forces.~~
~~(4) All of the following apply to anchoring and guying:~~
~~(a) Load anchoring data developed by the manufacturer or a qualified person shall be used.~~
~~(b) Guy derricks.~~
~~(i) The mast base shall be anchored.~~
~~(ii) The guys shall be secured to the ground or other firm anchorage.~~
~~(iii) The anchorage and guying shall be designed to withstand maximum horizontal and vertical forces encountered when operating within rated capacity with the particular guy slope and spacing specified for the application.~~
~~(c) All of the following apply to stiffleg derricks:~~
~~(i) The mast base and stifflegs shall be anchored.~~
~~(ii) The mast base and stifflegs shall be designed to withstand maximum horizontal and vertical forces encountered when operating within rated capacity with the particular stiffleg spacing and slope specified for the application.~~
~~(5) All of the following apply to swingers and hoists:~~
~~(a) The boom, swinger mechanisms, and hoists shall be suitable for the derrick work intended and shall be anchored to prevent displacement from the imposed loads.~~
~~(b) All of the following apply to hoists:~~
~~(i) Base mounted drum hoists shall meet the requirements in the following sections of ASME B30.7 "Base Mounted Drum Hoists," 2001 edition, which is adopted by reference in R 408.41003a:~~
~~(A) Section 7-1.1 (''Load ratings and markings'').~~
~~(B) Section 7-1.2 (''Construction''), except: 7-1.2.13 (''Operator's cab''); 7-1.2.15 (''Fire extinguishers'').~~
~~(C) Section 7-1.3 (''Installation'').~~
~~(D) Applicable terms in section 7-0.2 (''Definitions'').~~
~~(ii) Load tests for new hoists. The employer shall ensure that new hoists are load tested to a minimum of 110% of rated capacity, but not more than 125% of rated capacity, unless otherwise recommended by the manufacturer. This requirement shall be met when the manufacturer has conducted this testing.~~
~~(iii) Repaired or modified hoists. Hoists that have had repairs, modifications, or additions affecting their capacity or safe operation shall be evaluated by a qualified person to determine if a load test is necessary. If it is necessary, load testing shall be conducted in accordance with subdivision (b)(ii) and (iv) of this subrule.~~
~~(iv) Load test procedure. Load tests required by subdivision (b)(ii) or (iii) of this subrule shall be conducted to comply with all of the following:~~

~~(A) The test load shall be hoisted a vertical distance to assure that the load is supported by the hoist and held by the hoist brake or brakes.~~
~~(B) The test load shall be lowered, stopped, and held with the brake or brakes.~~
~~(C) The hoist shall not be used unless a competent person determines that the test has been passed.~~
~~(6) All of the following apply to operational aids:~~
~~(a) R 408.41019a shall apply, except for R 408.41019a(4)(a), R 408.41019a(5)(a), and R 408.41019a(5)(d).~~
~~(b) Boom angle aid. A boom angle indicator shall not be required. If the derrick is not equipped with a functioning boom angle indicator, the employer shall ensure that 1 of the following is met:~~
~~(i) The boom hoist cable shall be marked with caution and stop marks. The stop marks shall correspond to maximum and minimum allowable boom angles. The caution and stop marks shall be in view of the operator, or a spotter who is in direct communication with the operator.~~
~~(ii) An electronic or other device that signals the operator in time to prevent the boom from moving past its maximum and minimum angles, or automatically prevents such movement, shall be used.~~
~~(c) All of the following apply to load weight or capacity devices:~~
~~(i) Derricks manufactured more than 1 year after November 8, 2010 with a maximum rated capacity over 6,000 pounds shall have at least 1 of the following: a load weighing device, a load moment or rated capacity indicator, or a load moment or rated capacity limiter. Temporary alternative measures: The weight of the load shall be determined from a source recognized by the industry, such as the load's manufacturer, or by a calculation method recognized by the industry, such as calculating a steel beam from measured dimensions and a known per foot weight, or by other equally reliable means. This information shall be provided to the operator prior to the lift. See R 408.41019b(14) for additional requirements.~~
~~(ii) A load weight or capacity device that is not working properly shall be repaired not later than 30 days after the deficiency occurs. Exception: If the employer documents that it has ordered the necessary parts within 7 days of the occurrence of the deficiency and the part is not received in time to complete the repair in 30 days, the repair shall be completed within 7 days of receipt of the parts.~~
~~(7) All of the following apply to post-assembly approval and testing—new or reinstalled derricks:~~
~~(a) All of the following apply to anchorages:~~
~~(i) Anchorages, including the structure to which the derrick is attached, if applicable, shall be approved by a qualified person.~~
~~(ii) If a rock or hairpin anchorage is used, the qualified person shall determine if any special testing of the anchorage is needed. If so, it shall be tested accordingly.~~
~~(b) Functional test. Prior to initial use, new or reinstalled derricks shall be tested by a competent person with no hook load to verify proper operation. This test shall include all of the following:~~
~~(i) Lifting and lowering the hook or hooks through the full range of hook travel.~~
~~(ii) Raising and lowering the boom through the full range of boom travel.~~
~~(iii) Swinging in each direction through the full range of swing.~~
~~(iv) Actuating the anti two-block and boom hoist limit devices, if provided.~~
~~(v) Actuating locking, limiting, and indicating devices, if provided.~~

~~(c) Load test. Prior to initial use, new or reinstalled derricks shall be load tested by a competent person. The test load shall meet all of the following requirements:~~
~~(i) Test loads shall be at least 100% and not more than 110% of the rated capacity, unless otherwise recommended by the manufacturer or qualified person. The test load shall not be less than the maximum anticipated load.~~
~~(ii) The test shall consist of all of the following:~~
~~(A) Hoisting the test load a few inches and holding to verify that the load is supported by the derrick and held by the hoist brake or brakes.~~
~~(B) Swinging the derrick, if applicable, the full range of its swing, at the maximum allowable working radius for the test load.~~
~~(C) Booming the derrick up and down within the allowable working radius for the test load.~~
~~(D) Lowering, stopping, and holding the load with the brake or brakes.~~
~~(iii) The derrick shall not be used unless the competent person determines that the test has been passed.~~
~~(d) Documentation. Tests conducted under this paragraph shall be documented. The document shall contain the date, test results and the name of the tester. The document shall be retained until the derrick is retested or dismantled, whichever occurs first. All of these documents shall be available, during the applicable document retention period, to all persons who conduct inspections in accordance with R 408.41012a.~~
~~(8) Load testing repaired or modified derricks. Derricks that have had repairs, modifications, or additions affecting the derrick's capacity or safe operation shall be evaluated by a qualified person to determine if a load test is necessary. If a load test is needed, it shall be conducted and documented in accordance with subrule (7) of this rule.~~
~~(9) [Reserved.]~~
~~(10) Power failure procedures. If power fails during operations, the derrick operator shall safely stop operations, which shall include all of the following:~~
~~(a) Setting all brakes or locking devices.~~
~~(b) Moving all clutch and other power controls to the off position.~~
~~(11) Both of the following apply to use of winch heads:~~
~~(a) Ropes shall not be handled on a winch head without the knowledge of the operator.~~
~~(b) While a winch head is being used, the operator shall be within reach of the power unit control lever.~~
~~(12) [Reserved.]~~
~~(13) Both of the following apply to securing the boom:~~
~~(a) When the boom is being held in a fixed position, dogs, pawls, or other positive holding mechanisms on the boom hoist shall be engaged.~~
~~(b) When taken out of service for 30 days or more, the boom shall be secured by 1 of the following methods:~~
~~(i) Laid down.~~
~~(ii) Secured to a stationary member, as nearly under the head as possible, by attachment of a sling to the load block.~~
~~(iii) For guy derricks, lifted to a vertical position and secured to the mast.~~
~~(iv) For stiffleg derricks, secured against the stiffleg.~~
~~(14) The process of jumping the derrick shall be supervised by the A/D director.~~
~~(15) Derrick operations shall be supervised by a competent person.~~
~~(16) Inspections. In addition to the requirements in R 408.41012a, the following additional items shall be included in the inspections:~~
~~(a) Daily: Guys for proper tension.~~

~~(b) Both of the following items shall be included in annual inspections:~~
~~(i) Gudgeon pin for cracks, wear, and distortion.~~
~~(ii) Foundation supports for continued ability to sustain the imposed loads.~~
~~(17) Qualification and Training. The employer shall train each operator of a derrick on the safe operation of equipment the individual will operate. R 408.41008a of this standard shall not apply.~~

R 408.41025b ~~Base-mounted drum hoists.~~ **Rescinded.**
~~Rule 1025b. (a) Exposed moving parts on base mounted hoists, such as gears, projecting screws, setscrews, chain, cables, chain sprockets, and reciprocating or rotating parts, shall be guarded.~~
~~(b) All controls used during the normal operating cycle shall be located within easy reach of the operator's station. Electric motor-operated hoists shall have a means to stop remotely operated hoists if the controls are ineffective.~~
~~(c) Electric motor-operated hoists shall be equipped with both of the following items:~~
~~(i) A device that will disconnect all motors from the line upon power failure and that will not permit any motor to be restarted until the controller handle is brought to the "off" position.~~
~~(ii) Where applicable, an overspeed-prevention device.~~
~~(d) All base-mounted drum hoists shall comply with R 408.41025a(5)(b)(i).~~

R 408.41026a ~~Supplemental requirements for multiple-crane or derrick lifts.~~ **Rescinded.**
~~Rule 1026a. (1) Plan development. Before beginning a crane or derrick operation in which more than 1 crane or derrick will be supporting the load, the operation shall be planned. The planning shall meet all of the following requirements:~~
~~(a) Be developed by a qualified person.~~
~~(b) Be designed to ensure that the requirements of this standard are met.~~
~~(c) When the qualified person determines that engineering expertise is needed for the planning, the employer shall ensure that it is provided.~~
~~(2) Both of the following apply to plan implementation:~~
~~(a) The multiple-crane or derrick lift shall be directed by a lift director who meets the criteria for both a competent person and a qualified person, or a competent person who is assisted by 1 or more qualified persons.~~
~~(b) The lift director shall review the plan in a meeting with all workers who will be involved with the operation.~~

R 408.41027a ~~Design, construction, and testing.~~ **Rescinded.**
~~Rule 1027a. (1) This rule applies to equipment that has a manufacturer-rated hoisting or lifting capacity of more than 2,000 pounds.~~
~~(2) Mobile cranes, including crawler and truck, and locomotive cranes manufactured prior to November 8, 2010 shall meet at least 1 of the following applicable requirements for design, construction, and testing:~~
~~(a) ANSI/ASME B30.5 "Mobile and Locomotive Cranes," 1994 edition, which is adopted by reference in R 408.41003a,~~
~~(b) PCSA Standard No. 4 "Mobile Power Crane and Excavator and Hydraulic Crane Standards," 1983 edition, which is adopted by reference in R 408.41003a.~~
~~(c) The requirements in subrule (3) of this rule.~~

~~(d) The applicable DIN standards that were in effect at the time of manufacture.~~
~~(3) Mobile cranes, including crawler and truck, and locomotive cranes manufactured on or after November 8, 2010 shall meet the following portions of ANSI/ASME B30.5 "Mobile and Locomotive Cranes," 2004 edition, which is adopted by reference in R 408.41003a, as applicable:~~
~~(a) In section 5-1.1.1 (''Load Ratings—Where Stability Governs Lifting Performance''), paragraphs (a)—(d) (including subparagraphs).~~
~~(b) In section 5-1.1.2 (''Load Ratings—Where Structural Competence Governs Lifting Performance''), paragraph (b).~~
~~(c) Section 5-1.2 (''Stability (Backward and Forward)'').~~
~~(d) In section 5-1.3.1 (''Boom Hoist Mechanism''), subdivisions (a), (b)(1) and (2) of this subrule, except that when using rotation resistant rope, R 408.41014a(5)(d)(ii) applies.~~
~~(e) In section 5-1.3.2 (''Load Hoist Mechanism''), subdivision (a)(2) to (a)(4) (including subparagraphs), (b) (including subparagraphs), (c) (first sentence only) and (d).~~
~~(f) Section 5-1.3.3 (''Telescoping Boom'').~~
~~(g) Section 5-1.4 (''Swing Mechanism'').~~
~~(h) In section 5-1.5 (''Crane Travel''), all provisions except 5-1.5.3(d).~~
~~(i) In section 5-1.6 (''Controls''), all provisions except 5-1.6.1 (c).~~
~~(j) Section 5-1.7.4 (''Sheaves'').~~
~~(k) Section 5-1.7.5 (''Sheave sizes'').~~
~~(l) In section 5-1.9.1 (''Booms''), paragraph (f).~~
~~(m) Section 5-1.9.3 (''Outriggers'').~~
~~(n) Section 5-1.9.4 (''Locomotive Crane Equipment'').~~
~~(o) Section 5-1.9.7 (''Clutch and Brake Protection'').~~
~~(p) In section 5-1.9.11 (''Miscellaneous equipment''), paragraphs (a), (c), (e), and (f).~~
~~(4) Prototype testing: mobile cranes, including crawler and truck, and locomotive cranes manufactured on or after November 8, 2010 shall meet the prototype testing requirements in Test Option A or Test Option B of this rule. Tower cranes manufactured on or after November 8, 2010 shall meet the prototype testing requirements in British European Standards BS EN 14439 "Cranes—Safety—Tower Cranes," 2006 edition, which is adopted by reference in R 408.41003a.~~
~~Note: Prototype testing of crawler, locomotive and truck cranes manufactured prior to November 8, 2010 shall conform to subdivision (a) of this subrule.~~
~~(a) Test Option A.~~
~~(i) The following shall apply to equipment with cantilevered booms, such as hydraulic boom cranes: All the tests listed in SAE J1063 "Cantilevered Boom Crane Structures—Method of Test," November 1993 edition Table 1, which is adopted by reference in R 408.41003a, shall be performed to load all critical structural elements to their respective limits. All the strength margins listed in SAE J1063 "Cantilevered Boom Crane Structures—Method of Test," November 1993 edition Table 2, which is adopted by reference in R 408.41003a, shall be met.~~
~~(ii) The following applies to equipment with pendant supported lattice booms: All the tests listed in SAE J987 "Lattice Boom Cranes—Method of Test," June 2003 Table 1, which is adopted by reference in R 408.41003a, shall be performed to load all critical structural elements to their respective limits. All the strength margins listed in SAE J987 "Lattice Boom Cranes—Method of Test," June 2003 Table 2, which is adopted by reference in R 408.41003a, shall be met.~~

~~(b) Test Option B. The testing and verification requirements of BS EN 13000 "Cranes – Mobile Cranes," 2004 edition, which is adopted by reference in R 408.41003a, shall be met. In applying BS EN 13000 "Cranes – Mobile Cranes," 2004 edition, all of the following additional requirements shall be met:~~

~~(i) The following shall apply to equipment with cantilevered booms, such as hydraulic boom cranes: The analysis methodology, computer modeling, shall demonstrate that all load cases listed in SAE J1063 "Cantilevered Boom Crane Structures – Method of Test," November 1993 edition, which is adopted by reference in R 408.41003a, meet the strength margins listed in SAE J1063 "Cantilevered Boom Crane Structures – Method of Test," November 1993 edition Table 2.~~

~~(ii) The following shall apply to equipment with pendant supported lattice booms: The analysis methodology, computer modeling, shall demonstrate that all load cases listed in SAE J987 "Lattice Boom Cranes – Method of Test," June 2003 edition, which is adopted by reference in R 408.41003a, meet the strength margins listed in SAE J987 "Lattice Boom Cranes – Method of Test," June 2003 Table 2.~~

~~(iii) Analysis verification. The physical testing requirements under SAE J1063 "Cantilevered Boom Crane Structures – Method of Test," November 1993 edition, which is adopted by reference in R 408.41003a, and SAE J987 "Lattice Boom Cranes – Method of Test," June 2003 edition, which is adopted by reference in R 408.41003a, shall be met unless the reliability of the analysis methodology, computer modeling, has been demonstrated by a documented history of verification through strain gauge measuring or strain gauge measuring in combination with other physical testing.~~

~~(5) All equipment covered by this standard shall meet all of the following requirements:~~

~~(a) Rated capacity and related information. The information available in the cab, as specified in R 408.41019b(3), regarding ''rated capacity'' and related information shall include, at a minimum, the following information:~~

~~(i) A complete range of the manufacturer's equipment rated capacities, as follows:~~

~~(A) At all manufacturer approved operating radii, boom angles, work areas, boom lengths and configurations, jib lengths and angles or offset.~~

~~(B) Alternate ratings for use and nonuse of option equipment which affects rated capacities, such as outriggers, stabilizers, and extra counterweights.~~

~~(ii) A work area chart for which capacities are listed in the load chart. Note: An example of this type of chart is in ANSI/ASME B30.5 "Mobile and Locomotive Cranes," 2004 edition, section 5–1.1.3, Figure 11.~~

~~(iii) The work area figure and load chart shall clearly indicate the areas where no load is to be handled.~~

~~(iv) Recommended reeving for the hoist lines shall be shown.~~

~~(v) Recommended parts of hoist reeving, size, and type of wire rope for various equipment loads.~~

~~(vi) Recommended boom hoist reeving diagram, where applicable; size, type and length of wire rope.~~

~~(vii) Tire pressure, where applicable.~~

~~(viii) Caution or warnings relative to limitations on equipment and operating procedures, including an indication of the least stable direction.~~

~~(ix) Position of the gantry and requirements for intermediate boom suspension, where applicable.~~

~~(x) Instructions for boom erection and conditions under which the boom, or boom and jib combinations, may be raised or lowered.~~

~~(xi) Whether the hoist holding mechanism is automatically or manually controlled, whether free fall is available, or any combination of these.~~
~~(xii) The maximum telescopic travel length of each boom telescopic section.~~
~~(xiii) Whether sections are telescoped manually or with power.~~
~~(xiv) The sequence and procedure for extending and retracting the telescopic boom section.~~
~~(xv) Maximum loads permitted during the boom extending operation, and any limiting conditions or cautions.~~
~~(xvi) Hydraulic relief valve settings specified by the manufacturer.~~
~~(b) Load hooks, including latched and unlatched types, ball assemblies and load blocks shall be of sufficient weight to overhaul the line from the highest hook position for boom or boom and jib lengths and the number of parts of the line in use.~~
~~(c) Hook and ball assemblies and load blocks shall be marked with their rated capacity and weight.~~
~~(d) All of the following apply to latching hooks:~~
~~(i) Hooks shall be equipped with latches, except where the requirements of subdivision (d)(ii) of this subrule are met.~~
~~(ii) Hooks without latches, or with latches removed or disabled, shall not be used unless both of the following occur:~~
~~(A) A qualified person has determined that it is safer to hoist and place the load without latches, or with the latches removed or tied-back.~~
~~(B) Routes for the loads are preplanned to ensure that no employee is required to work in the fall zone except for employees necessary for the hooking or unhooking of the load.~~
~~(iii) The latch shall close the throat opening and be designed to retain slings or other lifting devices or accessories in the hook when the rigging apparatus is slack.~~
~~(e) Posted warnings. Posted warnings required by this standard as well as those originally supplied with the equipment by the manufacturer shall be maintained in legible condition.~~
~~(f) An accessible fire extinguisher shall be on the equipment.~~
~~(g) Cabs. Equipment with cabs shall meet all of the following requirements:~~
~~(i) Cabs shall be designed with a form of adjustable ventilation and method for clearing the windshield for maintaining visibility and air circulation. Examples of means for adjustable ventilation include air conditioner or window that can be opened for ventilation and air circulation; examples of means for maintaining visibility include heater to prevent windshield icing, defroster, fan, windshield wiper.~~
~~(ii) Swinging or sliding cab doors shall be designed to prevent inadvertent opening or closing while traveling or operating the machine. Swinging doors adjacent to the operator shall open outward. Sliding operator doors shall open rearward.~~
~~(iii) All of the following apply to windows:~~
~~(A) The cab shall have windows in front and on both sides of the operator. Forward vertical visibility shall be sufficient to give the operator a view of the boom point at all times.~~
~~(B) Windows may have sections designed to be opened or readily removed. Windows with sections designed to be opened shall be designed so that they can be secured to prevent inadvertent closure.~~
~~(C) Windows shall be made of safety glass or material with similar optical and safety properties, that introduce no visible distortion or otherwise obscure visibility that interferes with the safe operation of the equipment.~~
~~(iv) A clear passageway shall be provided from the operator's station to an exit door on the operator's side.~~

~~(v) Areas of the cab roof that serve as a workstation for rigging, maintenance, or other equipment-related tasks shall be capable of supporting 250 pounds without permanent distortion.~~
~~(h) Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, and other parts or components that reciprocate, rotate or otherwise move shall be guarded where contact by employees, except for maintenance and repair employees, is possible in the performance of normal duties.~~
~~(i) All exhaust pipes, turbochargers, and charge air coolers shall be insulated or guarded where contact by employees, except for maintenance and repair employees, is possible in the performance of normal duties.~~
~~(j) Hydraulic and pneumatic lines shall be protected from damage to the extent feasible.~~
~~(k) The equipment shall be designed so that exhaust fumes are not discharged in the cab and are discharged in a direction away from the operator.~~
~~(l) Friction mechanisms. When friction mechanisms, such as brakes and clutches, are used to control the boom hoist or load line hoist, they shall comply with both of the following:~~
~~(i) Be of a size and thermal capacity sufficient to control all rated loads with the minimum recommended reeving.~~
~~(ii) Be adjustable to permit compensation for lining wear to maintain proper operation.~~
~~(m) Hydraulic load hoists. Hydraulic drums shall have an integrally mounted holding device or internal static brake to prevent load hoist movement in the event of hydraulic failure.~~
~~(6) The employer's obligations under subrules (2) to (4) and (5)(g) to (m) of this rule are met when the equipment has not changed, except in accordance with R 408.41028a, and when an employer can refer to documentation from the manufacturer showing that the equipment has been designed, constructed and tested in accordance with those subrules.~~

R 408.41028a ~~Equipment modifications.~~ **Rescinded.**
~~Rule 1028a. (1) Modifications or additions which affect the capacity or safe operation of the equipment shall be prohibited except when the requirements of subrule (1)(a), (b), (c), (d), or (e) are met.~~
~~(a) All of the following apply to manufacturer review and approval:~~
~~(i) The manufacturer shall approve the modifications or additions in writing.~~
~~(ii) The load charts, procedures, instruction manuals and instruction plates, tags, or decals shall be modified as necessary to reflect the modification or addition.~~
~~(iii) The original safety factor of the equipment shall not be reduced.~~
~~(b) Manufacturer refusal to review request. The manufacturer shall be provided a detailed description of the proposed modification or addition, and shall be asked to approve the modification or addition. If a manufacturer declines to review the technical merits of the proposal or fails to acknowledge or initiate the review of the request within 30 days, all of the following shall be met:~~
~~(i) A registered professional engineer who is a qualified person with respect to the equipment involved shall do both of the following:~~
~~(A) Approve the modification or addition and specify the equipment configurations to which that approval applies.~~
~~(B) Modify load charts, procedures, instruction manuals and instruction plates, tags, or decals as necessary to reflect the modification or addition.~~
~~(ii) The original safety factor of the equipment shall not be reduced.~~

~~(c) Unavailable manufacturer. If the manufacturer is unavailable the requirements of subdivision (b)(i) and (ii) of this subrule shall be met.~~
~~(d) Manufacturer does not complete the review within 120 days of the request. The manufacturer shall be provided a detailed description of the proposed modification or addition and shall be asked to approve the modification or addition. If the manufacturer agreed to review the technical merits of the proposal, but failed to complete the review of the proposal within 120 days of the date it was provided the detailed description of the proposed modification or addition, then the requirements of subdivision (b)(i) and (ii) of this subrule shall be met.~~
~~(e) Multiple manufacturers of equipment designed for use on marine work sites. If the equipment is designed for marine work sites or contains major structural components from more than one manufacturer, then the requirements of subdivision (b)(i) and (ii) of this subrule shall be met.~~
~~(2) Modifications or additions which affect the capacity or safe operation of the equipment shall be prohibited when the manufacturer, after a review of the technical safety merits of the proposed modification or addition, rejects the proposal and explains the reasons for the rejection in a written response. If the manufacturer rejects the proposal but does not explain the reasons for the rejection in writing, the employer may treat this as a manufacturer refusal to review the request under subrule (1)(b) of this rule.~~

R 408.41029a ~~Tower cranes.~~ **Rescinded.**
~~Rule 1029a. (1) This rule contains supplemental requirements for tower cranes. All rules of this standard apply to tower cranes unless specified otherwise.~~
~~(2) All of the following apply to erecting, climbing and dismantling:~~
~~(a) R 408.41015a shall apply to tower cranes except as otherwise specified. The term ''assembly/disassembly'' shall be replaced by ''erecting, climbing and dismantling,'' and the term ''disassembly'' shall be replaced by ''dismantling'' when applying R 408.41015a to tower cranes.~~
~~(b) Dangerous areas, self-erecting tower cranes. In addition to the requirements in R 408.41015a(2)(e) for self-erecting tower cranes, employees shall not be in or under the tower, jib, or rotating portion of the crane during erecting, climbing, and dismantling operations until the crane is secured in a locked position and the competent person in charge indicates it is safe to enter this area, unless the manufacturer's instructions direct otherwise. Then, only the necessary personnel shall be permitted in this area.~~
~~(c) Foundations and structural supports. Tower crane foundations and structural supports, including both the portions of the structure used for support and the means of attachment, shall be designed by the manufacturer or a registered professional engineer.~~
~~(d) Addressing specific hazards. The requirements in R 408.41015a(2)(h)(i) to (ix) shall apply. In addition, the A/D director shall address all of the following:~~
~~(i) Foundations and structural supports. The A/D director shall determine that tower crane foundations and structural supports are installed in accordance with their design.~~
~~(ii) Loss of backward stability. Backward stability before swinging self erecting cranes or cranes on traveling or static undercarriages shall be maintained.~~
~~(iii) Wind speed. Wind shall not exceed the speed recommended by the manufacturer. When manufacturer does not specify this information, the speed shall be determined by a qualified person.~~

~~(e) Plumb tolerance. Towers shall be erected plumb to the manufacturer's tolerance and verified by a qualified person. When the manufacturer does not specify plumb tolerance, the crane tower shall be plumb to a tolerance of at least 1:500, approximately 1 inch in 40 feet.~~
~~(f) Multiple tower crane jobsites. On jobsites where more than 1 fixed jib (hammerhead) tower crane is installed, the cranes shall be located so that no crane can come in contact with the structure of another crane. Cranes are permitted to pass over one another.~~
~~(g) Climbing procedures. Prior to, and during, all climbing procedures, including inside climbing and top climbing, the employer shall do both of the following:~~
~~(i) Comply with all manufacturer prohibitions.~~
~~(ii) Have a registered professional engineer verify that the host structure is strong enough to sustain the forces imposed through the braces, brace anchorages, and supporting floors.~~
~~(h) Both of the following apply to counterweights or ballasts:~~
~~(i) Equipment shall not be erected, dismantled, or operated without the amount and position of counterweight, ballast, or both, in place as specified by the manufacturer or a registered professional engineer familiar with the equipment.~~
~~(ii) The maximum counterweight, ballast, or both specified by the manufacturer or registered professional engineer familiar with the equipment shall not be exceeded.~~
~~(3) Signs. The size and location of signs on tower cranes shall be installed as specified by the manufacturer. When these specifications are unavailable, a registered professional engineer familiar with the type of equipment involved shall approve in writing the size and location of any signs.~~
~~(4) All of the following apply to safety devices:~~
~~(a) R 408.41018a shall not apply to tower cranes.~~
~~(b) All of the following safety devices are required on all tower cranes unless otherwise specified:~~
~~(i) Boom stops on luffing boom type tower cranes.~~
~~(ii) Jib stops on luffing boom type tower cranes, if equipped with a jib attachment.~~
~~(iii) Travel rail end stops at both ends of travel rail.~~
~~(iv) Travel rail clamps on all travel bogies.~~
~~(v) Integrally mounted check valves on all load supporting hydraulic cylinders.~~
~~(vi) A hydraulic system pressure limiting device.~~
~~(vii) All of the following brakes, which automatically set in the event of pressure loss or power failure, shall be required:~~
~~(A) A hoist brake on all hoists.~~
~~(B) Swing brake.~~
~~(C) Trolley brake.~~
~~(D) Rail travel brake.~~
~~(viii) Deadman control or forced neutral return control, hand, levers.~~
~~(ix) Emergency stop switch at the operator's station.~~
~~(x) Trolley end stops shall be provided at both ends of travel of the trolley.~~
~~(c) Proper operation required. Operations shall not begin unless the devices listed in this rule are in proper working order. If a device stops working properly during operations, the operator shall safely stop operations. The equipment shall be taken out of service, and operations shall not resume until the device is again working properly. See R 408.41019b(5). Alternative measures shall not be used.~~
~~(5) Before leaving a hammerhead tower crane unattended, the operator shall, in addition to the requirements specified in R 408.41019b(4), do all of the following:~~

~~(a) Set the trolley brakes and other locking devices and bring the hook block to its highest position.~~
~~(b) Secure the crane to prevent accidental travel.~~
~~(c) Set rail clamps, where provided.~~
~~(d) Release the swing brake to allow weathervaning, unless a 360-degree rotation is not possible. When restraining a crane from swinging freely, the manufacturer's recommendations shall be followed.~~
~~(6) Before leaving a portal, tower, or pillar crane unattended, the operator shall, in addition to the requirements specified in R 408.41019b(4), do all of the following:~~
~~(a) Lower the boom to the boom rest or otherwise fasten it securely to prevent displacement due to wind loads or other outside forces, unless this is contrary to the manufacturer's recommendations.~~
~~(b) Set the brakes and other locking devices and bring the hook block to its highest position.~~
~~(c) Secure the crane to prevent accidental travel.~~
~~(d) Set rail clamps, where provided.~~
~~(7) All of the following apply to operational aids:~~
~~(a) R 408.41019a shall not apply to tower cranes.~~
~~(b) The devices listed in this subrule shall be required on all tower cranes covered by this standard, unless otherwise specified.~~
~~(c) Operations shall not begin unless the operational aids are in proper working order, except when the employer meets the specified temporary alternative measures. More protective alternative measures specified by the tower crane manufacturer, if any, shall be followed. See R 408.41019b(5) for additional requirements.~~
~~(d) If an operational aid stops working properly during operations, the operator shall safely stop operations until the temporary alternative measures are implemented or the device is again working properly. If a replacement part is no longer available, the use of a substitute device that performs the same type of function shall be permitted and shall not be considered a modification under R 408.41028a.~~
~~(e) Category I operational aids and alternative measures. Operational aids listed in this subrule that are not working properly shall be repaired not later than 7 calendar days after the deficiency occurs. Exception: If the employer documents that it has ordered the necessary parts within 7 calendar days of the occurrence of the deficiency, the repair shall be completed within 7 calendar days of receipt of the parts. All of the following apply:~~
~~(i) Trolley travel limiting device. The travel of the trolley shall be restricted at both ends of the jib by a trolley travel limiting device to prevent the trolley from running into the trolley end stops. Temporary alternative measures shall comply with either of the following:~~
~~(A) The trolley rope shall be marked so it can be seen by the operator at a point that will give the operator sufficient time to stop the trolley prior to the end stops.~~
~~(B) A spotter who is in direct communication with the operator shall be used when operations are conducted within 10 feet of the outer or inner trolley end stops.~~
~~(ii) Boom hoist limiting device. The range of the boom shall be limited at the minimum and maximum radius. Temporary alternative measures shall comply with either of the following:~~
~~(A) Clearly mark the cable so it can be seen by the operator at a point that will give the operator sufficient time to stop the boom hoist within the minimum and maximum boom radius.~~
~~(B) Use a spotter who is in direct communication with the operator to inform the operator when this point is reached.~~

~~(iii) Anti two-blocking device. The tower crane shall be equipped with a device which automatically prevents damage from contact between the load block, overhaul ball, or similar component, and the boom tip or fixed upper block or similar component. The device or devices shall prevent this damage at all points where two-blocking could occur. Temporary alternative measures shall comply with either of the following:~~

~~(A) Clearly mark the cable so it can be seen by the operator at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking.~~

~~(B) Use a spotter who is in direct communication with the operator to inform the operator when this point is reached.~~

~~(iv) Hoist drum lower limiting device. Tower cranes manufactured after November 8, 2011, shall be equipped with a device that prevents the last 2 wraps of hoist cable from being spooled off the drum. Temporary alternative measures shall comply with either of the following:~~

~~(A) Mark the cable so it can be seen by the operator at a point that will give the operator sufficient time to stop the hoist prior to last 2 wraps of hoist cable being spooled off the drum.~~

~~(B) Use a spotter who is in direct communication with the operator to inform the operator when this point is reached.~~

~~(v) Load moment limiting device. The tower crane shall have a device that prevents moment overloading. Temporary alternative measures shall comply with either of the following:~~

~~(A) A radius indicating device shall be used.~~

~~(B) If the tower crane is not equipped with a radius indicating device, the radius shall be measured to ensure the load is within the rated capacity of the crane. In addition, the weight of the load shall be determined from a source recognized by the industry, such as the load's manufacturer, or by a calculation method recognized by the industry, such as calculating a steel beam from measured dimensions and a known per foot weight, or by other equally reliable means. This information shall be provided to the operator prior to the lift.~~

~~(vi) Hoist line pull limiting device. The capacity of the hoist shall be limited to prevent overloading, including each individual gear ratio if equipped with a multiple speed hoist transmission. Temporary alternative measure: The operator shall ensure that the weight of the load does not exceed the capacity of the hoist, including for each individual gear ratio if equipped with a multiple speed hoist transmission.~~

~~(vii) Rail travel limiting device. The travel distance in each direction shall be limited to prevent the travel bogies from running into the end stops or buffers. Temporary alternative measure: A spotter who is in direct communication with the operator shall be used when operations are conducted within 10 feet of either end of the travel rail end stops. The spotter shall inform the operator of the distance of the travel bogies from the end stops or buffers.~~

~~(viii) Boom hoist drum positive locking device and control. The boom hoist drum shall be equipped with a control that will enable the operator to positively lock the boom hoist drum from the cab. Temporary alternative measure: The device shall be manually set when required if an electric, hydraulic, or automatic control is not functioning.~~

~~(f) Category II operational aids and alternative measures. The following operational aids that are not working properly shall be repaired not later than 30 calendar days after the deficiency occurs. Exception: If the employer documents that it has ordered the necessary parts within 7 calendar days of the occurrence of the deficiency and the part is not received in time to complete the repair in 30 calendar days, the repair shall be completed within 7 calendar days of receipt of the parts. The following apply:~~

~~(i) The following apply to boom angle or hook radius indicators:~~
~~(A) Luffing boom tower cranes shall have a boom angle indicator readable from the operator's station.~~
~~(B) Hammerhead tower cranes manufactured after November 8, 2011 shall have a hook radius indicator readable from the operator's station.~~
~~(C) Temporary alternative measure: Hook radii or boom angle shall be determined by measuring the hook radii or boom angle with a measuring device.~~
~~(ii) Trolley travel deceleration device. The trolley speed shall be automatically reduced prior to the trolley reaching the end limit in both directions. Temporary alternative measure: The employer shall post a notice in the cab of the crane notifying the operator that the trolley travel deceleration device is malfunctioning and instructing the operator to take special care to reduce the trolley speed when approaching the trolley end limits.~~
~~(iii) Boom hoist deceleration device. The boom speed shall be automatically reduced prior to the boom reaching the minimum or maximum radius limit. Temporary alternative measure: The employer shall post a notice in the cab of the crane notifying the operator that the boom hoist deceleration device is malfunctioning and instructing the operator to take special care to reduce the boom speed when approaching the minimum or maximum radius limits.~~
~~(iv) Load hoist deceleration device. The load speed shall be automatically reduced prior to the hoist reaching the upper limit. Temporary alternative measure: The employer shall post a notice in the cab of the crane notifying the operator that the load hoist deceleration device is malfunctioning and instructing the operator to take special care to reduce the load speed when approaching the upper limits.~~
~~(v) Wind speed indicator. A device shall be provided to display the wind speed and shall be mounted above the upper rotating structure on tower cranes. On self erecting cranes, it shall be mounted at or above the jib level. Temporary alternative measures shall comply with either of the following:~~
~~(A) Use of wind speed information from a properly functioning indicating device on another tower crane on the same site.~~
~~(B) A qualified person estimates the wind speed.~~
~~(vi) Load indicating device. Cranes manufactured after November 8, 2011 shall have a device that displays the magnitude of the load on the hook. Displays that are part of load moment limiting devices that display the load on the hook meet this requirement. Temporary alternative measure: The weight of the load shall be determined from a source recognized by the industry, such as the load's manufacturer, or by a calculation method recognized by the industry, such as calculating a steel beam from measured dimensions and a known per foot weight, or by other equally reliable means. This information shall be provided to the operator prior to the lift.~~
~~(8) All of the following apply to inspections:~~
~~(a) R 408.41012a shall apply to tower cranes, except that the term ''assembly'' is replaced by ''erection.'' R 408.41013a shall apply to tower cranes.~~
~~(b) Pre-erection inspection. Before each crane component is erected, it shall be inspected by a qualified person for damage or excessive wear. All of the following apply:~~
~~(i) The qualified person shall pay particular attention to components that will be difficult to inspect thoroughly during shift inspections.~~
~~(ii) If the qualified person determines that a component is damaged or worn to the extent that it would create a safety hazard if used on the crane, that component shall not be erected~~

~~on the crane unless it is repaired and, upon reinspection by the qualified person, found to no longer create a safety hazard.~~
~~(iii) If the qualified person determines that the component, though not presently a safety hazard, needs to be monitored, the employer shall ensure that the component is checked in the monthly inspections. Any such determination shall be documented, and the documentation shall be available to any individual who conducts a monthly inspection.~~
~~(c) Post-erection inspection. In addition to the requirements in R 408.41012(4), the following requirements shall be met:~~
~~(i) A load test using certified weights, or sealed weights using a certified scale with a current certificate of calibration, shall be conducted after each erection.~~
~~(ii) The load test shall be conducted according to the manufacturer's instructions when available. When these instructions are unavailable, the test shall be conducted according to written load test procedures developed by a registered professional engineer familiar with the type of equipment involved.~~
~~(d) Monthly. The following additional items shall be included:~~
~~(i) All tower, mast, and other structural bolts, in loose or dislodged condition, from the base of the tower crane up or, if the crane is tied to or braced by the structure, those above the upper-most brace support.~~
~~(ii) The upper-most tie-in, braces, floor supports and floor wedges where the tower crane is supported by the structure, for loose or dislodged components.~~
~~(e) Annual. In addition to the items that shall be inspected under R 408.41012(7), all turntable and tower bolts shall be inspected for proper condition and torque.~~

R 408.41030a ~~Overhead and gantry cranes.~~ **Rescinded.**
~~Rule 1030a. (1) Overhead and gantry cranes used in construction. All overhead and gantry cranes in use shall comply with the applicable requirements for design, construction, installation, testing, maintenance, inspection, and operation as prescribed in general industry safety standard part 18 "Overhead and Gantry Cranes, as referenced in R 408.41003a, and shall comply with the requirements of R 408.41008a.~~
~~(2) All of the following apply to overhead and gantry cranes that are not permanently installed in a facility:~~
~~(a) This subrule shall apply to the following equipment when used in construction and not permanently installed in a facility: overhead and gantry cranes, overhead and bridge cranes, semigantry, cantilever gantry, wall cranes, storage bridge cranes, launching gantry cranes, and similar equipment having the same fundamental characteristics, irrespective of whether it travels on tracks, wheels, or other means.~~
~~(b) The following requirements shall apply to equipment identified in subdivision (a) of this subrule:~~
~~(i) R 408.41001a, 408.41004a, 408.41005a, 408.41008a through 408.41017a, 408.41019b through 408.41021b, 408.41022a, 408.41023a, 408.41024a(4), 408.41025b, 408.41026a to 408.41028a, 408.41031a, 408.41032a, and 408.41034a.~~
~~(ii) The following portions of general industry safety standard part 18 "Overhead and Gantry Cranes, as referenced in R 408.41003a:~~
~~(A) R 408.11821(5), 408.11822(1), 408.11822(3) 408.11822(4), 408.11824(10), 408.11827(1), 408.11832(1), 408.11833(3), 408.11843(13), 408.11855(4), 408.11861(1)(b), 408.11865(2)(b), 408.11872(1), and 408.11873(1).~~

~~(B) The definitions in general industry safety standard part 18 "Overhead and Gantry Cranes, as referenced in R 408.41003a, except for "hoist" and "load." For those words, the definitions in this standard shall apply.~~
~~(C) R 408.11821(3), but only when the equipment identified in subdivision (a) of this subrule was manufactured before September 19, 2001.~~
~~(iii) For equipment manufactured on or after September 19, 2001, the following sections of ASME B30.2 "Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)," 2005 edition, which is adopted by reference in R 408.41003a, shall apply: 2–1.3.1; 2–1.3.2; 2–1.4.1; 2–1.6; 2–1.7.2; 2–1.8.2; 2–1.9.1; 2–1.9.2; 2–1.11; 2–1.12.2; 2–1.13.7; 2–1.14.2; 2–1.14.3; 2–1.14.5; 2–1.15.; 2–2.2.2; 2–3.2.1.1. In addition, 2–3.5 shall apply, except in 2–3.5.1(b), ''29 CFR 1910.147'' is substituted for ''ANSI Z244.1.''~~

R 408.41031a ~~Floating and land cranes or derricks on barges.~~ **Rescinded.**
~~Rule 1031a. (1) This rule contains supplemental requirements for floating cranes or derricks and land cranes or derricks on barges, pontoons, vessels or other means of flotation device. The rules of this standard shall apply to floating cranes or derricks and land cranes or derricks on barges, pontoons, vessels or other means of flotation, unless specified otherwise. The requirements of this rule shall not apply when using jacked barges when the jacks are deployed to the river, lake, or sea bed and the barge is fully supported by the jacks.~~
~~(2) General requirements. The requirements in subrules (3) to (11) of this rule shall apply to both floating cranes or derricks and land cranes or derricks on barges, pontoons, vessels or other means of flotation.~~
~~(3) An operator shall not leave a floating crane or derrick unattended until notified by the A/D director that it is safe to do so. Before leaving, the operator shall in addition to the requirements specified in R 408.41019b(4), do both of the following:~~
~~(a) Lower the boom to the boom rest or the deck of the barge and fasten it securely to prevent displacement due to wind loads or other outside forces.~~
~~(b) Engage manual locking devices in the absence of automatic holding equipment on derricks and engage swing brakes, boom brakes, and other locking devices on cranes.~~
~~(4) If power fails during operation, the equipment operator shall do all of the following:~~
~~(a) Set all brakes and locking devices.~~
~~(b) Move all clutch or other power controls to the off or neutral position.~~
~~(c) Communicate with the A/D director in charge of equipment operations.~~
~~(d) If practical, and applicable, land the load under brake control.~~
~~(5) All of the following apply to work area control:~~
~~(a) The requirements of R 408.41022a shall apply, except for R 408.41022a(1)(b)(ii).~~
~~(b) The employer shall do either of the following:~~
~~(i) Erect and maintain control lines, warning lines, railings, or similar barriers to mark the boundaries of the hazard areas.~~
~~(ii) Affix to the rear and sides of the house and counterweight a danger sign, as prescribed in construction safety standard part 22 "Signals, Signs, Tags, and Barricades," as referenced in R 408.41003a. The additional lettering on the danger sign shall indicate that the counterweight is swinging.~~
~~(6) Keeping clear of the load. R 408.41023a shall not apply.~~
~~(7) Additional safety devices. In addition to the safety devices listed in R 408.41018a, the following safety devices shall be required:~~

~~(a) Barge, pontoon, vessel or other means of flotation list and trim device. The safety device shall be located in the cab or, when there is no cab, at the operator's station.~~
~~(b) Positive equipment house lock.~~
~~(c) Wind speed and direction indicator. A competent person shall determine if wind is a factor that needs to be considered. If wind needs to be considered, a wind speed and direction indicator shall be used.~~
~~(8) Both of the following shall apply to operational aids:~~
~~(a) An anti two-block device shall be required only when hoisting personnel or hoisting over an occupied cofferdam or shaft.~~
~~(b) R 408.41019a(5)(d) shall not apply to dragline, clamshell, grapple, magnet, drop ball, container handling, concrete bucket, and pile driving work performed under this rule.~~
~~(9) Accessibility of procedures applicable to equipment operation. If the crane or derrick has a cab, the requirements of R 408.41019b(3) shall apply. If the crane or derrick does not have a cab, the employer shall ensure that both of the following are met:~~
~~(a) Rated capacities, load charts, are posted at the operator's station. If the operator's station is moveable, such as with pendant-controlled equipment, the load charts shall be posted on the equipment.~~
~~(b) Procedures, other than the load charts, applicable to the operation of the equipment, recommended operating speeds, special hazard warnings, instructions and operator's manual, shall be readily available on board the vessel or flotation device.~~
~~(10) Inspections. In addition to meeting the requirements of R 408.41012a for inspecting the crane or derrick, the employer shall inspect the barge, pontoons, vessel, or other means of flotation used to support a floating crane or derrick or land crane or derrick, and ensure all of the following:~~
~~(a) Shift. For each shift inspection, the means used to secure or attach the equipment to the vessel or flotation device is in proper condition, including wear, corrosion, loose or missing fasteners, defective welds, and, when applicable, insufficient tension.~~
~~(b) Monthly. For each monthly inspection all of the following shall be met:~~
~~(i) The means used to secure or attach the equipment to the vessel or flotation device is in proper condition, including inspection for wear, corrosion, and, when applicable, insufficient tension.~~
~~(ii) The vessel or flotation device is not taking on water.~~
~~(iii) The deckload is properly secured.~~
~~(iv) The vessel or flotation device is watertight based on the condition of the chain lockers, storage, fuel compartments, and hatches.~~
~~(v) The firefighting and lifesaving equipment is in place and functional.~~
~~(c) The shift and monthly inspections shall be conducted by a competent person, resulting in the following:~~
~~(i) If any deficiency is identified, an immediate determination shall be made by a qualified person whether the deficiency constitutes a hazard.~~
~~(ii) If the deficiency is determined to constitute a hazard, the vessel or flotation device shall be removed from service until the deficiency has been corrected.~~
~~(d) Annual external vessel or flotation device inspection. For each annual inspection all of the following shall be met:~~
~~(i) The external portion of the barge, pontoons, vessel, or other means of flotation used shall be inspected annually by a qualified person who has expertise with respect to vessels or flotation devices and that the inspection shall include all of the following items:~~
~~(A) The items identified in subdivisions (a) and (b) of this subrule.~~

~~(B) Cleats, bitts, chocks, fenders, capstans, ladders, and stanchions, for significant corrosion, wear, deterioration, or deformation that could impair the function of these items.~~
~~(C) External evidence of leaks and structural damage. Evidence of leaks and damage below the waterline may be determined through internal inspection of the vessel or flotation device.~~
~~(D) Four-corner draft readings.~~
~~(E) Firefighting equipment for serviceability.~~
~~(ii) Rescue skiffs, lifelines, work vests, life preservers and ring buoys shall be inspected for proper condition.~~
~~(iii) If any deficiency is identified, an immediate determination shall be made by the qualified person whether the deficiency constitutes a hazard or, though not yet a hazard, needs to be monitored in the monthly inspections resulting in the following:~~
~~(A) If the qualified person determines that the deficiency constitutes a hazard, the vessel or flotation device shall be removed from service until it has been corrected. See requirements in R 408.41019b(6).~~
~~(B) If the qualified person determines that, though not presently a hazard, the deficiency needs to be monitored, the deficiency shall be checked in the monthly inspections.~~
~~(e) Four-year internal vessel or flotation device inspection. For each 4 year inspection the following shall be included:~~
~~(i) A marine engineer, marine architect, licensed surveyor, or other qualified person who has expertise with respect to vessels or flotation devices surveys the internal portion of the barge, pontoons, vessel, or other means of flotation.~~
~~(ii) If the surveyor identifies a deficiency, an immediate determination shall be made by the surveyor as to whether the deficiency constitutes a hazard or, though not yet a hazard, needs to be monitored in the monthly or annual inspections, as appropriate. Both of the following apply:~~
~~(A) If the surveyor determines that the deficiency constitutes a hazard, the vessel or flotation device shall be removed from service until it has been corrected.~~
~~(B) If the surveyor determines that, though not presently a hazard, the deficiency needs to be monitored, the deficiency shall be checked in the monthly or annual inspections, as appropriate.~~
~~(f) Documentation. The monthly and annual inspections required in subrule (8)(b) and (d) of this rule shall be documented in accordance with R 408.41012(6)(c) and R 408.41012(7)(g). The 4-year inspection required in subrule (8)(e) of this rule shall be documented in accordance with R 408.41012(7)(g), except that the documentation for that inspection shall be retained for a minimum of 4 years. All of these documents shall be made available, during the applicable document retention period, to all persons who conduct inspections in accordance with R 408.41012a.~~
~~(11) [Reserved.]~~
~~(12) Working with a diver. The employer shall meet the following additional requirements when working with a diver in the water:~~
~~(a) If a crane or derrick is used to get a diver into and out of the water, it shall not be used for any other purpose until the diver is back on board. When used for more than 1 diver, a crane or derrick shall not be used for any other purpose until all divers are back on board.~~
~~(b) The operator shall remain at the controls of the crane or derrick at all times.~~
~~(c) In addition to the requirements in R 408.41011b to R 408.41011e, either of the following shall be met:~~
~~(i) A clear line of sight shall be maintained between the operator and tender.~~
~~(ii) The signals between the operator and tender shall be transmitted electronically.~~

~~(d) The means used to secure the crane or derrick to the vessel or flotation device, as specified in subrule (16)(e) of this rule, shall not allow any amount of shifting in any direction.~~

~~(13) All of the following apply to manufacturer's specifications and limitations:~~

~~(a) The employer shall ensure that the barge, pontoons, vessel, or other means of flotation shall be capable of withstanding imposed environmental, operational and in-transit loads when used in accordance with the manufacturer's specifications and limitations.~~

~~(b) The employer shall ensure that the manufacturer's specifications and limitations with respect to environmental, operational, and in transit loads for a barge, pontoon, vessel, or other means of flotation shall not be exceeded or violated.~~

~~(c) When the manufacturer's specifications and limitations are unavailable, the employer shall ensure that the specifications and limitations established by a qualified person with respect to environmental, operational, and in-transit loads for the barge, pontoons, vessel, or other means of flotation are not exceeded or violated.~~

~~(14) [Reserved.]~~

~~(15) Floating cranes or derricks. For equipment designed by the manufacturer or employer for marine use by permanent attachment to barges, pontoons, vessels, or other means of flotation, all of the following shall be met:~~

~~(a) Both of the following apply to load charts:~~

~~(i) The employer shall not exceed the manufacturer load charts applicable to operations on water. When using these charts, the employer shall comply with all parameters and limitations, such as dynamic and environmental parameters, applicable to the use of the charts.~~

~~(ii) The employer shall ensure that load charts take into consideration a minimum wind speed of 40 miles per hour.~~

~~(b) The employer shall ensure that the requirements for maximum allowable list and maximum allowable trim, as specified in Table 13a of this rule, are met.~~

~~TABLE 13a~~

~~Rated capacity (degrees)~~	~~Maximum allowable list (degrees)~~	~~Maximum allowable trim~~
~~Equipment designed for marine use by permanent attachment (other than derricks):~~		
~~25 tons or less~~	~~5~~	~~5~~
~~Over 25 tons~~	~~7~~	~~7~~
~~Derricks designed for marine use by permanent attachment:~~		
~~Any rated capacity~~	~~10~~	~~10~~

~~(c) The employer shall ensure that the equipment is stable under the conditions specified in Tables 13b and 13c of this rule. Note: Freeboard means the vertical distance between the water line and the main deck of the vessel.~~

~~TABLE 13b~~

~~Operated at (ft)~~	~~Wind speed (mph)~~	~~Minimum freeboard~~
~~Rated capacity~~	~~60~~	~~2~~
~~Rated capacity plus 25%~~	~~60~~	~~1~~
~~High boom, no load~~	~~60~~	~~2~~

~~TABLE 13c~~

~~Operated at~~	~~Wind speed~~
~~For backward stability of the boom:~~	
~~High boom, no load, full back list (least stable condition).~~	~~90 mph.~~

~~(d) If the equipment is employer made, it shall not be used unless the employer has documents demonstrating that the load charts and applicable parameters for use meet the requirements of subdivisions (a) to (c) of this subrule. These documents shall be signed by a registered professional engineer who is a qualified person with respect to the design of this type of equipment, including the means of flotation.~~

~~(e) The employer shall ensure that the barge, pontoons, vessel, or other means of flotation used comply with all of the following:~~

~~(i) Are structurally sufficient to withstand the static and dynamic loads of the crane or derrick when operating at the crane or derrick's maximum rated capacity with all planned and actual deck loads and ballasted compartments.~~

~~(ii) Have a subdivided hull with 1 or more longitudinal watertight bulkheads for reducing the free-surface effect.~~

~~(iii) Have access to void compartments to allow for inspection and pumping.~~

~~(16) Land cranes or derricks. For land cranes or derricks used on barges, pontoons, vessels, or other means of flotation, the employer shall ensure all of the following:~~

~~(a) The rated capacity of the equipment, including but not limited to modification of load charts, applicable for use on land is reduced to do the following:~~

~~(i) Account for increased loading from list, trim, wave action, and wind.~~

~~(ii) Be applicable to a specified location or locations on the specific barge, pontoons, vessel or other means of flotation that will be used, under the environmental conditions expected and encountered.~~

~~(iii) The conditions required in subdivisions (c) and (d) of this subrule are met.~~

~~(b) The rated capacity modification required in subdivision (a) of this subrule shall be performed by the equipment manufacturer, or a qualified person who has expertise with respect to both land crane or derrick capacity and the stability of vessels or flotation devices.~~

~~(c) For list and trim, the following apply:~~

~~(i) The maximum allowable list and the maximum allowable trim for the barge, pontoon, vessel or other means of flotation shall not exceed the amount necessary to ensure that the conditions in subdivision (d) of this subrule are met. In addition, the maximum allowable list~~

~~and the maximum allowable trim shall not exceed the least of the following: 5 degrees, the amount specified by the crane or derrick manufacturer, or, when an amount is not specified, the amount specified by the qualified person.~~

~~(ii) The maximum allowable list and the maximum allowable trim for the land crane or derrick shall not exceed the amount specified by the crane or derrick manufacturer, or, when an amount is not specified, the amount specified by the qualified person.~~

~~(d) The following requirements shall be met:~~

~~(i) All deck surfaces of the barge, pontoons, vessel, or other means of flotation used shall be above water.~~

~~(ii) The entire bottom area of the barge, pontoons, vessel, or other means of flotation used shall be submerged.~~

~~(e) Physical attachment, corralling, rails system and centerline cable system shall meet the requirements in Option (1), Option (2), Option (3), or Option (4) of this subrule. Whichever option is used shall also meet the requirements of paragraph (v) of this subdivision.~~

~~(i) Option (1) – Physical attachment. The crane or derrick shall be physically attached to the barge, pontoons, vessel or other means of flotation. Methods of physical attachment include crossed-cable systems attached to the crane or derrick and vessel or flotation device, bolting or welding the crane or derrick to the vessel or flotation device, strapping the crane or derrick to the vessel or flotation device with chains, or other methods of physical attachment.~~

~~(ii) Option (2) – Corralling. The crane or derrick shall be prevented from shifting by installing barricade restraints, such as a corralling system. Employers shall ensure that corralling systems do not allow the equipment to shift by any amount in any direction.~~

~~(iii) Option (3) – Rails. The crane or derrick shall be prevented from shifting by being mounted on a rail system. Employers shall ensure that rail clamps and rail stops are used unless the system is designed to prevent movement during operation by other means.~~

~~(iv) Option (4) – Centerline cable system. The crane or derrick shall be prevented from shifting by being mounted to a wire rope system. The employer shall ensure that the wire rope system meets the following requirements:~~

~~(A) The wire rope and attachments are of sufficient size and strength to support the side load of crane or derrick.~~

~~(B) The wire rope is attached physically to the vessel or flotation device.~~

~~(C) The wire rope is attached to the crane or derrick by appropriate attachment methods, such as shackles or sheaves, on the undercarriage, and that the method used shall allow the crew to secure the crane or derrick from movement during operation and to move the crane or derrick longitudinally along the vessel or flotation device for repositioning.~~

~~(D) Means are installed to prevent the crane or derrick from passing the forward or aft end of the wire rope attachments.~~

~~(E) The crane or derrick is secured from movement during operation.~~

~~(v) The systems or means used to comply with Option (1), Option (2), Option (3), or Option (4) of this subrule shall be designed by a marine engineer, registered professional engineer familiar with floating crane or derrick design, or qualified person familiar with floating crane or derrick design.~~

~~(f) Exception. For mobile auxiliary cranes used on the deck of a floating crane or derrick, the requirement specified by subdivision (e) of this subrule to use Option (1), Option (2), Option (3), or Option (4) shall not apply when the employer demonstrates implementation of a plan and procedures that meet the following requirements:~~

~~(i) A marine engineer or registered professional engineer familiar with floating crane or derrick design develops and signs a written plan for the use of the mobile auxiliary crane.~~

~~(ii) The plan is designed so that the applicable requirements of this rule shall be met despite the position, travel, operation, and lack of physical attachment, or corralling, use of rails or cable system, of the mobile auxiliary crane.~~
~~(iii) The plan specifies the areas of the deck where the mobile auxiliary crane is permitted to be positioned, travel, and operate, and the parameters and limitations of such movements and operation.~~
~~(iv) The deck is marked to identify the permitted areas for positioning, travel, and operation.~~
~~(v) The plan specifies the dynamic and environmental conditions that shall be present for use of the plan.~~
~~(vi) If the dynamic and environmental conditions in paragraph (v) of this subdivision are exceeded, the mobile auxiliary crane shall be attached physically or corralled according to Option (1), Option (2) or Option (4) of subdivision (e) of this subrule.~~
~~(g) The barge, pontoons, vessel, or other means of flotation used shall comply with the following:~~
~~(i) Be structurally sufficient to withstand the static and dynamic loads of the crane or derrick when operating at the crane's or derrick's maximum rated capacity with all anticipated deck loads and ballasted compartments.~~
~~(ii) Have a subdivided hull with 1 or more longitudinal watertight bulkheads for reducing the free surface effect.~~
~~(iii) Have access to void compartments to allow for inspection and pumping.~~
~~(17) An employer shall comply with the applicable requirements for the protection of employees who work on marine vessels specified in construction safety standard part 13. "Mobile Equipment," as referenced in R 408.41003a.~~

R 408.41032a ~~Dedicated pile drivers.~~ **Rescinded.**
~~Rule 1032a. (1) The provisions of this standard shall apply to dedicated pile drivers, except as specified in this section.~~
~~(2) R 408.41019a(4)(c) shall not apply.~~
~~(3) R 408.41019a(5)(d) shall apply only to dedicated pile drivers manufactured after November 8, 2011.~~
~~(4) In R 408.41027, only subrules (4) and (5) shall apply to dedicated pile drivers.~~

R 408.41033a ~~Sideboom cranes.~~ **Rescinded.**
~~Rule 1033a. (1) The provisions of this standard apply, except R 408.41017a, R 408.41018a, R 408.41019a, and R 408.41008a.~~
~~(2) R 408.41024a applies, except R 408.41024a(1)(b)(i). Sideboom cranes in which the boom is designed to free fall, live boom, are permitted only if manufactured prior to November 8, 2010.~~
~~(3) Sideboom cranes mounted on wheel or crawler tractors shall meet all of the following requirements of ASME B30.14 "Side Boom Tractors," 2004 edition, which is adopted by reference in R 408.41003a:~~
~~(a) Section 14–1.1 (''Load Ratings'').~~
~~(b) Section 14–1.3 (''Side Boom Tractor Travel'').~~
~~(c) Section 14–1.5 (''Ropes and Reeving Accessories'').~~
~~(d) Section 14–1.7.1 (''Booms'').~~
~~(e) Section 14–1.7.2 (''General Requirements—Exhaust Gases'').~~

~~(f) Section 14–1.7.3 (‘‘General Requirements—Stabilizers (Wheel-Type Side Boom Tractors)’’).~~
~~(g) Section 14–1.7.4 (‘‘General Requirements—Welded Construction’’).~~
~~(h) Section 14–1.7.6 (‘‘General Requirements—Clutch and Brake Protection’’).~~
~~(i) Section 14–2.2.2 (‘‘Testing—Rated Load Test’’), except that it shall apply only to equipment that has been altered or modified.~~
~~(j) In section 14–3.1.2 (‘‘Operator Qualifications’’), paragraph (a), except the phrase ‘‘When required by law.’’~~
~~(k) In section 14–3.1.3 (‘‘Operating Practices’’), paragraphs (e), (f)(1)—(f)(4), (f)(6), (f)(7), (h), and (i).~~
~~(l) In section 14–3.2.3 (‘‘Moving the Load’’), paragraphs (j), (l), and (m).~~

R 408.41034a ~~Equipment with a rated hoisting or lifting capacity of 2,000 pounds or less.~~
Rescinded.
~~Rule 1034a. This rule specifies requirements for employers using equipment with a maximum rated hoisting or lifting capacity of 2,000 pounds or less.~~
~~(1) The employer using this equipment shall comply with the following provisions:~~
~~(a) R 408.41001a.~~
~~(b) R 408.41004a and R 408.41005a.~~
~~(c) R 408.41011b to 408.41011e.~~
~~(d) R 408.41012a(4).~~
~~(e) R 408.41013a to R 408.41014a.~~
~~(f) R 408.41015a(1).~~
~~(g) R 408.41015a(4).~~
~~(h) R 408.41016a to R 408.41016d.~~
~~(i) R 408.41017a.~~
~~(j) R 408.41019c.~~
~~(k) R 408.41020a.~~
~~(l) R 408.41023a, except for R 408.41023a(3)(c).~~
~~(m) R 408.41024a.~~
~~(n) R 408.41025a.~~
~~(o) R 408.41026a.~~
~~(p) R 408.41028a.~~
~~(q) R 408.41029a.~~
~~(r) R 408.41030a.~~
~~(s) R 408.41031a.~~
~~(2) Assembly or disassembly.~~
~~(a) In addition to complying with R 408.41015a(1) and (4), the employer shall also comply with R 408.41034a(2)(b) and (c).~~
~~(b) Components and configuration. The employer shall ensure the following:~~
~~(i) The selection of components, and the configuration of the equipment, that affect the capacity or safe operation of the equipment complies with 1 of the following:~~
~~(A) Manufacturer’s instructions, recommendations, limitations, and specifications. When these documents and information are unavailable, a registered professional engineer familiar with the type of equipment involved shall approve, in writing, the selection and configuration of components.~~
~~(B) Approved modifications that meet the requirements of R 408.41028a.~~

~~(ii) Post-assembly inspection. Upon completion of assembly, the equipment shall be inspected to ensure that it complies with subrule (2)(b)(i). See R 408.41012(4) for post-assembly inspection requirements.~~
~~(c) Manufacturer prohibitions. The employer shall comply with applicable manufacturer prohibitions.~~
~~(3) Operation—procedures.~~
~~(a) The employer shall comply with all manufacturer procedures applicable to the operational functions of the equipment, including its use with attachments.~~
~~(b) Unavailable operation procedures. The employer shall comply with the following:~~
~~(i) When the manufacturer's procedures are unavailable, develop and ensure compliance with all procedures necessary for the safe operation of the equipment and attachments.~~
~~(ii) Ensure that procedures for the operational controls are developed by a qualified person.~~
~~(iii) Ensure that procedures related to the capacity of the equipment are developed and signed by a registered professional engineer who is familiar with the equipment.~~
~~(c) Accessibility. The employer shall ensure all of the following:~~
~~(i) The load chart is available to the operator at the control station.~~
~~(ii) Procedures applicable to the operation of the equipment, recommended operating speeds, special hazard warnings, instructions, and operator's manual are readily available for use by the operator.~~
~~(iii) When rated capacities are available at the control station only in electronic form and a failure occurs that makes the rated capacities inaccessible, the operator immediately ceases operations or follows safe shut-down procedures until the rated capacities, in electronic or other form, are available.~~
~~(4) Safety devices and operational aids.~~
~~(a) The employer shall ensure that safety devices and operational aids that are part of the original equipment are maintained in accordance with manufacturer procedures.~~
~~(b) Anti two-blocking. The employer shall ensure that equipment covered by this section manufactured more than 1 year after November 8, 2010 have either an anti two-block device that meets the requirements of R 408.41019a(4)(c) or is designed so that in the event of a two-block situation no damage or load failure will occur, such as by using a power unit that stalls in response to a two-block situation.~~
~~(5) Operator qualifications. The employer shall train each operator, prior to operating the equipment, on the safe operation of the type of equipment the operator will be using.~~
~~(6) Signal person qualifications. The employer shall train each signal person in the proper use of signals applicable to the use of the equipment.~~
~~(7) [Reserved.]~~
~~(8) Inspections. The employer shall ensure that equipment is inspected in accordance with manufacturer procedures.~~
~~(9) [Reserved.]~~
~~(10) Hoisting personnel. The employer shall ensure that equipment covered by this standard is not used to hoist personnel.~~
~~(11) Design. The employer shall ensure that the equipment is designed by a qualified engineer.~~

ASSEMBLY OR DISASSEMBLY

R 408.41035 Selection of manufacturer or employer procedures.

Rule 1035. When selecting manufacturer or employer procedures for assembling or disassembling equipment or attachments, the employer shall comply with all applicable manufacturer prohibitions and with either of the following:
(a) Manufacturer procedures applicable to assembly and disassembly.
(b) Employer procedures for assembly or disassembly. Employer procedures may be used only where the employer can demonstrate that the procedures used meet the requirements in R 408.41035d.
Note: The employer shall follow manufacturer procedures when an employer uses synthetic slings during assembly or disassembly rigging, as specified in R 408.41035b(21).

R 408.41035a General requirements.
Rule 1035a. (1) Supervision by a competent and qualified person. Both of the following criteria apply to a person supervising assembly or disassembly of equipment:
(a) Assembly or disassembly must be directed by a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by 1 or more qualified persons.
(b) Where the assembly or disassembly is being performed by only 1 person, that person shall meet the criteria for both a competent person and a qualified person. For purposes of this standard, that person is considered the A/D director.
(2) Knowledge of procedures. The A/D director shall understand the applicable assembly or disassembly procedures.
(3) Review of procedures. The A/D director shall review the applicable assembly or disassembly procedures immediately prior to the commencement of assembly or disassembly unless the A/D director understands the procedures and has applied them to the same type and configuration of equipment, including accessories, if any.
(4) Crew instructions. Both of the following apply to crew instructions:
(a) Before commencing assembly or disassembly operations, the A/D director shall ensure that the crew members understand all of the following:
(i) Their tasks.
(ii) The hazards associated with their tasks.
(iii) The hazardous positions and locations that crew members need to avoid.
(b) During assembly or disassembly operations, before a crew member takes on a different task, or when adding new personnel during the operations, the requirements in subdivision (a) of this subrule must be met.
(5) All of the following apply to protecting assembly or disassembly crew members out of operator view:
(a) Before a crew member goes to a location that is out of view of the operator and is either in, on, or under the equipment, or near the equipment or load where the crew member could be injured by movement of the equipment or load, the crew member shall inform the operator that he or she is going to that location.
(b) Where the operator knows that a crew member went to a location covered by subdivision (a) of this subrule, the operator shall not move any part of the equipment or load until the operator is informed in accordance with a prearranged system of communication that the crew member is in a safe position.
(6) When an employee is working under the boom, jib or other components, the following apply:

(a) When pins or similar devices are being removed, employees shall not be under the boom, jib, or other components, except where the requirements of subrule (2) of this rule are met.

(b) When the employer demonstrates that site constraints require 1 or more employees to be under the boom, jib, or other components when pins or similar devices are being removed, the A/D director shall implement procedures that minimize the risk of unintended dangerous movement and minimize the duration and extent of exposure under the boom. See Non-mandatory Appendix B of this standard for an example.

(7) Capacity limits. During all phases of assembly or disassembly, the A/D director shall ensure that rated capacity limits for loads imposed on the equipment, equipment components including rigging, lifting lugs, and equipment accessories are not exceeded for the equipment being assembled or disassembled.

R 408.41035b Addressing specific hazards.

Rule 1035b. (1) The A/D director who supervises the assembly or disassembly operation shall address the hazards associated with the operation, including the hazards described in subrules (2) to (21) of this rule.

(2) Site and ground bearing conditions. Site and ground conditions shall be adequate for safe assembly or disassembly operations and to support the equipment during assembly or disassembly, as specified in R 408.41007.

(3) Blocking material. The size, amount, condition, and method of stacking the blocking shall be sufficient to sustain the loads and maintain stability.

(4) Proper location of blocking. When used to support lattice booms or components, blocking shall be appropriately placed to do both of the following:

(a) Protect the structural integrity of the equipment.

(b) Prevent dangerous movement and collapse.

(5) Verifying assist crane loads. When using an assist crane, the loads that are imposed on the assist crane at each phase of assembly or disassembly shall be verified in accordance with R 408.41053e(3) before assembly or disassembly begins.

(6) Boom and jib pick points. The points of attachment of rigging to a boom, or boom sections or jib or jib sections, shall be suitable for preventing structural damage and facilitating safe handling of these components.

(7) The following apply to center of gravity:

(a) The center of gravity of the load shall be identified if that is necessary for the method used for maintaining stability.

(b) When there is insufficient information to accurately identify the center of gravity, measures designed to prevent unintended dangerous movement resulting from an inaccurate identification of the center of gravity shall be used. See Non-mandatory Appendix B of this standard for an example.

(8) Stability upon pin removal. The boom sections, boom suspension systems, such as gantry A-frames and jib struts, and components shall be rigged or supported to maintain stability upon the removal of the pins.

(9) Snagging. Suspension ropes and pendants shall not be allowed to catch on the boom or jib connection pins or cotter pins, including keepers and locking pins.

(10) Struck by counterweights. The A/D director shall address potential for unintended movement from inadequately supported counterweights and from hoisting counterweights.

(11) Boom hoist brake failure. Each time reliance is to be placed on the boom hoist brake to prevent boom movement during assembly or disassembly, the brake shall be tested prior to such reliance to determine if it is sufficient to prevent boom movement. If it is not sufficient, a boom hoist pawl, other locking device or back-up braking device, or another method of preventing dangerous movement of the boom, such as blocking or using an assist crane, from a boom hoist brake failure shall be used.

(12) Loss of backward stability. The A/D director shall address backward stability before swinging the upperworks, travel, and when attaching or removing equipment components.

(13) Wind speed and weather. The A/D director shall address the effect of wind speed and weather on the equipment.

(14) Cantilevered boom sections. Manufacturer limitations on the maximum amount of boom supported only by cantilevering shall not be exceeded. When the maximum limitations are unavailable, a registered professional engineer familiar with the type of equipment involved shall determine in writing this limitation; the limitation determined by the registered professional engineer shall not be exceeded.

(15) Weight of components. The weight of each of the components shall be readily available.

(16) Components and configuration. The following apply to components and configuration.

(a) The selection of components and configuration of the equipment that affect the capacity or safe operation of the equipment shall be in accordance with 1 of the following:

(i) Manufacturer instructions, prohibitions, limitations, and specifications. When these are unavailable, a registered professional engineer familiar with the type of equipment involved shall approve, in writing, the selection and configuration of components.

(ii) Approved modifications that meet the requirements of R 408.41083.

(b) Post assembly inspection. Upon completion of assembly, the A/D director shall inspect the equipment to ensure compliance with subdivision (a) of this subrule. See R 408.41037b for post assembly inspection requirements.

(17) Shipping pins, reusable shipping pins, straps, links, and similar equipment shall be removed. After they are removed, they shall either be stowed or otherwise stored so that they do not present a falling object hazard.

(18) Pile driving. Equipment used for pile driving shall not have a jib attached during pile driving operations.

(19) Outriggers and stabilizers. When the load to be handled and the operating radius require the use of outriggers or stabilizers, or at any time when outriggers or stabilizers are used, all of the following requirements shall be met, except as otherwise indicated:

(a) The outriggers or stabilizers shall be either fully extended or, if the manufacturer's procedures permit, deployed as specified in the load chart.

(b) The outriggers shall be set to remove the equipment weight from the wheels except for locomotive cranes. For use of outriggers on locomotive cranes subrule (20) of this rule applies. This rule does not apply to stabilizers.

(c) When outrigger floats are used, the operator shall ensure they are attached to the outriggers. When stabilizer floats are used, the operator shall ensure they are attached to the stabilizers.

(d) Each outrigger or stabilizer shall be visible to the operator or to a signal person during extension and setting.
(e) Outrigger and stabilizer blocking shall comply with both of the following:
(i) Meet the requirements in subrules (3) and (4) of this rule.
(ii) Be placed only under the outrigger or stabilizer float or pad of the jack or, where the outrigger or stabilizer is designed without a jack, under the outer bearing surface of the extended outrigger or stabilizer beam.
(20) For locomotive cranes, when using outriggers or stabilizers to handle loads, the manufacturer's procedures shall be followed. When lifting loads without using outriggers or stabilizers, the manufacturer's procedures regarding truck wedges or screws must be met.
(21) Rigging. In addition to the requirements in Construction Safety Standard Part 8 "Handling and Storage of Materials," as referenced in R 408.41003e, and other requirements in this and other standards applicable to rigging, when rigging is used for assembly or disassembly, the employer shall ensure all of the following:
(a) The rigging work is done by a qualified rigger.
(b) Synthetic slings are protected from abrasive, sharp, or acute edges, and configurations that could cause a reduction of the sling's rated capacity, such as distortion or localized compression. Requirements for the protection of wire rope slings are contained in Construction Safety Standard Part 8 "Handling and Storage of Materials," as referenced in R 408.41003e.
(c) When synthetic slings are used, the synthetic sling manufacturer's instructions, limitations, specifications, and recommendations shall be followed.

R 408.41035c Dismantling of booms and jibs; applicability to manufacturer and employer procedures.
Rule 1035c. During dismantling, including dismantling for changing the length of, booms and jibs, an employee must meet all of the following requirements:
(a) None of the pins in the pendants shall be removed, either partly or completely, when the pendants are in tension.
(b) None of the pins at the top or bottom of the boom sections located between the pendant attachment points and the crane or derrick body shall be removed, either partly or completely, when the pendants are in tension.
(c) None of the pins at the top or bottom on boom sections located between the uppermost boom section and the crane or derrick body shall be removed, either partly or completely, when the boom is being supported by the uppermost boom section resting on the ground or other support.
(d) None of the top pins on boom sections located on the cantilevered portion of the boom being removed, for example, the portion being removed ahead of the pendant attachment points, shall not be removed, either partly or completely, until the cantilevered section to be removed is fully supported.

R 408.41035d General requirements applicable to employer procedures.
Rule 1035d. (1) When using employer procedures instead of manufacturer procedures for assembly or disassembly, the employer procedures shall ensure all of the following:
(a) Prevent unintended dangerous movement, and prevent collapse, of any part of the equipment.

(b) Provide adequate support and stability of all parts of the equipment.
(c) Position employees involved in the assembly or disassembly operation so that their exposure to unintended movement or collapse of part or all of the equipment is minimized.
(2) Employer procedures must be developed by a qualified person.

POWER LINE SAFETY

R 408.41036 Power line safety up to 350 kV; assembly and disassembly.
Rule 1036. (1) Before assembling or disassembling equipment, the employer shall determine if any part of the equipment, load line, or load, including rigging and lifting accessories, could get closer than 20 feet to a power line during the assembly or disassembly process. If this could occur, the employer shall meet the requirements in subrule (2), (3) or (4) of this rule.
(2) Option (1)—Deenergize and ground. Confirm from the utility owner or operator that the power line has been deenergized and visibly grounded at the worksite. Employers choosing this option shall not proceed with this option if the electric utility does not deenergize the power line. This standard does not require utility companies to deenergize power lines.
(3) Option (2)—20 foot clearance. Ensure that no part of the equipment, load line, or load, including rigging and lifting accessories, gets closer than 20 feet to the power line by implementing the measures specified in subrule (5) of this rule.
(4) Option (3)—Table A clearance. All of the following apply:
(a) Determine the line's voltage and the minimum clearance distance permitted under Table A "Minimum Clearance Distances."
(b) Determine if any part of the equipment, load line, or load, including rigging and lifting accessories, could get closer than the minimum clearance distance to the power line permitted under Table A "Minimum Clearance Distances." If this could occur, then the employer shall follow the requirements in subrule (5) of this rule to ensure that no part of the equipment, load line, or load, including rigging and lifting accessories, gets closer to the line than the minimum clearance distance.
(5) Preventing encroachment or electrocution. When encroachment precautions are required under subrule (3) or (4) of this rule, all of the following requirements shall be met:
(a) Conduct a planning meeting with the A/D director, operator, assembly or disassembly crew and the other workers who will be in the assembly or disassembly area to review the location of the power lines and the steps that must be implemented to prevent encroachment and electrocution.
(b) If tag lines are used, the tag lines must be nonconductive.
(c) The operator shall ensure that at least 1 of the following additional measures is in place. The measure selected shall be effective in preventing encroachment. The additional measures consist of the following:
(i) Use a dedicated spotter who is in continuous contact with the equipment operator. The dedicated spotter shall comply with all the following:
(A) Be equipped with a visual aid to assist in identifying the minimum clearance distance. Examples of a visual aid include, but are not limited to, the following:
(1) A clearly visible line painted on the ground.

(2) A clearly visible line of stanchions.
(3) A set of clearly visible line-of-sight landmarks, such as a fence post behind the dedicated spotter and a building corner ahead of the dedicated spotter.
(B) Be positioned to effectively gauge the clearance distance.
(C) Where necessary, use equipment that enables the dedicated spotter to communicate directly with the operator.
(D) Give timely information to the operator so that the required clearance distance can be maintained.
(ii) Use a proximity alarm set to give the operator sufficient warning to prevent encroachment.
(iii) Use a device that automatically warns the operator when to stop movement, such as a range control warning device. Such a device shall be set to give the operator sufficient warning to prevent encroachment.
(iv) Use a device that automatically limits range of movement and that is set to prevent encroachment.
(v) Use an elevated warning line, barricade, or line of signs, in view of the operator, equipped with flags or similar high-visibility markings.
(6) Assembly/disassembly below power lines prohibited. The employer shall ensure that no part of a crane or derrick, load line, or load, including rigging and lifting accessories, whether partially or fully assembled, is allowed below a power line unless the employer has confirmed that the utility owner or operator has deenergized and visibly grounded the power line at the worksite.
(7) Assembly/disassembly inside Table A clearance prohibited. The employer shall ensure that no part of a crane or derrick, load line, or load, including rigging and lifting accessories, whether partially or fully assembled, is closer than the minimum approach distance under Table A "Minimum Clearance Distances" to a power line unless the employer has confirmed that the utility owner or operator has deenergized and visibly grounded the power line at the worksite.
(8) Voltage information. When Option (3) in subrule (4) of this rule is used, the utility owner or operator of the power lines shall provide the requested voltage information within 2 working days of the employer's request.
(9) Power lines presumed energized. The employer may assume that all power lines are energized unless the utility owner or operator confirms that the power line has been and continues to be deenergized and visibly grounded at the worksite.
(10) Posting of electrocution warnings. The employer shall ensure that at least 1 electrocution hazard warning is conspicuously posted in the cab so that it is in view of the operator and, except for overhead gantry and tower cranes, at least 2 are posted on the outside of the equipment.

R 408.41036a Power line safety up to 350 kV; equipment operations.
Rule 1036a. (1) Hazard assessments and precautions inside the work zone. Before beginning equipment operations, the employer shall comply with the requirements in subrules (2) and (3) of this rule.
(2) The employer shall ensure that the work zone is identified by either of the following means:

(a) Demarcating boundaries, such as with flags, or a device such as a range limit device or range control warning device, and prohibiting the operator from operating the equipment past those boundaries.

(b) Defining the work zone as the area 360 degrees around the equipment, up to the equipment's maximum working radius.

(3) The employer shall determine if any part of the equipment, load line, or load, including rigging and lifting accessories, if operated up to the equipment's maximum working radius in the work zone, could get closer than 20 feet to a power line. If this could occur, the employer shall do 1 of the following:

(a) Option (1)—Deenergize and ground. Confirm from the utility owner or operator that the power line has been deenergized and visibly grounded at the worksite.

(b) Option (2)—20 foot clearance. Ensure that no part of the equipment, load line, or load, including rigging and lifting accessories, gets closer than 20 feet to the power line by implementing the measures specified in subrule (4) of this rule.

(c) Option (3)—Table A clearance. The following apply:

(i) Determine the line's voltage and the minimum approach distance permitted under Table A "Minimum Clearance Distances."

(ii) Determine if any part of the equipment, load line, or load, including rigging and lifting accessories, while operating up to the equipment's maximum working radius in the work zone, could get closer than the minimum approach distance of the power line permitted under Table A "Minimum Clearance Distances." If this could occur, the employer shall follow the requirements in subrule (4) of this rule to ensure that no part of the equipment, load line, or load, including rigging and lifting accessories, gets closer to the line than the minimum approach distance.

(4) Preventing encroachment or electrocution. Where encroachment precautions are required under subrule (3)(b) or (c) of this rule, all of the following requirements shall be met:

(a) Conduct a planning meeting with the operator and the other workers who may be in the area of the equipment or load to review the location of the power lines, and the steps that will be implemented to prevent encroachment or electrocution.

(b) If tag lines are used, the tag lines must be nonconductive.

(c) Erect and maintain an elevated warning line, barricade, or line of signs, in view of the operator, equipped with flags or similar high-visibility markings, at 20 feet from the power line, if using subrule (3)(b) of this rule, or at the minimum approach distance under Table A "Minimum Clearance Distances" if using subrule (3)(c) of this rule. If the operator is unable to see the elevated warning line, a dedicated spotter shall be used as described in subrule (4)(d)(ii) of this rule in addition to implementing 1 of the measures described in subrule (4)(d)(i), (iii), (iv), and (v) of this rule.

(d) Implement at least 1 of the following measures:

(i) A proximity alarm set to give the operator sufficient warning to prevent encroachment.

(ii) Use a dedicated spotter who is in continuous contact with the operator. The dedicated spotter must do all of the following:

(A) Be equipped with a visual aid to assist in identifying the minimum clearance distance. Examples of a visual aid include, but are not limited to, any of the following:

(1) A clearly visible line painted on the ground.

(2) A clearly visible line of stanchions.

(3) A set of clearly visible line-of-sight landmarks such as a fence post behind the dedicated spotter and a building corner ahead of the dedicated spotter.
(B) Be positioned to effectively gauge the clearance distance.
(C) Where necessary, use equipment that enables the dedicated spotter to communicate directly with the operator.
(D) Give timely information to the operator so that the required clearance distance can be maintained.
(iii) Use a device that automatically warns the operator when to stop movement, such as a range control warning device. This device shall be set to give the operator sufficient warning to prevent encroachment.
(iv) Use of a device that automatically limits range of movement shall be set to prevent encroachment.
(v) Use of an insulating link or device, as defined in R 408.41006b, shall be installed at a point between the end of the load line, or below, and the load.
(e) The requirements of subdivision (4)(d) of this subrule do not apply to work covered by Construction Safety Standard Part 16 "Power Transmission and Distribution," as referenced in R 408.41003e.
(5) Voltage information. When subrule (3)(c) of this rule is used, the utility owner or operator of the power lines shall provide the requested voltage information within 2 working days of the employer's request.
(6) Operations below power lines. No part of the equipment, load line, or load, including rigging and lifting accessories, is allowed below a power line unless the employer has confirmed that the utility owner or operator has deenergized and visibly grounded the power line at the worksite.
This subrule is inapplicable when the employer demonstrates that 1 of the following applies:
(a) The work is covered by Construction Safety Standard Part 16 "Power Transmission and Distribution," as referenced in R 408.41003e.
(b) For equipment with non-extensible booms, the uppermost part of the equipment, with the boom at true vertical, would be more than 20 feet below the plane of the power line or more than the Table A, minimum clearance distance below the plane of the power line.
(c) For equipment with articulating or extensible booms, the uppermost part of the equipment, with the boom in the fully extended position, at true vertical, would be more than 20 feet below the plane of the power line or more than the Table A, minimum clearance distance below the plane of the power line.
(d) The employer demonstrates that compliance with this subrule is infeasible and meets the requirements of R 408.41036c.
(7) Power lines presumed energized. The employer may assume that all power lines are energized unless the utility owner or operator confirms that the power line has been and continues to be deenergized and visibly grounded at the worksite.
(8) Working near transmitter or communication towers. When working near transmitter or communication towers where the equipment is close enough for an electrical charge to be induced in the equipment or materials being handled, the employer shall ensure that the transmitter is deenergized or both of the following precautions are taken:
(a) The equipment is provided with an electrical ground.

(b) If tag lines are used, the tag lines are non-conductive.

(9) Training. The employer shall train each operator and crew member assigned to work with the equipment on all of the following:

(a) The procedures to be followed in the event of electrical contact with a power line, including all of the following:

(i) Information regarding the danger of electrocution from the operator simultaneously touching the equipment and the ground.

(ii) The importance to the operator's safety of remaining inside the cab except where there is an imminent danger of fire, explosion, or other emergency that necessitates leaving the cab.

(iii) The safest means of evacuating from equipment that may be energized.

(iv) The danger of the potentially energized zone around the equipment, step potential.

(v) The need for crew in the area to avoid approaching or touching the equipment and the load.

(vi) Safe clearance distance from power lines.

(b) Power lines are presumed to be energized unless the utility owner or operator confirms that the power line has been and continues to be deenergized and visibly grounded at the worksite.

(c) Power lines are presumed to be uninsulated unless the utility owner or operator or a registered engineer who is a qualified person with respect to electrical power transmission and distribution confirms that a line is insulated.

(d) The limitations of an insulating link or device, proximity alarm, and any range control devices, if used.

(e) The procedures to be followed to properly ground equipment and the limitations of grounding.

(f) Employees working as dedicated spotters shall be trained to enable them to effectively perform their task, including training on the applicable requirements of this rule.

(g) Training under this subrule shall be administered in accordance with R 408.41064(10).

(10) Devices originally designed by the manufacturer for use as a safety device, as specified in R 408.41040, operational aid, or a means to prevent power line contact or electrocution, when used to comply with this rule, shall meet the manufacturer's procedures for use and conditions of use.

TABLE A MINIMUM CLEARANCE DISTANCES	
Voltage (nominal, kV, alternating current)	**Minimum clearance distance (feet)**
up to 50	**10**
over 50 to 200	**15**
over 200 to 350	**20**
over 350 to 500	**25**
over 500 to 750	**35**
over 750 to 1,000	**45**
over 1,000	**(as established by the utility owner or operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).**
Note: The value that follows ‘‘to’’ is up to and includes that value. For example, over 50 to 200 means up to and including 200kV.	

R 408.41036b Power line safety over 350 kV.

Rule 1036b. The requirements of R 408.41036 and R 408.41036a apply to power lines over 350 kV except for the following:

(a) For power lines at or below 1000 kV, wherever the distance ‘‘20 feet’’ is specified, the distance ‘‘50 feet’’ shall be substituted.

(b) For power lines over 1000 kV, the minimum clearance distance shall be established by the utility owner or operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution.

R 408.41036c Power line safety (all voltages); equipment operations closer than Table A zone.

Rule 1036c. (1) Equipment operations in which any part of the equipment, load line, or load, including rigging and lifting accessories, is closer than the minimum approach distance under Table A “Minimum Clearance Distances,” to an energized power line shall be prohibited, except where the employer demonstrates that all of the requirements in subrules (2) to (25) of this rule are met.

(2) The employer determines that it is infeasible to do the work without breaching the minimum approach distance under Table A “Minimum Clearance Distances.”

(3) The employer determines that, after consultation with the utility owner or operator, it is infeasible to deenergize and ground the power line or relocate the power line.

(4) Minimum clearance distance requirements. The power line owner or operator or registered professional engineer, who is a qualified person with respect to electrical power transmission and distribution, determines the minimum clearance distance that must be maintained to prevent electrical contact in light of the on-site conditions. The factors that shall be considered in making this determination include, but are not limited to, the following:

(a) Conditions affecting atmospheric conductivity.
(b) Time necessary to bring the equipment, load line, and load, including rigging and lifting accessories, to a complete stop.
(c) Wind conditions.
(d) Degree of sway in the power line.
(e) Lighting conditions.
(f) Other conditions affecting the ability to prevent electrical contact.
(5) Subrule (4) of this rule does not apply to work covered by Construction Safety Standard Part 16 "Power Transmission and Distribution," as referenced in R 408.41003e. For such work, the minimum clearance distances specified in CS Part 16 Table 1 apply. Employers engaged in CS Part 16 work may work closer than the distances in CS Part 16 Table 1 where both the requirements of this rule and CS Part 16 R 408.41642(2) are met.
(6) A planning meeting with the employer and utility owner or operator, or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution, is held to determine the procedures that shall be followed to prevent electrical contact and electrocution. At a minimum, these procedures must include the requirements in subrules (7) to (18) of this rule.
(7) If the power line is equipped with a device that automatically reenergizes the circuit in the event of a power line contact, before the work begins, the automatic reclosing feature of the circuit interrupting device shall be made inoperative if the design of the device permits.
(8) Use a dedicated spotter who is in continuous contact with the operator. The dedicated spotter must do all of the following:
(a) Be equipped with a visual aid to assist in identifying the minimum clearance distance. Examples of a visual aid include, but are not limited to, any of the following:
(i) A clearly visible line painted on the ground.
(ii) A clearly visible line of stanchions.
(iii) A set of clearly visible line-of-sight landmarks such as a fence post behind the dedicated spotter and a building corner ahead of the dedicated spotter.
(b) Be positioned to effectively gauge the clearance distance.
(c) Where necessary, use equipment that enables the dedicated spotter to communicate directly with the operator.
(d) Give timely information to the operator so that the required clearance distance can be maintained.
(9) Use of an elevated warning line or barricade that is not attached to the crane in view of the operator, either directly or through video equipment, and equipped with flags or similar high-visibility markings to prevent electrical contact. This subrule does not apply to work covered by Construction Safety Standard Part 16 "Power Transmission and Distribution," as referenced in R 408.41003e.
(10) The following apply to use of an insulating link or device:
(a) An insulating link or device shall be installed at a point between the end of the load line, or below, and the load.
(b) For work covered by Construction Safety Standard Part 16 "Power Transmission and Distribution," as referenced in R 408.41003e, the requirement in subdivision (a) of this subrule, applies only when working inside the CS Part 16 Table 1 clearance distances.

(11) Use of nonconductive rigging if the rigging may be within the minimum clearance distances during operation, as specified in Table A "Minimum Clearance Distances."

(12) If the equipment is equipped with a device that automatically limits range of movement, it shall be used and set to prevent any part of the equipment, load line, or load, including rigging and lifting accessories, from breaching the minimum approach distance established under subrules (4) and (5) of this rule.

(13) If a tag line is used, the tag line must be of the nonconductive type.

(14) Use of barricades forming a perimeter at least 10 feet away from the equipment to prevent unauthorized personnel from entering the work area. In areas where obstacles prevent the barricade from being at least 10 feet away, the barricade must be as far from the equipment as feasible.

(15) Workers other than the operator are prohibited from touching the load line above the insulating link or device and crane. Operators who remotely operate the equipment from the ground shall use either wireless controls that isolate the operator from the equipment or insulating mats that insulate the operator from the ground.

(16) Only personnel essential to the operation may be in the area of the crane and load.

(17) The equipment shall be properly grounded.

(18) Insulating line hose or cover-up shall be installed by the utility owner or operator except where such devices are unavailable for the line voltages involved.

(19) The procedures developed to comply with subrules (6) to (18) of this rule are documented and immediately available on-site.

(20) The equipment user and utility owner or operator, or registered professional engineer shall meet with the equipment operator and the other workers who must be in the area of the equipment or load to review the procedures that must be implemented to prevent breaching the minimum approach distance established in subrules (4) and (5) of this rule and prevent electrocution.

(21) The procedures developed to comply with subrules (6) to (18) of this rule are implemented.

(22) The utility owner or operator, or registered professional engineer and all employers of employees involved in the work shall identify 1 person who will direct the implementation of the procedures. The person identified under this subrule shall direct the implementation of the procedures and shall have the authority to stop work at any time to ensure safety.

(23) If a problem occurs implementing the procedures being used to comply with subrules (6) to (18) of this rule, or indicating that those procedures are inadequate to prevent electrocution, the employer shall safely stop operations and either develop new procedures to comply with subrules (6) to (18) of this rule, or have the utility owner or operator deenergize and visibly ground or relocate the power line before resuming work.

(24) Devices originally designed by the manufacturer for use as a safety device, as specified in R 408.41040, operational aid, or a means to prevent power line contact or electrocution, when used to comply with this rule, shall comply with the manufacturer's procedures for use and conditions of use.

(25) The employer shall train each operator and crew member assigned to work with the equipment in accordance with R 408.41036a.

R 408.41036d Power line safety with no load.

Rule 1036d. (1) This rule establishes procedures and criteria that must be met for equipment traveling under or near a power line on a construction site with no load. Equipment traveling on a construction site with a load must comply with 1 or all of the following rules as appropriate:

(a) R 408.41036a.

(b) R 408.41036b.

(c) R 408.41036d and R 408.41053f.

(2) The employer shall ensure that all of the following requirements are met:

(a) The boom or mast and boom or mast support system are lowered sufficiently to meet the requirements of this rule.

(b) The clearances specified in Table T "Minimum Clearance Distances While Traveling With No Load" of this rule are maintained.

(c) The effects of speed and terrain on equipment movement, including movement of the boom or mast, are considered so that those effects do not cause the minimum clearance distances specified in Table T of this rule to be breached.

(d) Dedicated spotter. If any part of the equipment while traveling is closer than 20 feet to the power line, the employer shall ensure that a dedicated spotter who is in continuous contact with the driver or operator is used. The dedicated spotter shall do all of the following:

(i) Be positioned to effectively gauge the clearance distance.

(ii) Where necessary, use equipment that enables the dedicated spotter to communicate directly with the operator.

(iii) Give timely information to the operator so that the required clearance distance can be maintained.

(e) Additional precautions for traveling in poor visibility. When traveling at night or in conditions of poor visibility, in addition to the measures specified in subdivisions (a) to (d) of this subrule, the employer shall ensure both of the following:

(i) The power lines are illuminated or another means of identifying the location of the lines is used.

(ii) A safe path of travel is identified and used.

TABLE T MINIMUM CLEARANCE DISTANCES WHILE TRAVELING WITH NO LOAD	
Voltage (nominal, kV, alternating current)	**While traveling—minimum clearance distance (feet)**
Up to 0.75	**4**
Over .75 to 50	**6**
Over 50 to 345	**10**
Over 345 to 750	**16**
Over 750 to 1,000	**20**
Over 1,000	**(as established by the utility owner or operator or registered professional engineer who is a qualified person with respect to electrical power transmission and distribution).**

EQUIPMENT INSPECTION REQUIREMENTS

R 408.41037 Modified equipment inspection.

Rule 1037. (1) Equipment that has had modifications or additions that affect the safe operation of the equipment or capacity shall be inspected by a qualified person after such modifications and additions have been completed, prior to initial use. These modifications or additions may include a safety device or operational aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism. The inspection shall meet both of the following requirements:

(a) The inspection shall assure that the modifications or additions have been done in accordance with the approval obtained pursuant to R 408.41083.

(b) The inspection shall include functional testing of the equipment.

(2) The employer shall ensure that equipment is not used until an inspection under this rule demonstrates that the requirements of subrule (1)(a) of this rule have been met.

R 408.41037a Repaired or adjusted equipment inspection.

Rule 1037a. (1) Equipment that has had a repair or adjustment that relates to safe operation shall be inspected by a qualified person after such a repair or adjustment has been completed, prior to initial use. These repairs and adjustments may include a safety device or operational aid, critical part of a control system, power plant, braking system, load-sustaining structural components, load hook, or in-use operating mechanism. The inspection shall meet all of the following requirements:

(a) The qualified person shall determine if the repair or adjustment meets manufacturer equipment criteria where applicable and available.

(b) Where manufacturer equipment criteria are unavailable or inapplicable, the qualified person shall do both of the following:

(i) Determine if a registered professional engineer (RPE) is needed to develop criteria for the repair or adjustment. If an RPE is not needed, the employer shall ensure that the criteria are developed by the qualified person. If an RPE is needed, the employer shall ensure that the criteria are developed by an RPE.

(ii) Determine if the repair or adjustment meets the criteria developed in accordance with subdivision (b)(i) of this subrule.

(c) The inspection shall include functional testing of the repaired or adjusted parts and other components that may be affected by the repair or adjustment.

(2) The employer shall ensure that equipment is not used until an inspection under this rule demonstrates that the repair or adjustment meets the requirements of subrule (1)(a) or, where applicable, subrule (1)(b) of this rule.

R 408.41037b Post-assembly inspection.

Rule 1037b. (1) Upon completion of assembly, a qualified person shall inspect the equipment to ensure that it is configured in accordance with manufacturer equipment criteria.

(2) When manufacturer equipment criteria are unavailable, a qualified person shall do both of the following:

(a) Determine if an RPE who is familiar with the type of equipment involved is needed to develop criteria for the equipment configuration. If an RPE is not needed, the employer shall ensure that the criteria are developed by the qualified person. If an RPE is needed, the employer shall ensure that the criteria are developed by an RPE.

(b) Determine if the equipment meets the criteria developed in accordance with subdivision (a) of this subrule.

(3) Equipment shall not be used until an inspection under this rule demonstrates that the equipment is configured in accordance with the applicable criteria.

R 408.41037c Each shift inspection.

Rule 1037c. (1) A competent person shall begin a visual inspection prior to each shift the equipment is to be used. The inspection shall be completed before or during that shift and shall consist of observation for apparent deficiencies. Taking apart equipment components and booming down is not required as part of this inspection unless the results of the visual inspection or trial operation indicate that further investigation necessitates taking apart equipment components or booming down. Determinations made in conducting the inspection shall be reassessed in light of observations made during operation. At a minimum, the inspection shall include all of the following:

(a) Control mechanisms for maladjustments interfering with proper operation.

(b) Control and drive mechanisms for apparent excessive wear of components and contamination by lubricants, water, or other foreign matter.

(c) Air, hydraulic, and other pressurized lines for deterioration or leakage, particularly those that flex in normal operation.

(d) Hydraulic system for proper fluid level.

(e) Hooks and latches for deformation, cracks, excessive wear, or damage such as from chemicals or heat.

(f) Wire rope reeving for compliance with the manufacturer's specifications.

(g) Wire rope, in accordance with R 408.41038.

(h) Electrical apparatus for malfunctioning, signs of apparent excessive deterioration, dirt or moisture accumulation.
(i) Tires, when in use, for proper inflation and condition.
(j) Ground conditions around the equipment for proper support including ground settling under and around outriggers or stabilizers and supporting foundations ground water accumulation or similar conditions. This rule does not apply to the inspection of ground conditions for railroad tracks and their underlying support when the railroad tracks are part of the general railroad system of transportation that is regulated according to the Federal Railroad Administration under 49 CFR part 213 as adopted in R 408.41003f.
(k) The equipment for level position within the tolerances specified by the equipment manufacturer's recommendations, both before each shift and after each move and setup.
(l) Operator cab windows for significant cracks, breaks, or other deficiencies that would hamper the operator's view.
(m) Rails rail stops rail clamps, and supporting surfaces when the equipment has rail traveling. This rule does not apply to the inspection of rails rail stops rail clamps, and supporting surfaces when the railroad tracks are part of the general railroad system of transportation that is regulated according to the Federal Railroad Administration under 49 CFR part 213 as adopted in R 408.41003f.
(n) Safety devices and operational aids for proper operation.
(2) If any deficiency in subrule (1)(a) to (m) of this rule, or in additional inspection items required to be checked for specific types of equipment in accordance with other rules of this standard is identified, a competent person shall make an immediate determination as to whether the deficiency constitutes a safety hazard. If the deficiency is determined to constitute a safety hazard, the employer shall ensure that the equipment is taken out of service until it is corrected, as specified in R 408.41053 to R 408.41053g.
(3) If there is any deficiency in safety devices and operational aids for proper operation identified, the employer shall ensure that the action specified in R 408.41040 and R 408.41052 to R 408.41052b is taken prior to using the equipment.

R 408.41037d Monthly inspection.
Rule 1037d. (1) An employer shall ensure that equipment that is in service is inspected monthly in accordance with R 408.41037c.
(2) Equipment shall not be used until an inspection under these rules demonstrates that no corrective action under R 408.41037c (2) and (3) is required.
(3) The following information shall be documented and maintained by the employer that conducts the inspection:
(a) The items checked and the results of the inspection.
(b) The name and signature of the person who conducted the inspection and the date.
(4) The document required in subrule (3) of this rule shall be retained for a minimum of 3 months.

R 408.41037e Annual and comprehensive inspection.
Rule 1037e. (1) At least every 12 months, a qualified person shall inspect the equipment in accordance with R 408.41037c, except that the corrective action set forth

in subrules (3), (4), and (5) of this rule shall apply in place of the corrective action required by R 408.41037c (2) and (3).

(2) In addition to the requirement in subrule (1) of this rule, at least every 12 months, the equipment shall be inspected by a qualified person. Disassembly shall be required, as necessary, to complete the inspection. The equipment and equipment structure including the boom and, if equipped, the jib, shall be inspected for all of the following:

(a) Deformed, cracked, or significantly corroded structural members.

(b) Loose, failed, or significantly corroded bolts, rivets, and other fasteners.

(c) Cracked welds.

(d) Sheaves and drums for cracks or significant wear.

(e) Parts such as pins, bearings, shafts, gears, rollers, and locking devices for distortion, cracks, or significant wear.

(f) Brake and clutch system parts, linings, pawls, and ratchets for excessive wear.

(g) Safety devices and operational aids for proper operation, including significant inaccuracies.

(h) Gasoline, diesel, electric, or other power plants for proper operation and safety-related problems or conditions, such as a leaking exhaust and an emergency shut-down feature.

(i) Chains and chain drive sprockets for excessive wear of sprockets and excessive chain stretch.

(j) Travel steering, brakes, and locking devices, for proper operation.

(k) Tires for damage or excessive wear.

(l) Hydraulic, pneumatic, and other pressurized hoses, fittings, and tubing, as follows:

(i) A flexible hose or its junction with the fittings for indications of leaks.

(ii) Threaded or clamped joints for leaks.

(iii) Outer covering of the hose for blistering, abnormal deformation, or other signs of failure or impending failure.

(iv) Outer surface of a hose, rigid tube, or fitting for indications of excessive abrasion or scrubbing.

(m) Hydraulic and pneumatic pumps and motors, as follows:

(i) Performance indicators for unusual noises or vibration, low operating speed, excessive heating of the fluid, or low pressure.

(ii) Loose bolts or fasteners.

(iii) Shaft seals and joints between pump sections for leaks.

(n) Hydraulic and pneumatic valves, as follows:

(i) Spools for sticking, improper return to neutral, and leaks.

(ii) Leaks.

(iii) Valve housing cracks.

(iv) Relief valves for failure to reach correct pressure. A manufacturer procedure for checking pressure, must be followed.

(o) Hydraulic and pneumatic cylinders, as follows:

(i) Drifting caused by fluid leaking across the piston.

(ii) Rod seals and welded joints for leaks.

(iii) Cylinder rods for scores, nicks, or dents.

(iv) Case or barrel for significant dents.

(v) Rod eyes and connecting joints that are loose or deformed.

(p) Outrigger or stabilizer pads or floats for excessive wear or cracks.

(q) Slider pads for excessive wear or cracks.
(r) Electrical components and wiring for cracked or split insulation and loose or corroded terminations.
(s) Warning labels and decals originally supplied with the equipment by the manufacturer or otherwise required under this standard that are missing or unreadable.
(t) Originally equipped operator seat or equivalent that are missing.
(u) Operator seat that is unserviceable.
(v) Originally equipped steps, ladders, handrails, and guards that are missing.
(w) Steps, ladders, handrails, and guards that are in unusable or unsafe condition.
(2) The inspection required in subrule (1) of this rule shall include functional testing of the equipment as configured to determine if it is functioning properly.
(3) If any deficiency is identified during the inspection, a qualified person shall make an immediate determination as to whether the deficiency constitutes a safety hazard or, though not yet a safety hazard, needs to be monitored in the monthly inspections.
(4) If the qualified person determines that a deficiency is a safety hazard, the employer shall ensure that the equipment is taken out of service until it has been corrected, except when temporary alternative measures are implemented as specified in R 408.41052a or R 408.41084c. See R 408.41053.
(5) If the qualified person determines that, though not presently a safety hazard, the deficiency needs to be monitored, the employer shall ensure that the deficiency is checked in the monthly inspections.
(6) Documentation of annual inspection. The following information shall be documented, maintained, and retained for a minimum of 12 months by the employer that conducts the inspection:
(a) The items checked and the results of the inspection.
(b) The name and signature of the person who conducted the inspection and the date.

R 408.41037f Additional inspection requirements.
Rule 1037f. (1) Where the severity of use or conditions is such that there is a reasonable probability of damage or excessive wear, such as loading, or shock loading, that may have exceeded rated capacity, or prolonged exposure to a corrosive atmosphere, the employer shall stop using the equipment and a qualified person shall do all of the following:
(a) Inspect the equipment for structural damage to determine if the equipment can continue to be used safely.
(b) In light of the use or conditions determine whether any items and conditions listed in R 408.41037e need to be inspected. If an inspection is needed, the qualified person shall inspect those items and conditions.
(c) If a deficiency is found, the employer shall follow the requirements in R 408.41037e (3) to (5).
(2) Equipment that has been idle for 3 months or more shall be inspected by a qualified person in accordance with the requirements of R 408.41037d before initial use.
(3) Any part of a manufacturer's procedures regarding inspections that relate to safe operation that is more comprehensive or has a more frequent schedule of inspection

than the requirements of this rule shall be followed, such as the operation of any of the following:
(a) Safety devices.
(b) Operational aids.
(c) Critical part of a control system.
(d) Power plants.
(e) Braking systems.
(f) Load-sustaining structural components.
(g) Load hooks.
(h) In-use operating mechanisms.
(4) All documents produced under this rule shall be available during the applicable document retention period to all persons who conduct inspections under this rule.

WIRE ROPE INSPECTION REQUIREMENTS

R 408.41038 Each shift inspection.
Rule 10138. (1) A wire rope that is in continuous service shall be visually inspected by a competent person prior to each shift. A visual inspection shall consist of observing all rope, including running and standing, that can be expected to be in use during the day's operations. The purpose of the visual observations is to discover damage that may be an immediate hazard. Untwisting or opening of wire rope or booming down is not required as part of this inspection.
(2) Category I. Apparent deficiencies in this category include any of the following:
(a) Significant distortion of the rope, including any of the following:
(i) Kinking.
(ii) Crushing.
(iii) Unstranding.
(iv) Birdcaging.
(v) Signs of core failure or steel core protrusion between the outer strands.
(b) Electric arc damage, from a source other than power lines, or heat damage.
(c) Improperly applied end connections.
(d) Significantly corroded, cracked, bent, or worn end connections, such as from severe service.
(3) Category II. Apparent deficiencies in this category are any of the following:
(a) Visible broken or cut wires.
(b) In running wire ropes, 6 randomly distributed broken wires in 1 rope lay or 3 broken wires in 1 strand in 1 rope lay, where a rope lay is the length along the rope in which 1 strand makes a complete revolution around the rope.
(c) In rotation-resistant ropes, 2 randomly distributed broken wires in 6 rope diameters or 4 randomly distributed broken wires in 30 rope diameters.
(d) In pendants or standing ropes, there are more than 2 broken wires in 1 rope lay in sections beyond end connections or more than 1 broken wire at an end connection.
(e) A diameter reduction of more than 5% from nominal diameter.
(4) Category III. Apparent deficiencies in this category include any of the following:
(a) In rotation resistant wire rope, core protrusion or other distortion indicating core failure.
(b) Prior electrical contact with a power line.

(c) A broken strand.

(5) Critical review items. The competent person shall give particular attention to all of the following:

(a) Rotation resistant wire rope in use.

(b) Wire rope being used for boom hoists and luffing hoists, particularly at reverse bends.

(c) Wire rope at flange points, crossover points, and repetitive pickup points on drums.

(d) Wire rope at or near terminal ends.

(e) Wire rope in contact with saddles, equalizer sheaves, or other sheaves where rope travel is limited.

(6) All of the following require removal from service:

(a) If a deficiency in Category I is identified, a competent person shall make an immediate determination as to whether the deficiency constitutes a safety hazard. If the competent person determines a deficiency constitutes a safety hazard, operations involving use of the wire rope in question shall be prohibited until 1 of the following occurs:

(i) The wire rope is replaced, as specified in R 408.41053 to R 408.41053g.

(ii) If the deficiency is localized, the problem shall be corrected by severing the wire rope in 2. The undamaged portion may continue to be used. Joining lengths of wire rope by splicing shall be prohibited. If a rope is shortened under this subrule, the employer shall ensure that the drum has 2 wraps of wire when the load, boom, or both is in the lowest position.

(b) If a deficiency in Category II is identified, operations involving use of the wire rope in question shall be prohibited until 1 of the following occurs:

(i) The employer complies with either the wire rope manufacturer's established criterion for removal from service or a different criterion that the wire rope manufacturer has approved in writing for that specific wire rope, as specified in R 408.41053 to R 408.41053g.

(ii) The wire rope is replaced, as specified in R 408.41053 to R 408.41053g.

(iii) If the deficiency is localized the problem is corrected by severing the wire rope in 2. The undamaged portion may continue to be used. Joining lengths of wire rope by splicing shall be prohibited. If a rope is shortened under this subrule the employer shall ensure that the drum has 2 wraps of wire when the load boom or both is in the lowest position.

(c) If a deficiency in Category III is identified, operations involving use of the wire rope in question shall be prohibited until 1 of the following occurs:

(i) The wire rope is replaced, as specified in R 408.41053 to R 408.41053g.

(ii) If the deficiency, other than power line contact, is localized, the problem is corrected by severing the wire rope in 2. The undamaged portion may continue to be used. Joining lengths of wire rope by splicing shall be prohibited. Repair of wire rope that contacted an energized power line shall also be prohibited. If a rope is shortened under this subrule, the employer shall ensure that the drum has 2 wraps of wire when the load, boom, or both is in the lowest position. The defective portion of a wire rope that is removed shall not be used for other load-carrying service.

(d) Where a wire rope is required to be removed from service under this rule, either the equipment as a whole or the hoist with that wire rope shall be tagged-out, in accordance with R 408.41053b(1), until the wire rope is repaired or replaced

R 408.41038a Monthly inspection.

Rule 1038a. (1) An employer shall ensure that a monthly inspection is conducted in accordance with R 408.41038.

(2) The inspection required in subrule (1) of this rule shall include any deficiencies that the qualified person who conducts the annual inspection determines under R 408.41038b(3)(b) shall be monitored.

(3) Wire ropes on equipment shall not be used until an inspection under this rule demonstrates that no corrective action under R 408.41038(6) is required.

(4) The inspection required by this rule shall be documented according to R 408.41037d (3) and (4).

R 408.41038b Annual and comprehensive inspection.

Rule 1038b. (1) An employer shall ensure that at least every 12 months, wire ropes in use on equipment shall be inspected by a qualified person in accordance with R 408.41038.

(2) In addition to the requirement in subrule (1) of this rule, at least every 12 months, the wire ropes in use on equipment shall be inspected by a qualified person, as follows:

(a) The inspection shall be for deficiencies of the types listed in R 408.41038 (2), (3), and (4).

(b) The inspection shall be complete and thorough, covering the surface of the entire length of the wire ropes, with particular attention given to all of the following:

(i) Critical review items listed in R 408.41038(5).

(ii) Those sections that are normally hidden during shift and monthly inspections.

(iii) Wire rope subject to reverse bends.

(iv) Wire rope passing over sheaves.

(c) Exception. If an inspection under subrule (2) of this rule is not feasible due to existing set-up and configuration of the equipment, such as where an assist crane is needed, or due to site conditions such as a dense urban setting, the inspections shall be conducted as soon as it becomes feasible, but no longer than an additional 6 months for running ropes and at the time of disassembly for standing ropes.

(3) If a deficiency is identified, a qualified person shall make an immediate determination as to whether the deficiency constitutes a safety hazard. All of the following apply if a deficiency is identified:

(a) If the deficiency is determined to constitute a safety hazard, operations involving use of the wire rope in question shall be prohibited until 1 of the following occurs:

(i) The wire rope is replaced, as specified in R 408.41053 to R 408.41053g.

(ii) If the deficiency is localized, the problem is corrected by severing the wire rope in 2. The undamaged portion may continue to be used. Joining lengths of wire rope by splicing shall be prohibited. If a rope is shortened under this subrule, the employer shall ensure that the drum has 2 wraps of wire when the load, boom, or both is in its lowest position.

(b) If the qualified person determines that, though not presently a safety hazard, the deficiency needs to be monitored, the employer shall ensure that the deficiency is checked in the monthly inspections.

(4) The inspection required by this rule shall be documented according to R 408.41037e(6).

R 408.41038c Additional inspection requirements.

Rule 1038c. (1) Rope lubricants that are of the type that hinder inspection shall not be used.

(2) All documents produced under these rules shall be available during the applicable document retention period to all persons who conduct inspections under these rules.

WIRE ROPE SELECTION AND INSTALLATION

R 408.41039 Wire rope selection and installation criteria.

Rule 1039. (1) Original equipment wire rope and replacement wire rope shall be selected and installed in accordance with this rule. Selection of replacement wire rope shall be in accordance with the recommendations of the wire rope manufacturer, the equipment manufacturer, or a qualified person.

(2) Wire rope design criteria. Wire rope, other than rotation resistant rope, shall comply with either of the following:

(a) Option (1). Wire rope shall comply with section 5–1.7.1 of ANSI/ASME B30.5 "Mobile and Locomotive Cranes," 2004 edition, as adopted in R 408.41003a, except that section 5-1.7.1 paragraph (c) shall not apply.

(b) Option (2). Wire rope shall be designed to have, in relation to the equipment's rated capacity, a sufficient minimum breaking force and design factor so that compliance with the applicable inspection provisions in R 408.41038 to R 408.41038c shall be an effective means of preventing sudden rope failure.

(3) Wire rope shall be compatible with the safe functioning of the equipment.

(4) Both of the following apply to boom hoist reeving:

(a) Fiber core ropes shall not be used for boom hoist reeving, except for derricks.

(b) Rotation resistant ropes shall be used for boom hoist reeving only where the requirements of R 408.41039a(4) are met.

R 408.41039a Rotation resistant ropes.

Rule 1039a (1) Type I rotation resistant wire rope (Type I) means stranded rope constructed to have little or no tendency to rotate or, if guided, transmits little or no torque. Type I has at least 15 outer strands and comprises an assembly of at least 3 layers of strands laid helically over a center in 2 operations. The direction of lay of the outer strands is opposite to that of the underlying layer.

(2) Type II rotation resistant wire rope (Type II) means stranded rope constructed to have significant resistance to rotation. Type II has at least 10 outer strands and

comprises an assembly of 2 or more layers of strands laid helically over a center in 2 or 3 operations. The direction of lay of the outer strands is opposite to that of the underlying layer.

(3) Type III rotation resistant wire rope (Type III) means stranded rope constructed to have limited resistance to rotation. Type III has no more than 9 outer strands, and comprises an assembly of 2 layers of strands laid helically over a center in 2 operations. The direction of lay of the outer strands is opposite to that of the underlying layer.

(4) Rotation resistant rope requirements. All of the following requirements apply to rotation resistant rope:

(a) Types II and III with an operating design factor of less than 5 shall not be used for duty cycle or repetitive lifts.

(b) Rotation resistant ropes, including Types I, II, and III, shall have an operating design factor of not less than 3.5.

(c) Type I shall have an operating design factor of not less than 5, except where the wire rope manufacturer and the equipment manufacturer approve the design factor, in writing.

(d) Types II and III shall have an operating design factor of not less than 5, except where the requirements of subrule (8) of this rule are met.

(5) When Types II and III with an operating design factor of less than 5 are used for non-duty cycle, non-repetitive lifts, the following requirements shall be met for each lifting operation:

(a) A qualified person shall inspect the rope in accordance with R 408.41038. The rope shall be used only if the qualified person determines that there are no deficiencies constituting a hazard. In making this determination, more than 1 broken wire in any 1 rope lay is considered a hazard.

(b) Operations shall be conducted in a manner and at speeds so as to minimize dynamic effects.

(c) Each lift made under subrule (5) of this rule shall be recorded in the monthly and annual inspection documents. Prior uses shall be considered by the qualified person in determining whether to use the rope again.

(6) Rotation resistant ropes shall not be used for boom hoist reeving, except where the requirements of subrule (10) of this rule are met.

(7) Rotation resistant ropes may be used as boom hoist reeving when load hoists are used as boom hoists for attachments, such as luffing attachments or boom and mast attachment systems. Under these conditions, all of the following requirements shall be met:

(a) The drum shall provide a first layer rope pitch diameter of not less than 18 times the nominal diameter of the rope used.

(b) The requirements in R 408.41060 (1) and (2), irrespective of the date of manufacture of the equipment, and R 408.41060(3).

(c) The requirements in ANSI/ASME B30.5 "Mobile and Locomotive Cranes," 2004 edition, sections 5–1.3.2 (a), (a)(2) through (a)(4), (b) and (d), as adopted in R 408.41003a, except that the minimum pitch diameter for sheaves used in multiple rope reeving is 18 times the nominal diameter of the rope used, instead of the value of 16 specified in section 5–1.3.2 (d).

(d) All sheaves used in the boom hoist reeving system shall have a rope pitch diameter of not less than 18 times the nominal diameter of the rope used.

(e) The operating design factor for the boom hoist reeving system shall be not less than 5.
(f) The operating design factor for these ropes shall be the total minimum breaking force of all parts of rope in the system divided by the load imposed on the rope system when supporting the static weights of the structure and the load within the equipment's rated capacity.
(g) When provided, a power-controlled lowering system shall be capable of handling rated capacities and speeds as specified by the manufacturer.

R 408.41039b Wire rope clips; socketing; seizing.
Rule 1039b (1) Wire rope clips used in conjunction with wedge sockets shall be attached to the unloaded dead end of the rope only, except that the use of devices specifically designed for dead-ending rope in a wedge socket are permitted.
(2) Socketing shall be done in the manner specified by the manufacturer of the wire rope or fitting.
(3) Prior to cutting a wire rope, seizings shall be placed on each side of the point to be cut. The length and number of seizings shall be in accordance with the wire rope manufacturer's instructions.

SAFETY DEVICES

R 408.41040 Safety devices.
Rule 1040. (1) Safety devices shall be required on all equipment covered by this rule, unless otherwise specified as follows:
(a) Crane level indicators shall be as follows:
(i) The equipment shall have a crane level indicator that is either built into the equipment or is available on the equipment.
(ii) If a built-in crane level indicator is not working properly, it shall be tagged-out or removed. If a removable crane level indicator is not working properly, it shall be removed.
(iii) The requirements in this rule do not apply to portal cranes, derricks, floating cranes or derricks, and land cranes or derricks on barges, pontoons, vessels, or other means of flotation.
(b) Boom stops, except for derricks and hydraulic booms.
(c) Jib stops, if a jib is attached, except for derricks.
(2) Equipment with foot pedal brakes shall have locks.
(3) Hydraulic outrigger jacks and hydraulic stabilizer jacks shall have an integral holding device or check valve.
(4) Equipment on rails shall have rail clamps and rail stops, except for portal cranes
(5) Both of the following apply to horns:
(a) The equipment shall have a horn that is either built into the equipment or is on the equipment and immediately available to the operator.
(b) If a built-in horn is not working properly, it shall be tagged-out or removed. If a removable horn is not working properly, it shall be removed.
(6) Proper operation required. Operations shall not begin unless all of the devices listed in this rule are in proper working order. If a device stops working properly during operations, the operator shall safely stop operations. If any of the devices listed in this rule are not in proper working order, the equipment shall be taken out of service

and operations shall not resume until the device is again working properly as specified in R 408.41053. Alternative measures shall not be used.

R 408.41041a ~~Excavating equipment; operating rules generally.~~ **Rescinded.**
~~Rule 1041a. (1) An employer shall assure that a prospective operator, before being assigned as an operator of excavation equipment, has been trained in all of the following areas:~~
~~(a) The capabilities of equipment and attachments.~~
~~(b) The purpose, use, and limitations of controls.~~
~~(c) The making of daily inspections.~~
~~(d) Practice in operating assigned equipment to perform the functions necessary for required jobs.~~
~~(e) Applicable state standards and company rules and regulations.~~
~~(2) An operator shall not leave excavation equipment unattended with a load suspended above the ground, floor, or platform during working operations. A bucket or blade shall not be left suspended above the ground when a machine is unattended.~~
~~(3) The provisions of subrule (2) shall not prohibit leaving job-related equipment hanging on the hook to prevent theft or vandalism during the hours the project is shut down.~~
~~(4) Windows of any excavation equipment shall be equipped with safety glass or its equivalent. Visual distortions which are caused by broken or defective glass and which would affect the safe operation of the equipment when in use shall be corrected.~~
~~(5) Where necessary for rigging or servicing, a ladder or steps shall be provided to give access to a cab roof.~~
~~(6) Handholds and steps shall be provided on all lifting and digging equipment for access to the cab. Platforms and walkways shall have slip-resistant surfaces, and guardrails as prescribed in construction safety standards Part 21 "Guarding of Walking and Working Areas," and construction safety standards Part 45 "Fall Protection," as referenced in R 408.41003a.~~
~~(7) Fuels shall be transported, stored, and handled as prescribed in construction safety standard Part 18 "Fire Protection and Prevention," as referenced in R 408.41003a.~~
~~(8) An employee shall not be permitted under a suspended load.~~
~~(9) Excavation equipment shall not be loaded beyond the rated load.~~
~~(10) When loads that are limited by hydraulic or structural competence rather than by stability are to be handled, the person who is responsible for the job shall ascertain that the weight of a load approaching rated capacity has been determined and does not exceed the capacity of the equipment.~~
~~(11) In moving a load, an operator shall avoid sudden acceleration or deceleration of a moving boom that would cause a swinging action by the load.~~
~~(12) A load shall be secured and balanced before the load is lifted more than 6 inches.~~
~~(13) A load shall not be moved in a manner that could contact obstructions.~~
~~(14) A tag line shall be used when rotation of the load would be hazardous.~~
~~(15) Excavation equipment shall not be used for dragging a load sideways.~~
~~(16) Before moving excavation equipment that is carrying a load, an on-site supervisor or an operator, or both, shall determine all of the following:~~
~~(a) The position to carry the load.~~
~~(b) The boom location.~~
~~(c) The ground conditions.~~
~~(d) The travel route.~~

~~(e) The speed of movement.~~
~~(f) The location of overhead wires.~~
~~(17) While being moved from one jobsite to another, excavation equipment shall comply with both of the following provisions:~~
~~(a) The boom shall be carried in line with the direction of movement.~~
~~(b) The superstructure shall be secured against rotation, except when negotiating a turn with an operator in the cab or the boom on a dolly.~~
~~(18) Excavation equipment shall not travel with the boom at a height that could allow the boom to bounce back over the cab.~~
~~(19) For moving loads with multiple pieces of excavation equipment, the requirements of subrule (22) of this rule shall be met. The load, conditions, and equipment capacities shall be analyzed and a plan of operation shall be formulated.~~
~~(20) Clothing, personal belongings, tools, and other articles within a cab or operating enclosure shall be stored in cabinets, boxes, or by other means so as not to interfere with access or operations.~~
~~(21) A portable fire extinguisher that has a rating of not less than 10 BC, shall be kept in the cab or operating enclosure. When there is no cab or enclosure, it shall be kept on the jobsite within a 200-foot radius of the equipment and shall be readily available. The operator and maintenance employees shall be trained in the use of the fire extinguisher.~~
~~(22) When night operations are carried out, lighting shall illuminate the immediate working area to a minimum of 10 footcandles and shall not interfere with the operator's vision.~~
~~(23) An employee shall not ride the bare hook or on a load of material suspended from the hook.~~
~~(24) An employer shall comply with the requirements of the power crane and shovel associations' mobile hydraulic crane standard no. 4 "Mobile Power Crane and Excavator and Hydraulic Crane Standards," 1983 edition, as adopted by reference in R 408.41003a.~~
~~(25) When working in proximity to power lines, excavation equipment shall maintain clearances as prescribed in Table A and Table T.~~
~~(26) If an employee could be struck by the rotating superstructure of excavation equipment, the hazardous area shall be barricaded to prevent an employee from entering and being struck.~~
~~(27) If clearances between the rotating or moving structure of constantly moving excavation equipment can create a pinch point for an employee, or if an employee could be struck by the rotating superstructure, an employer, in place of barricades, shall train and instruct each employee to stay out of the danger area and a danger sign, as prescribed in construction safety standards Part 22 "Signals, Signs, Tags, and Barricades," as referenced in R 408.41003a, shall be affixed to the rear and sides of the house and counterweight. The additional lettering on the danger sign shall indicate that the counterweight is swinging.~~
~~(28) An employee shall remain clear of excavation equipment at all times unless the employee is operating the equipment.~~

R 408.41051a ~~Inspections generally, excavation equipment.~~ **Rescinded.**
~~Rule 1051a. (1) A thorough, annual inspection of all boom equipped excavating equipment shall be made by a qualified person. An employer shall maintain, on the jobsite or attached to the equipment, a copy of the latest equipment inspection record with the date and results for each piece of equipment.~~
~~(2) An employer shall designate a qualified person to perform all inspections of excavation equipment as required in R 408.41012a.~~

OPERATIONAL AIDS

R 408.41052 Operational aids.
Rule 1052. (1) The devices listed in these rules are required on all equipment covered by this part, unless otherwise specified.
(a) The requirements in R 408.41052b (2), (3), and (4) do not apply to articulating cranes.
(b) The requirements in R 408.41052a(4), R 408.41052b (2) and (5) apply only to those digger derricks manufactured after November 8, 2011.
(2) Operations shall not begin unless the listed operational aids are in proper working order, except when an operational aid is being repaired, the employer shall use the specified temporary alternative measures. The time periods permitted for repairing defective operational aids are specified in R 408.41052a(2) and R 408.41052b. More protective alternative measures specified by the crane or derrick manufacturer, if any, shall be followed.
(3) If a listed operational aid stops working properly during operations, the operator shall safely stop operations until the temporary alternative measures are implemented or the device is again working properly. If a replacement part is no longer available, the use of a substitute device that performs the same type of function is permitted and is not considered a modification under R 408.41083.

R 408.41052a Category I operational aids and alternative measures.
Rule 1052a. (1) Operational aids listed in these rules that are not working properly shall be repaired not later than 7 calendar days after the deficiency occurs.
Exception: If the employer documents that it has ordered the necessary parts within 7 calendar days of the occurrence of the deficiency, the repair shall be completed within 7 calendar days of receipt of the parts. See R 408.41053d(1) for additional requirements.
(2) Boom hoist limiting devices. The following apply to boom hoist limiting devices:
(a) For equipment manufactured after December 16, 1969, a boom hoist limiting device shall be required. If temporary alternative measures are necessary, 1 or more of the following methods shall be used:
(i) Use a boom angle indicator.
(ii) Clearly mark the boom hoist cable so that it can easily be seen by the operator at a point that will give the operator sufficient time to stop the hoist to keep the boom within the minimum allowable radius. In addition, install mirrors or remote video cameras and displays if necessary for the operator to see the mark.
(iii) Clearly mark the boom hoist cable so that it can easily be seen by a spotter at a point that will give the spotter sufficient time to signal the operator and have the operator stop the hoist to keep the boom within the minimum allowable radius.

(b) If the equipment was manufactured on or before December 16, 1969, and is not equipped with a boom hoist limiting device, at least 1 of the measures in subrule (2)(a)(i) to (iii) of this rule shall be used.

(3) Luffing jib limiting device. Equipment with a luffing jib shall have a luffing jib limiting device. Temporary alternative measures shall be the same as in subrule (2)(a) of this rule, except to limit the movement of the luffing jib rather than the boom hoist.

(4) Anti two-blocking devices – telescopic boom cranes. Telescopic boom cranes manufactured after February 28, 1992 shall be equipped with a device that automatically prevents damage from contact between the load block, overhaul ball, or similar component, and the boom tip or fixed upper block or similar component. The device shall prevent this damage at all points where two-blocking could occur. Temporary alternative measures: Clearly mark the cable so that it can easily be seen by the operator at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, and use a spotter when extending the boom.

(5) Anti two-blocking devices – lattice boom cranes. The following apply to lattice boom cranes:

(a) Lattice boom cranes manufactured after February 28, 1992 shall be equipped with a device that either automatically prevents damage and load failure from contact between the load block, overhaul ball, or similar component, and the boom tip or fixed upper block or similar component, or warns the operator in time for the operator to prevent two-blocking. The device shall either prevent this damage or failure, or provide adequate warning for all points where two-blocking may occur.

(b) Lattice boom cranes and derricks manufactured after November 8, 2011 shall be equipped with a device that automatically prevents damage and load failure from contact between the load block, overhaul ball, or similar component, and the boom tip or fixed upper block or similar component. The device shall prevent this damage or failure at all points where two-blocking may occur.

(c) Exception. The requirements in subrule (5)(a) and (b) of this rule do not apply to lattice boom equipment when used for dragline, clamshell or grapple, magnet, drop ball, container handling, concrete bucket, or marine operations that do not involve hoisting personnel and pile driving work.

(d) Temporary alternative measures. Clearly mark the cable so that it can easily be seen by the operator at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, or use a spotter.

(6) Anti two-blocking devices – articulating cranes. Articulating cranes manufactured after December 31, 1999 that are equipped with a load hoist shall be equipped with a device that automatically prevents damage from contact between the load block, overhaul ball, or similar component, and the boom tip or fixed upper block or similar component. The device shall prevent this damage at all points where two-blocking may occur. Temporary alternative measures: When two-blocking may only occur with movement of the load hoist, clearly mark the cable so that it can easily be seen by the operator at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, or use a spotter. When two-blocking may occur without movement of the load hoist, clearly mark the cable so that it can easily be seen by the operator at a point that shall give the operator sufficient time to stop the hoist to prevent two-blocking, and use a spotter when extending the boom.

R 408.41052b Category II operational aids and alternative measures.

Rule 1052b. (1) Operational aids listed in subrule (2) to (6) of this rule that are not working properly shall be repaired not later than 30 calendar days after the deficiency occurs.

Exception: If the employer documents that it has ordered the necessary parts within 7 calendar days of the occurrence of the deficiency and the part is not received in time to complete the repair in 30 calendar days, the repair shall be completed within 7 calendar days of receipt of the parts. See R 408.41053d(1) for additional requirements.

(2) Boom angle or radius indicator. The equipment shall have a boom angle or radius indicator readable from the operator's station. Temporary alternative measures: Radii or boom angle shall be determined by measuring the radii or boom angle with a measuring device.

(3) Jib angle indicator if the equipment has a luffing jib. Temporary alternative measures: Radii or jib angle shall be determined by ascertaining the main boom angle and then measuring the radii or jib angle with a measuring device.

(4) Boom length indicator if the equipment has a telescopic boom, except where the rated capacity is independent of the boom length. Temporary alternative measures: One or more of the following methods shall be used:

(a) Mark the boom with measured marks to calculate boom length.

(b) Calculate boom length from boom angle and radius measurements.

(c) Measure the boom with a measuring device.

(5) Load weighing and similar devices. The following apply to load weighing and similar devices:

(a) Equipment, other than derricks and articulating cranes, manufactured after March 29, 2003 with a rated capacity over 6,000 pounds shall have at least 1 of the following: a load weighing device, a load moment or rated capacity indicator, or a load moment or rated capacity limiter. Temporary alternative measures: The weight of the load shall be determined from a source recognized by the industry, such as the load's manufacturer, or by a calculation method recognized by the industry, such as calculating a steel beam from measured dimensions and a known per foot weight. This information shall be provided to the operator prior to the lift.

(b) Articulating cranes manufactured after November 8, 2011 shall have at least 1 of the following: an automatic overload prevention device, a load weighing device, a load moment or rated capacity indicator, or a load moment rated capacity limiter. Temporary alternative measures: The weight of the load shall be determined from a source recognized by the industry, such as the load's manufacturer, or by a calculation method recognized by the industry, such as calculating a steel beam from measured dimensions and a known per foot weight. This information shall be provided to the operator prior to the lift.

(6) Both of the following devices shall be required on equipment manufactured after November 8, 2011:

(a) Outrigger or stabilizer position, horizontal beam extension, sensor or monitor if the equipment has outriggers or stabilizers. Temporary alternative measures: The operator shall verify that the position of the outriggers or stabilizers is correct in accordance with manufacturer procedures before beginning operations requiring outrigger or stabilizer deployment.

(b) Hoist drum rotation indicator if the equipment has a hoist drum not visible from the operator's station. Temporary alternative measures: Mark the drum to indicate the rotation of the drum. In addition, install mirrors or remote video cameras and displays if necessary for the operator to see the mark.

OPERATIONS

R 408.41053 Operation procedures.

Rule 1053. (1) The employer shall comply with all manufacturer procedures applicable to the operational functions of equipment, including its use with attachments.

(2) The following apply to unavailable operation procedures:

(a) When the manufacturer procedures are unavailable, the employer shall develop and ensure compliance with all procedures necessary for the safe operation of the equipment and attachments.

(b) Procedures for the operational controls shall be developed by a qualified person.

(c) Procedures related to the capacity of the equipment shall be developed and signed by a registered professional engineer familiar with the equipment.

(3) The following apply to accessibility of procedures:

(a) The procedures applicable to the operation of the equipment, including rated capacities, load charts, recommended operating speeds, special hazard warnings, instructions, and operator's manual, shall be readily available in the cab at all times for use by the operator.

(b) When rated capacities are available in the cab only in electronic form and in the event of a failure that makes the rated capacities inaccessible, the operator shall immediately cease operations or follow safe shut-down procedures until the rated capacities, in electronic or other form, are available.

(4) The operator shall not engage in any practice or activity that diverts his or her attention while actually engaged in operating the equipment, such as the use of cellular phones other than when used for signal communications.

R 408.41053a Leaving equipment unattended.

Rule 1053a. (1) The operator shall not leave the controls while the load is suspended, except when all of the following are met:

(a) The operator remains adjacent to the equipment and is not engaged in any other duties.

(b) The load is to be held suspended for a period of time exceeding normal lifting operations.

(c) The competent person determines that it is safe and implements measures necessary to restrain the boom hoist and telescoping, load, swing, and outrigger or stabilizer functions.

(d) Barricades or caution lines, and notices, are erected to prevent all employees from entering the fall zone. No employees, including those listed in R 408.41058 (2)(a) to (c) and (4) or (5), are permitted in the fall zone.

(2) The provisions in this rule do not apply to working gear, such as slings, spreader bars, ladders, and welding machines, where the weight of the working gear is negligible

relative to the lifting capacity of the equipment as positioned, and the working gear is suspended over an area other than an entrance or exit.

R 408.41053b Tagging out-of-service equipment.

Rule 1053b. (1) When the employer has taken the equipment out of service, a tag shall be placed in the cab stating that the equipment is out of service and is not to be used. When the employer has taken a function out of service, the employer shall ensure that a tag is placed in a conspicuous position stating that the function is out of service and shall not be used.

(2) The following apply to response to ‘‘do not operate’’ and tag-out signs:

(a) If there is a warning sign, such as a tag-out or maintenance, and do not operate, on the equipment or starting control, the operator shall not activate the switch or start the equipment until the sign has been removed by a person authorized to remove it, or until the operator has verified both of the following:

(i) No one is servicing, working on, or otherwise in a dangerous position on the machine.

(ii) The equipment has been repaired and is working properly.

(b) If there is a warning sign, tag-out or maintenance, and do not operate, on any other switch or control, the operator shall not activate that switch or control until the sign has been removed by a person authorized to remove it, or until the operator has verified that the requirements in subrule (2)(a)(i) and (ii) of this rule have been met.

R 408.41053c Engine start up; stop signal; storm warnings.

Rule 1053c. (1) Before starting the engine, the operator shall verify that all controls are in the proper starting position and that all personnel are in the clear.

(2) The operator shall obey a stop or emergency stop signal, irrespective of who gives it.

(3) When a local storm warning has been issued, the competent person shall determine whether it is necessary to implement manufacturer recommendations for securing the equipment.

R 408.41053d Equipment adjustments or repairs.

Rule 1053d. (1) If the employer or competent person determines that equipment adjustments or repairs are necessary, both of the following shall be done:

(a) The operator shall, in writing, promptly inform the person designated by the employer to receive such information and, where there are successive shifts, communicate to the next operator.

(b) The employer shall notify all affected employees, at the beginning of each shift, of the necessary adjustments or repairs and all alternative measures.

(2) Safety devices and operational aids shall not be used as a substitute for the exercise of professional judgment by the operator.

(3) If the competent person determines that there is a slack rope condition requiring respooling of the rope, the employer or competent person shall verify before starting to lift that the rope is seated on the drum and in the sheaves as the slack is removed.

(4) The competent person shall adjust the equipment, or operations, or both, to address the effect of wind, ice, and snow on equipment stability and rated capacity.

R 408.41053e Compliance with rated capacity.

Rule 1053e. (1) The equipment shall not be operated in excess of its rated capacity.

(2) The operator shall not be required to operate the equipment in a manner that would violate subrule (1) of this rule.

(3) Load weight. The operator shall verify that the load is within the rated capacity of the equipment by either or both of the following methods:

(a) The weight of the load is determined from a source recognized by the industry such as the load's manufacturer, or by a calculation method recognized by the industry such as calculating a steel beam from measured dimensions and a known per foot weight, or by other equally reliable means. In addition, when requested by the operator, this information must be provided to the operator prior to the lift.

(b) The operator begins hoisting the load to determine if it exceeds 75% of the maximum rated capacity at the longest radius that is used during the lift operation by using a load weighing device, load moment indicator, rated capacity indicator, or rated capacity limiter. If it does, the operator shall not proceed with the lift until he or she verifies the weight of the load in accordance with subdivision (a) of this subrule.

(4) The operator shall not permit the boom or other parts of the equipment to contact any obstruction.

(5) The operator shall not use the equipment to drag or pull loads sideways.

(6) On wheel-mounted equipment, no loads shall be lifted over the front area, except as permitted by the manufacturer.

(7) The operator shall test the brakes each time a load that is 90% or more of the maximum line pull is handled by lifting the load a few inches and applying the brakes. In duty cycle and repetitive lifts where each lift is 90% or more of the maximum line pull, this requirement shall apply to the first lift but not to successive lifts.

(8) Neither the load nor the boom shall be lowered below the point where less than 2 full wraps of rope remain on their respective drums.

R 408.41053f Traveling with load.

Rule 1053f. (1) Traveling with a load is prohibited if the practice is prohibited by the manufacturer.

(2) Where traveling with a load, the employer shall ensure all of the following:

(a) A competent person supervises the operation, determines if it is necessary to reduce rated capacity, and makes determinations regarding load position, boom location, ground support, travel route, overhead obstructions, and speed of movement necessary to ensure safety.

(b) The determinations of the competent person required in subdivision (a) of this subrule are implemented.

(c) For equipment with tires, tire pressure specified by the manufacturer shall be maintained.

(3) Rotational speed of the equipment shall be such that the load does not swing out beyond the radius at which it can be controlled.

(4) A tag or restraint line shall be used if necessary to prevent rotation of the load that would be hazardous.

(5) The brakes shall be adjusted in accordance with manufacturer procedures to prevent unintended movement.

R 408.41053g Locomotive crane swing; counterweight and ballast requirements.
Rule 1053g. (1) A locomotive crane shall not be swung into a position where railway cars on an adjacent track could strike it, until it is determined that cars are not being moved on the adjacent track and that proper flag protection has been established.
(2) Both of the following apply to equipment other than tower cranes:
(a) Equipment shall not be operated without the counterweight or ballast in place as specified by the manufacturer.
(b) The maximum counterweight or ballast specified by the manufacturer for the equipment shall not be exceeded.
(3) Counterweight and ballast requirements for tower cranes are specified in R 408.41084a(8).

AUTHORITY TO STOP OPERATIONS

R 408.41054 Authority to stop operation.
Rule 1054. Whenever there is a concern about safety, the operator may stop and refuse to handle loads until a qualified person has determined that safety has been assured.

SIGNAL REQUIREMENTS

R 408.41055 Signals; general requirements.
Rule 1055. (1) The employer shall ensure that a signal person is provided in each of the following situations:
(a) The point of operation, meaning the load travel or the area near or at load placement, is not in full view of the operator.
(b) When the equipment is traveling, the view in the direction of travel is obstructed.
(c) Due to site specific safety concerns, either the operator or the person handling the load determines that it is necessary.
(2) Types of signals. The signals between the operator and signal person shall be by hand, voice, audible, or new signals.
(3) Hand signals. The following apply to hand signals:
(a) When using hand signals, the signal person, operator, and lift director shall use the standard method. See Appendix A "Standard Hand Signals for Controlling Crane Operations' of this standard.
Exception: When use of the standard method for hand signals is infeasible, or when an operation or use of an attachment is not covered in the standard method, nonstandard hand signals may be used in accordance with subdivision (b) of this subrule.
(b) Non-standard hand signals. When using non-standard hand signals, the signal person, operator, and lift director, when there is one, shall contact each other prior to the operation and agree on the non-standard hand signals that will be used.
(4) New signals. Signals between the operator and signal person other than hand, voice, or audible signals may be used when the employer demonstrates either of the following:
(a) The new signals provide at least equally effective communication as voice audible or standard method hand signals.

(b) The new signals comply with a national consensus standard that provides at least equally effective communication as voice audible or standard method hand signals.
(5) Suitability. The signals between the operator and signal person used, such as hand, voice, or audible, and means of transmitting the signals to the operator, such as direct line of sight, video, and radio, must be appropriate for the site conditions.
(6) During operations requiring signals, the ability to transmit signals between the operator and signal person shall be maintained. If that ability is interrupted at any time, the operator shall safely stop operations requiring signals until it is reestablished and a proper signal is given and understood.
(7) If the operator becomes aware of a safety problem and needs to communicate with the signal person, he or she shall safely stop operations. Operations shall not resume until the operator and signal person agree that the problem has been resolved.
(8) Only 1 person shall give signals to a crane or derrick at a time, except in circumstances covered by subrule (10) of this rule.
(9) A person who becomes aware of a safety problem shall alert the operator or signal person by giving the stop or emergency stop signal.
(10) All directions given to the operator by the signal person shall be given from the operator's direction perspective.
(11) Communication with multiple cranes or derricks. When the signal person or persons communicates with more than 1 crane or derrick, a system shall be used to identify the crane or derrick each signal is for, by either 1 of the following:
(a) The signal person shall identify for each signal the crane or derrick that the signal is for prior to giving the function, direction, or both.
(b) Use an equally effective method of identifying which crane or derrick the signal is for.

R 408.41055a Signal transmission devices.
Rule 1055a. (1) The devices used to transmit signals shall be tested between the operator and the signal person on-site before beginning operations to ensure that the signal transmission is clear and reliable.
(2) Signal transmission shall be through a dedicated channel except under the following circumstances:
(a) When multiple cranes or derricks are used for the same task, 1 or more qualified signal persons may share a dedicated channel for coordinating operations.
(b) When a crane is being operated on or adjacent to railroad tracks and the actions of the crane operator need to be coordinated with the movement of other equipment or trains on the same or adjacent tracks.
(3) The crane or derrick operator shall receive signals using a hands-free device.

R 408.41055b Voice signals; additional requirements.
Rule 1055b. (1) The operator, signal person, and lift director, if there is one, shall contact each other and agree on the voice signals that will be used prior to beginning operations. These individuals shall meet again if any of the following occurs:
(a) A worker is substituted or added.
(b) There is confusion about the voice signals.
(c) Voice signals are to be changed.
(2) Each voice signal shall contain the following elements, given in the following order:

(a) Function, such as hoist or boom, direction.
(b) Distance or speed, or both.
(c) Function, stop command.
(3) The operator, signal person, and lift director, if there is one, involved must be able to effectively communicate in the language used.

R 408.41055c Hand signal chart posting.
Rule 1055c. Hand signal charts shall be posted either on the crane or derrick or be readily available on site.

FALL PROTECTION

R 408.41056 Fall protection scope.
Rule 1056. (1) The following rules shall apply to all equipment covered by this standard except tower cranes:
(a) R 408.41056a "Boom walkways."
(b) R 408.41056b (3) "Steps, handholds, ladders, grabrails, guardrails and railings, generally."
(c) R 408.41056d "Non-assembly or disassembly work."
(d) R 408.41056e "Assembly or disassembly work."
(2) The following rules apply to all equipment covered by this standard:
(a) R 408.41056b (1) and (2) "Steps, handholds, ladders, grabrails, guardrails and railings, generally."
(b) R 408.41056c "Personal fall arrest and fall restraint systems."
(c) R 408.41056f "Anchorage criteria."
(d) R 408.41056h "Anchoring to the load line."
(e) R 408.41056i "Training."
(3) The following rules shall apply only to tower cranes:
(a) R 408.41056b (4) "Steps, handholds, ladders, grabrails, guardrails and railings, generally."
(b) R 408.41056g "Tower cranes."

R 408.41056a Boom walkways.
Rule 1056a. (1) Equipment manufactured after November 8, 2011 with lattice booms shall be equipped with walkways on the boom or booms if the vertical profile of the boom, from cord centerline to cord centerline, is 6 feet or more.
(2) The boom walkway shall be at least 12 inches wide.
(3) Guardrails, railings, and other permanent fall protection attachments along walkways are as follows:
(a) Not required.
(b) Prohibited on booms supported by pendant ropes or bars if guardrails, railings, or attachments could be snagged by the ropes or bars.
(c) Prohibited if they are of the removable type or designed to be installed and removed each time the boom is assembled or disassembled.
(d) Where not prohibited, guardrails or railings may be of any height up to, but not more than, 45 inches.

R 408.41056b Steps, handholds, ladders, grabrails, guardrails, and railings, generally.
Rule 1056b. (1) Construction Safety Standard Part 45 "Fall Protection," 1926.502(b), as referenced in R 408.41003e, does not apply to equipment covered by this standard.
(2) The employer shall maintain in good condition originally-equipped steps, handholds, ladders and guardrails, railings, or grabrails.
(3) Equipment manufactured after November 8, 2011 shall be equipped so as to provide safe access and egress between the ground and the operator work station, including the forward and rear positions, by the provision of devices such as steps, handholds, ladders, and guardrails, railings, or grabrails. These devices shall meet both of the following criteria:
(a) Steps, handholds, ladders and guardrails, railings, or grabrails shall meet the criteria of either of the following, except where infeasible:
(i) The Society of Automotive Engineers (SAE) J185 "Access Systems for Off-Road Machines," May 2003 edition.
(ii) The International Organization for Standardization (ISO) 11660–2 "Cranes – Access, Guards and Restraints – Part 2: Mobile Cranes," 1994 edition. The standards in this rule are adopted in R 408.41003a.
(b) Walking or stepping surfaces, except for crawler treads, shall have slip-resistant features or properties, such as diamond plate metal, strategically placed grip tape, expanded metal, or slip-resistant paint.
(4) Tower cranes manufactured after November 8, 2011 shall be equipped so as to provide safe access and egress between the ground and the cab, machinery platforms, and tower or mast, by the provision of devices such as steps, handholds, ladders, and guardrails, railings, or grabrails. These devices shall meet both of the following criteria:
(a) Steps, handholds, ladders, and guardrails, railings, or grabrails shall meet the criteria of any of the following, except where infeasible:
(i) ISO 11660–1 "Cranes – Access, Guards and Restraints – Part 1: General," 2008 edition.
(ii) ISO 11660–3 "Cranes – Access, Guards and Restraints – Part 3: Tower Cranes," 2008 edition.
(iii) SAE J185 "Access Systems for Off-Road Machines," May 2003 edition.
Note: The standards in this rule are adopted in R 408.41003a.
(b) Walking or stepping surfaces shall have slip-resistant features or properties, such as diamond plate metal, strategically placed grip tape, expanded metal, or slip-resistant paint.

R 408.41056c Personal fall arrest and fall restraint systems.
Rule 1056c. Personal fall arrest system components shall be used in personal fall arrest and fall restraint systems and shall conform to the criteria in Construction Safety Standard Part 45 "Fall Protection," 1926.502(d), as referenced in R 408.41003e, except that 1926.502(d)(15) does not apply to components used in personal fall arrest and fall restraint systems. Either body belts or body harnesses shall be used in personal fall arrest and fall restraint systems.

R 408.41056d Non-assembly or disassembly work.
Rule 1056d. For non-assembly or disassembly work, the employer shall provide and ensure the use of fall protection equipment for employees who are on a walking or

working surface with an unprotected side or edge more than 6 feet above a lower level. The following apply:

(a) When moving point-to-point, equipment shall be provided for the following:

(i) On non-lattice booms, whether horizontal or not horizontal.

(ii) On lattice booms that are not horizontal.

(iii) On horizontal lattice booms where the fall distance is 15 feet or more.

(b) While at a work station on any part of the equipment, including any type of boom, except when the employee is at or near draw-works when the equipment is running, in the cab, or on the deck.

R 408.41056e Assembly or disassembly work.

Rule 1056e. For assembly or disassembly work, the employer shall provide and ensure the use of fall protection equipment for employees who are on a walking or working surface with an unprotected side or edge more than 15 feet above a lower level, except when the employee is at or near draw-works when the equipment is running, in the cab, or on the deck.

R 408.41056f Anchorage criteria.

Rule 1056f. (1) Construction Safety Standard Part 45 "Fall Protection," 1926.502(d)(15) and 1926.502(e)(2), as referenced in R 408.41003e, applies to equipment covered by this standard only to the extent delineated in subrule (2) of this rule.

(2) The following apply to anchorages for personal fall arrest and positioning device systems:

(a) Personal fall arrest systems shall be anchored to any apparently substantial part of the equipment unless a competent person, from a visual inspection, without an engineering analysis, would conclude that the criteria in Construction Safety Standard Part 45 "Fall Protection," 1926.502(d)(15), as referenced in R 408.41003e, would not be met.

(b) Positioning device systems shall be anchored to any apparently substantial part of the equipment unless a competent person, from a visual inspection, without an engineering analysis, would conclude that the criteria in Construction Safety Standard Part 45 "Fall Protection," 1926.502(e)(2), as referenced in R 408.41003e, would not be met.

(c) Attachable anchor devices, portable anchor devices that are attached to the equipment, shall meet the anchorage criteria in Construction Safety Standard Part 45 "Fall Protection," 1926.502(d)(15) for personal fall arrest systems and 1926.502(e)(2) for positioning device systems, as referenced in R 408.41003e.

(3) Anchorages for fall restraint systems. Fall restraint systems shall be anchored to any part of the equipment that is capable of withstanding twice the maximum load that an employee may impose on it during reasonably anticipated conditions of use.

R 408.41056g Tower cranes.

Rule 1056g. (1) For work other than erecting, climbing, and dismantling, the employer shall provide and ensure the use of fall protection equipment for employees who are on a walking or working surface with an unprotected side or edge more than 6 feet above a lower level, except when the employee is at or near draw-works when the equipment is running, in the cab, or on the deck.

(2) For erecting, climbing, and dismantling work, the employer shall provide and ensure the use of fall protection equipment for employees who are on a walking or working surface with an unprotected side or edge more than 15 feet above a lower level.

R 408.41056h Anchoring to load line.
Rule 1056h. A personal fall arrest system may be anchored to the crane or derrick's hook, or other part of the load line, where all of the following requirements are met:
(a) A qualified person has determined that the set-up and rated capacity of the crane or derrick, including the hook, load line, and rigging, meets or exceeds the requirements in Construction Safety Standard Part 45 "Fall Protection," 1926.502(d)(15), as referenced in R 408.41003e.
(b) The equipment operator is at the work site and is informed that the equipment is being used for this purpose.
(c) A load is not suspended from the load line when the personal fall arrest system is anchored to the crane or derrick's hook or other part of the load line.

R 408.41056i Training.
Rule 1056i. The employer shall train each employee who may be exposed to fall hazards while on, or hoisted by, equipment covered by this standard on both of the following:
(a) The requirements in this part that address fall protection.
(b) The applicable requirements in Construction Safety Standard Part 45 "Fall Protection," 1926.500 and 1926.502, as referenced in R 408.41003e.

WORK AREA CONTROL

R 408.41057 Swing radius hazards.
Rule 1057. (1) The requirements in subrule (2) of this rule apply when there are accessible areas in which the equipment's rotating superstructure, whether permanently or temporarily mounted, poses a reasonably foreseeable risk of either of the following:
(a) Striking and injuring an employee.
(b) Pinching or crushing an employee against another part of the equipment or another object.
(2) To prevent employees from entering hazard areas described in subrule (1) of this rule, the employer shall do all of the following:
(a) Train each employee assigned to work on or near the equipment in how to recognize struck-by and pinch or crush hazard areas posed by the rotating superstructure.
(b) Erect and maintain control lines, warning lines, railings or similar barriers to mark the boundaries of the hazard areas. Exception: When the employer can demonstrate that it is neither feasible to erect such barriers on the ground nor on the equipment, the hazard areas must be clearly marked by warning signs, as prescribed in Construction Safety Standard Part 22 "Signals, Signs, Tags, and Barricades," as referenced in R 408.41003e, and high visibility markings on the equipment that identify the hazard areas. In addition, the employer shall train each employee to understand what these markings signify.

(3) Both of the following apply to protecting employees in the hazard area:
(a) Before an employee goes to a location in the hazard area that is out of view of the operator, the employee, or someone instructed by the employee, shall ensure that the operator is informed that he or she is going to that location.
(b) When the operator knows that an employee went to a location covered by subrule (1)(a) of this rule, the operator shall not rotate the superstructure until the operator is informed in accordance with a prearranged system of communication that the employee is in a safe position.
(4) When any part of a crane or derrick is within the working radius of another crane or derrick, the controlling entity shall institute a system to coordinate operations. If there is no controlling entity, the employer, if there is only 1 employer operating the multiple pieces of equipment, or employers, shall institute this system.

KEEPING CLEAR OF THE LOAD

R 408.41058 Keeping clear of load.
Rule 1058. (1) Where available, hoisting routes that minimize the exposure of employees to hoisted loads shall be used to the extent consistent with public safety.
(2) An employee shall not be within the fall zone of a suspended load that is not being moved, except for employees engaged in any of the following:
(a) Hooking, unhooking, or guiding a load.
(b) Initially attaching the load to a component or structure.
(c) Operating a concrete hopper or concrete bucket.
(3) When employees are engaged in hooking, unhooking, or guiding the load, or are in the initial connection of a load to a component or structure and are within the fall zone, all of the following criteria shall be met:
(a) The materials being hoisted must be rigged to prevent unintentional displacement.
(b) Hooks with self-closing latches, or their equivalent, must be used.
Exception: ‘‘J’’ hooks are permitted to be used for setting wooden trusses.
(c) The materials must be rigged by a qualified rigger.
(4) Only employees needed to receive a load are permitted to be within the fall zone when a load is being landed.
(5) During a tilt-up or tilt-down operation both of the following shall be met:
(a) An employee shall not be directly under the load.
(b) Only employees essential to the operation are permitted in the fall zone, but not directly under the load. An employee is essential to the operation if the employee is conducting 1 of the following operations and the employer can demonstrate it is infeasible for the employee to perform that operation from outside the fall zone:
(i) Physically guiding the load.
(ii) Closely monitoring and giving instructions regarding the load’s movement.
(iii) Either detaching the load from or initially attaching the load to another component or structure including, but not limited to, making an initial connection or installing bracing.
Note: Boom free fall shall be prohibited when an employee is in the fall zone of the boom or load, and load line free fall shall be prohibited when an employee is directly under the load. See R 408.41060.

FREE FALL AND CONTROLLED LOAD LOWERING

R 408.41060 Boom free fall prohibitions.

Rule 1060. (1) The use of equipment in which the boom is designed to free fall, live boom, shall be prohibited in each of the following circumstances:

(a) An employee is in the fall zone of the boom or load.

(b) An employee is being hoisted.

(c) The load or boom is directly over a power line or over any part of the area extending the Table A "Minimum Clearance Distances," clearance distance to each side of the power line; or any part of the area extending the Table A clearance distance to each side of the power line is within the radius of vertical travel of the boom or the load.

(d) The load is over a shaft, except where there are no employees in the shaft.

(e) The load is over a cofferdam, except where there are no employees in the fall zone of the boom or the load.

(f) Lifting operations are taking place in a refinery or tank farm.

(2) The use of equipment in which the boom is designed to free fall, live boom, is permitted only when none of the circumstances listed in subrule (1)(a) of this rule are present and either of the following applies:

(a) The equipment was manufactured prior to October 31, 1984.

(b) The equipment is a floating crane or derrick or a land crane or derrick on a vessel or flotation device.

R 408.41060a Preventing boom free fall.

Rule 1060a. Preventing boom free fall. When the use of equipment with a boom that is designed to free fall, live boom, is prohibited, the boom hoist shall have a secondary mechanism or device designed to prevent the boom from falling if the primary system used to hold or regulate the boom hoist fails, as follows:

(a) Friction drums shall have both of the following:

(i) A friction clutch and, in addition, a braking device, to allow for controlled boom lowering.

(ii) A secondary braking or locking device, which is manually or automatically engaged, to back-up the primary brake while the boom is held, such as a secondary friction brake or a ratchet and pawl device.

(b) Hydraulic drums shall have an integrally mounted holding device or internal static brake to prevent boom hoist movement in the event of hydraulic failure.

(c) Neither clutches nor hydraulic motors shall be considered brake or locking devices for purposes of this standard.

(d) Hydraulic boom cylinders shall have an integrally mounted holding device.

R 408.41060b Preventing uncontrolled retraction.

Rule 1060b. Hydraulic telescoping booms shall have an integrally mounted holding device to prevent the boom from retracting in the event of hydraulic failure.

R 408.41060c Controlled load lowering.

Rule 1060c. In each of the following circumstances, controlled load lowering shall be required and free fall of the load line hoist shall be prohibited:

(a) An employee is directly under the load.

(b) An employee is being hoisted.
(c) The load is directly over a power line, or over any part of the area extending the Table A "Minimum Clearance Distances," clearance distance to each side of the power line, or any part of the area extending the Table A clearance distance to each side of the power line is within the radius of vertical travel of the load.
(d) The load is over a shaft.
(e) The load is over a cofferdam, except when there are no employees in the fall zone of the load.

OPERATOR QUALIFICATION AND CERTIFICATION

R 408.41061 Operator qualification and certification.
Rule 1061. (1) The employer shall ensure that, prior to operating any equipment covered under these rules, the person is operating the equipment during a training period in accordance with R 408.41061d or the operator is qualified or certified to operate the equipment in accordance with these rules.
(2) Exceptions. Operator qualification or certification under this rule shall not be required for operators of any of the following:
(a) Derricks. See R 408.41085 to R 408.41085h.
(b) Sideboom cranes. See R 408.41089.
(c) Equipment with a maximum manufacturer-rated hoisting or lifting capacity of 2,000 pounds or less. See R 408.41090 to R 408.41090e.
(3) When operator qualification or certification is required by these rules, the employer shall provide the qualification or certification at no cost to operators who are employed by the employer at the time these rules become effective.

R 408.41061a Option (1): Certification by accredited crane operator testing organization.
Rule 1061a. (1) For a testing organization to be considered accredited to certify operators under this standard, the testing organization must comply with the following:
(a) Be accredited by a nationally recognized accrediting agency based on that agency's determination that industry recognized criteria have been met for all of the following:
(i) Written testing materials.
(ii) Practical examinations.
(iii) Test administration.
(iv) Grading.
(v) Facilities and equipment.
(vi) Personnel.
(b) Administer written and practical tests that comply with both of the following:
(i) Assess the operator applicant regarding, at a minimum, the knowledge and skills listed in R 408.41061f.
(ii) Provide different levels of certification based on equipment capacity and type.
(c) Have procedures for an operator to reapply and be retested if an operator applicant fails a test or is decertified.
(d) Have testing procedures for recertification designed to ensure that the operator continues to meet the technical knowledge and skills requirements in R 408.41061f.

(e) Have the testing organization's accreditation reviewed by the nationally recognized accrediting agency at least every 3 years.

(2) An operator is deemed qualified to operate a particular piece of equipment if the operator is certified by these rules for that type and capacity of equipment or for higher-capacity equipment of that type. If no accredited testing agency offers certification examinations for a particular type, capacity of equipment, or both, an operator is deemed qualified to operate that equipment if the operator has been certified for the type and capacity that is most similar to that equipment and for which a certification examination is available. The operator's certificate shall state the type and capacity of equipment for which the operator is certified.

(3) A certification issued under option (1) is portable.

(4) A certification issued under this subrule is valid for 5 years.

(5) The requirements in this rule are known as option (1).

R 408.41061b Option (2): Qualification by audited employer program.

Rule 1061b. (1) The employer's qualification of its employee shall comply with the written and practical tests and shall comply with either of the following:

(a) Have been developed by an accredited crane operator testing organization as provided under R 408.41061a.

(b) Have been approved by an auditor in accordance with all of the following requirements:

(i) The auditor is certified to evaluate tests by an accredited crane operator testing organization as provided under R 408.41061a.

(ii) The auditor is not an employee of the employer.

(iii) The approval is based on the auditor's determination that the written and practical tests meet nationally recognized test development criteria and are valid and reliable in assessing the operator applicants regarding, at a minimum, the knowledge and skills listed in R 408.41061f.

(iv) The audit is conducted in accordance with nationally recognized auditing standards.

(2) The employer's qualification of its employee shall meet all of the following requirements for the administration of tests:

(a) The written and practical tests are administered under circumstances approved by the auditor as meeting nationally recognized test administration standards.

(b) The auditor is certified to evaluate the administration of the written and practical tests by an accredited crane operator testing organization as provided under R 408.41061a.

(c) The auditor is not an employee of the employer.

(d) The audit is conducted in accordance with nationally recognized auditing standards.

(3) The employer program shall be audited within 3 months of the beginning of the program and at least every 3 years thereafter.

(4) The employer program shall have testing procedures for requalification designed to ensure that the operator continues to meet the technical knowledge and skills requirements in R 408.41061f. The requalification procedures shall be audited in accordance with subrules (2) and (3) of this rule.

(5) Deficiencies. If the auditor determines that there is a significant deficiency in the program, the employer shall ensure all of the following:

(a) No operator is qualified until the auditor confirms that the deficiency has been corrected.

(b) The program is audited again within 180 days of the confirmation that the deficiency was corrected.

(c) The auditor files a documented report of the deficiency to the Michigan occupational safety and health administration within 15 days of the auditor's determination that there is a deficiency.

(d) Records of the audits of the employer's program are maintained by the auditor for 3 years and are made available by the auditor to the director of the department of licensing and regulatory affairs or his or her designee upon request.

(6) A qualification under this rule shall be both of the following:

(a) Not portable. A qualification meets the requirements of R 408.41061 only where the operator is employed by and operates the equipment for the employer that issued the qualification.

(b) Valid for 5 years.

(7) The requirements in this rule are known as option (2).

R 408.41061c Option (3): Licensing by government entity.

Rule 1061c. (1) For purposes of these rules, a government licensing department or office that issues operator licenses for operating equipment covered by this standard is considered a government accredited crane operator testing organization if the criteria in this rule are met.

(2) The following apply to licensing criteria:

(a) The requirements for obtaining the license include an assessment by written and practical tests of the operator applicant regarding, at a minimum, the knowledge and skills listed in R 408.41061f.

(b) The testing meets industry recognized criteria for written testing materials, practical examinations, test administration, grading, facilities, equipment, and personnel.

(c) The government authority that oversees the licensing department or office has determined that the requirements in subdivisions (a) and (b) of this subrule, have been met.

(d) The licensing department or office has testing procedures for relicensing designed to ensure that the operator continues to meet the technical knowledge and skills requirements in R 408.41061f.

(3) The following apply to a license issued by a government accredited crane operator testing organization that meets the requirements of the option described in this rule:

(a) Meets the operator qualification requirements of this rule for operation of equipment only within the jurisdiction of the government entity.

(b) Is valid for the period of time stipulated by the licensing department or office, but not longer than 5 years.

(4) The requirements in this rule are known as option (3).

R 408.41061d Pre-qualification and certification training period.

Rule 1061d. (1) An employee who is not qualified or certified under these rules may operate equipment only as an operator-in-training and only where the requirements of this rule are met.

(2) The employer shall provide each operator-in-training with sufficient training prior to operating the equipment to enable the operator-in-training to operate the equipment safely under limitations established by this rule, including continuous monitoring, and any additional limitations established by the employer.

(3) The tasks performed by the operator-in-training while operating the equipment shall be within the operator-in-training's ability.

(4) Trainer. While operating the equipment, the operator-in-training shall be continuously monitored by an operator's trainer who shall meet all of the following requirements:

(a) Is an employee or agent of the operator-in-training's employer.

(b) Is either a certified operator under this rule, or has passed the written portion of a certification test under 1 of the options in R 408.41061a to R 408.41061c, and is familiar with the proper use of the equipment's controls.

(c) While monitoring the operator-in-training, the operator's trainer shall not perform tasks that detract from the trainer's ability to monitor the operator-in-training.

(d) For equipment other than tower cranes, the operator's trainer and the operator-in-training shall be in direct line of sight of each other and communicate verbally or by hand signals. For tower cranes, the operator's trainer and the operator-in-training shall be in direct communication with each other.

(5) Continuous monitoring. The operator-in-training shall be monitored by the operator's trainer at all times, except for short breaks where all of the following are met:

(a) A break lasts not longer than 15 minutes and there is not more than 1 break per hour.

(b) Immediately prior to a break the operator's trainer informs the operator-in-training of the specific tasks that the operator-in-training is to perform and limitations to which he or she shall adhere to during a break.

(c) The specific tasks that the operator-in-training performs during a break must be within the operator-in-training's abilities.

(6) The operator-in-training shall not operate the equipment in any of the following circumstances unless the exception in subdivision (e) of this subrule is applicable:

(a) If any part of the equipment, load line, or load including rigging and lifting accessories, if operated up to the equipment's maximum working radius in the work zone as prescribed in R 408.41036a(2) could get within 20 feet of a power line that is up to 350 kV, or within 50 feet of a power line that is over 350 kV.

(b) If the equipment is used to hoist personnel.

(c) In multiple-equipment lifts or when the load exceeds 75% of the rated load.

(d) If the equipment is used over a shaft, cofferdam, or in a tank farm.

(e) In multiple-equipment lift operations or when the load exceeds 75% of the rated load, except where the operator's trainer determines that the operator-in-training skills are sufficient for this high-skill work.

R 408.41061e Training and testing.

Rule 1061e. (1) A testing entity may provide training and testing as long as the applicable accredited agency criteria for an organization providing both services are met.

(2) The testing entity may administer tests verbally, with answers given verbally, when the operator candidate meets both of the following:

(a) Passes a written demonstration of literacy relevant to the work.

(b) Demonstrates the ability to use the type of written manufacturer procedures applicable to the class or type of equipment for which the candidate is seeking certification.

(3) The testing entity may administer tests in any language the operator candidate understands, and the operator's certificate shall note the language in which the test was given.

(4) The operator is qualified under R 408.41061a(2) to operate equipment that is furnished with materials required by these rules that are written in the language of the certification. The operator may only operate equipment furnished with these materials.

R 408.41061f Certification criteria.

Rule 1061f. (1) Qualifications and certifications shall be based, at a minimum, on the requirements in subrule (2) and (3) of this rule.

(2) A determination through a written test as prescribed in this subrule. All of the following apply:

(a) The individual knows the information necessary for safe operation of the specific type of equipment that he or she shall operate, including all of the following:

(i) The controls as well as the operational and performance characteristics.

(ii) Use of, and the ability to calculate, either manually or with a calculator, load and capacity information on a variety of configurations of the equipment.

(iii) Procedures for preventing and responding to power line contact.

(iv) Technical knowledge similar to the subject matter criteria listed in Appendix C of this standard applicable to the specific type of equipment the individual will operate. Use of the Appendix C criteria meets the requirements of this subrule.

(v) Technical knowledge applicable to the following:

(A) The suitability of the supporting ground and surface to handle expected loads.

(B) Site hazards.

(C) Site access.

(vi) These rules, including applicable incorporated materials.

(b) The individual is able to read and locate relevant information in the equipment manual and other materials containing information referred to in R 408.41061f(1)(a).

(3) A determination through a practical test that the individual has the skills necessary for safe operation of the equipment, including the following:

(a) Ability to recognize, from visual and auditory observation, the items listed in R 408.41037c.

(b) Operational and maneuvering skills.

(c) Application of load chart information.

(d) Application of safe shut-down and securing procedures.

R 408.41061g Phase-in period.

Rule 1061g. (1) The provisions of these rules are applicable beginning November 8, 2010 except for R 408.41061(3) and R 408.41061d, which are applicable beginning November 10, 2017.

(2) When R 408.41061 is not applicable, both of the following requirements apply until November 10, 2017:

(a) The employer shall ensure that operators of equipment covered by this standard are competent to operate the equipment safely.

(b) When an employee assigned to operate machinery does not have the required knowledge or ability to operate the equipment safely, the employer shall train that employee prior to operating the equipment. The employer shall ensure that each operator is evaluated to confirm that he or she understands the information provided in the training.

SIGNAL PERSON QUALIFICATIONS

R 408.41062 Signal person qualifications.

Rule 1062. (1) The employer of the signal person shall ensure that each signal person meets the qualification requirements in subrule (3) of this rule prior to giving any signals. This requirement shall be met by using either Option (1) or Option (2) described as follows:

(a) Option (1)—Third-party qualified evaluator. The signal person has documentation from a third-party qualified evaluator as defined in R 408.41006d showing that the signal person meets the qualification requirements in subrule (3) of this rule.

(b) Option (2)—Employer's qualified evaluator. The employer's qualified evaluator, as defined in R 408.41006d, shall assess the individual and determine that he or she meets the qualification requirements in subrule (3) of this rule and provides documentation of that determination. An assessment by an employer's qualified evaluator under this option is not portable. Other employers shall not be permitted to use the assessment to meet the requirements of this rule.

(c) The employer shall make the documentation for whichever option is used available at the site while the signal person is employed by the employer. The documentation shall specify each type of signaling, such as hand signals and radio signals, for which the signal person meets the requirements of subrule (3) of this rule.

(2) If subsequent actions by the signal person indicate that the individual does not meet the qualification requirements as provided in subrule (3) of this rule, the employer shall not allow the individual to continue working as a signal person until retraining is provided and a reassessment is made in accordance with subrule (1) of this rule that confirms that the individual meets the qualification requirements.

(3) Qualification requirements. The signal person must have all of the following qualifications:

(a) Know and understand the type of signals used. If hand signals are used, the signal person must know and understand the standard method for hand signals.

(b) Be competent in the application of the type of signals used.

(c) Have a basic understanding of equipment operation and limitations, including the crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads.

(d) Know and understand the relevant requirements of R 408.41055 to R 408.41055c and this rule.
(e) Demonstrate that he or she meets the requirements in subdivisions (a) to (d) of this subrule through an oral or written test and a practical test.

QUALIFICATIONS OF MAINTENANCE AND REPAIR EMPLOYEES

R 408.41063 Qualifications of maintenance and repair employees.
Rule 1063. (1) The employer may permit maintenance, inspection, and repair personnel to operate the equipment only when all of the following requirements are met:
(a) The operation is limited to those functions necessary to perform maintenance, inspect the equipment, or verify its performance.
(b) The personnel does either of the following:
(i) Operate the equipment under the direct supervision of an operator who meets the requirements of R 408.41061 to R 408.41061g.
(ii) Be familiar with the operation, limitations, characteristics, and hazards associated with the type of equipment.
(2) Maintenance and repair personnel shall meet the definition of a qualified person with respect to the equipment and maintenance or repair tasks performed.

TRAINING REQUIREMENTS

R 408.41064 Training requirements.
Rule 1064. (1) Overhead power lines. The employer shall train each employee specified in R 408.41036a(7) and R 408.41036c(25) in the topics listed in R 408.41036a(7).
(2) Signal persons. The employer shall train each employee who is assigned to work as a signal person who does not meet the requirements of R 408.41055(3) in the areas addressed in that subrule.
(3) Operators-in-training for equipment where certification or qualification is required by these rules. The employer shall train each operator-in-training in the areas addressed in R 408.41061f. The employer shall provide retraining if the operator-in-training does not pass a qualification or certification test.
(4) Transitional period. During the phase-in period for operator certification or qualification, as provided in R 408.41061g, an employer shall train each operator who has not been certified or qualified in the areas addressed in R 408.41061f.
(5) Operators exempt from the requirements of R 408.41061. The employer shall train each operator exempt under R 408.41061 from the requirements of R 408.41061a to R 408.41061g on the safe operation of the equipment the operator will be using.
(6) The employer shall train each operator of the equipment covered by this standard in the following practices:
(a) On friction equipment, when moving a boom off a support, first raise the boom a short distance sufficient to take the load of the boom to determine if the boom hoist brake needs to be adjusted. On other types of equipment with a boom, the same practice is applicable, except that typically there is no means of adjusting the brake. If the brake does not hold, a repair is necessary. An operator shall test the hoisting brakes before moving a near maximum rated load by raising the load a few inches and

applying the hoisting brakes. The requirement in this rule applies to both single and multiple line reeving. See R 408.41053b and R 408.41053d for additional requirements.
(b) When available, the manufacturer's emergency procedures for halting unintended equipment movement.
(7) Competent persons and qualified persons. The employer shall train each competent person and each qualified person regarding the requirements of this standard applicable to their respective roles.
(8) Crush and pinch points. The employer shall train each employee who works with the equipment to keep clear of holes, and keep clear of crush and pinch points and the hazards addressed in R 408.41057.
(9) Tag-out. The employer shall train each operator and each additional employee authorized to start or energize equipment or operate equipment controls, such as maintenance and repair employees, in the tag-out and start-up procedures in R 408.41053b.
(10) The following apply to training administration:
(a) The employer shall evaluate each employee required to be trained under this rule to confirm that the employee understands the information provided in the training.
(b) The employer shall provide refresher training in relevant topics for each employee when, based on the conduct of the employee or an evaluation of the employee's knowledge, there is an indication that retraining is necessary.
(c) When training is required under this standard, the employer shall provide the training at no cost to the employee.

~~MATERIAL AND PERSONNEL HOISTS (ELEVATORS)~~

R 408.41065a ~~Material and personnel hoists generally.~~ **Rescinded.**
~~Rule 1065a. (1) An employer shall ensure that an employee who is specifically engaged in installing personnel elevators or hoists is licensed by the state of Michigan in accordance with 1967 PA 227 and 1976 PA 333, MCL 408.801 to 408.824 and MCL 338.2151 to 338.2160 respectively, and the rules of the department of licensing and regulatory affairs relating to elevators.~~
~~(2) An employer shall comply with the manufacturer's specifications and limitations applicable to the operation of all material and personnel hoists. If the manufacturer's specifications are not available, then the limitations assigned to the equipment shall be determined by a qualified person who is competent in the field and shall be based on the requirements of ANSI A10.4 "Safety Requirements for Personal Hoists and Employee Elevators for Construction and Demolition Operations," 2004 edition and ANSI A10.5 "Safety Requirements for Material Hoists," 1992 edition, which are adopted by reference in R 408.41003a. A determination shall be documented and recorded. Attachments used shall not exceed the capacity, rating, or scope recommended by the manufacturer.~~
~~(3) The employer shall ensure that rated load capacities, recommended operating speeds, and special hazard warnings or instructions shall be posted on cars and platforms.~~

R 408.41066a ~~Employer responsibility.~~ **Rescinded.**
~~Rule 1066a. (1) An employer shall limit the operation of material and personnel hoists to the following entities:~~

~~(a) An employee who has been trained and qualified to operate the hoisting equipment to which the employee is assigned.~~
~~(b) Authorized maintenance personnel when performing their duties.~~
~~(2) An employer shall maintain hoisting equipment and accessories in a condition that will not endanger an operator or other employees.~~
~~(3) When modifications or changes to personnel hoists are made, the capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly. The original safety factor of the equipment shall not be reduced.~~
~~(4) An employer shall comply with all applicable requirements of this part.~~

R 408.41067a ~~Employee responsibility.~~ **Rescinded.**
~~Rule 1067a. (1) An operator shall report any recognized defects of any material and personnel hoisting equipment to the supervisor.~~
~~(2) An employee shall not alter or bypass any safety device.~~

R 408.41068a ~~Operator training.~~ **Rescinded.**
~~Rule 1068a. Before assignment, an employer shall assure that an operator of a material and personnel hoist has been trained in all of the following areas:~~
~~(a) The capabilities of the equipment.~~
~~(b) The purpose, use, and limitations of the controls.~~
~~(c) How to conduct daily inspections.~~
~~(d) Operational practices of the assigned equipment through its functions necessary to perform the required job.~~
~~(e) Applicable state standards and company rules and regulations.~~

R 408.41069a ~~Operator conduct.~~ **Rescinded.**
~~Rule 1069a. (1) An operator shall not engage in any practice that will divert his or her attention while engaged in operating a material and personnel hoist.~~
~~(2) Each operator shall be responsible for those operations under the operator's direct control. When there is any doubt as to safety, the operator shall stop operations and consult with the supervisor before continuing work.~~
~~(3) An operator shall not leave the equipment unattended unless it has been secured and rendered inoperable in the operator's absence.~~
~~(4) When controls are locked out for maintenance or for repair purposes, an equipment operator shall not start operations until the lock has been removed by the person or persons responsible for the safe operation.~~
~~(5) If a malfunction occurs during the operation of the equipment and the door remains locked, the operator and all other personnel shall remain in the cab until the operation is restored.~~
~~(6) An operator shall be familiar with the equipment and its proper care. If adjustments or repairs are necessary or if any defects are evident, the operator shall report the repairs or defects to the responsible supervisor and also notify the next operator of the equipment status.~~
~~(7) A hoist operator shall ensure that the rated capacity of the hoist is not exceeded.~~

R 408.41070a ~~Signals.~~ **Rescinded.**

~~Rule 1070a. A signal communication system shall be provided for use between the material and personnel hoist operator and landings.~~

R 408.41070b ~~Material hoists.~~ **Rescinded.**
~~Rule 1070b. (1) Operating rules for material hoists shall be established and posted at the operator's station of the hoist. The rules shall include a signal system and the applicable manufacturer's specifications for rated operating speed. Rules and notices shall be posted on the car frame in a conspicuous location and shall include the statement "no riders allowed." A person shall not be allowed to ride on a material hoist, except for inspection and maintenance.~~
~~(2) All entrances of the hoistway shall be protected by substantial gates that shall guard the full width of the landing entrance from floor to ceiling. A hoistway entrance gate shall be identified as such.~~
~~(3) A gate that protects the entrance to a hoistway shall be equipped with a latching device and be not more than 4 inches from the edge of the landing sill. A gate shall extend a minimum of 6 feet 8 inches above the floor.~~
~~(4) An overhead protective covering of 2-inch planking or other solid material of equivalent strength shall be provided on the top of every material hoist cage or platform.~~
~~(5) An operator's station of a hoisting machine shall have overhead protection equivalent to tight planking that is not less than 2 inches thick. The support for the overhead protection shall be of equal strength.~~
~~(6) A hoist tower may be used with or without enclosures on all sides. However, whichever alternative is chosen, all of the following applicable conditions shall be met:~~
~~(a) When a hoist tower is enclosed, it shall be enclosed on all sides for its entire height with a screen enclosure of not more than ½-inch mesh of no. 18 united states gauge wire or equivalent, except for a landing access.~~
~~(b) 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 united states gauge wire or equivalent. The hoist platform enclosure shall include the required gates for loading and unloading. An 8-foot high enclosure shall be provided on the unused sides of the hoist tower at ground level.~~
~~(c) In either alternative, the cab or platform shall be enclosed as specified in subdivision (b) of this subrule.~~
~~(7) A car safety device shall be installed to function in case of rope failure and shall be tested upon installation and at 4-month intervals.~~
~~(8) A material hoist tower shall be designed by a licensed professional engineer.~~
~~(9) Wire rope shall be in compliance with the requirements of R 408.41013a and R 408.41014a and shall be inspected and removed from service if any condition specified in R 408.1013a and R 408.41014a is present.~~

~~PERSONNEL HOISTS~~

R 408.41071a ~~Inspections.~~ **Rescinded.**
~~Rule 1071a. (1) Before being put into service, a qualified person shall inspect and test all functions of a personnel hoist. An inspection and test is required after a major alteration of an existing installation. All hoists shall be inspected and tested at not more than 90-day intervals.~~

~~(2) An employer shall prepare a certification record that includes all of the following information:~~
~~(a) The date of the inspection and test of all functions and safety devices that were performed.~~
~~(b) The signature of the person who performed the inspection and tests.~~
~~(c) A serial number or other identifier for the hoist that was inspected and tested. The most recent certification record shall be maintained on file on the jobsite.~~
~~(3) A load safety test, as required by ANSI A10.4 "Safety Requirements for Personnel Hoists and Employee Elevators for Construction and Demolition Operations," 2004 edition, which is adopted by reference in R 408.41003a, shall be performed on a personnel hoist by a licensed elevator contractor in the presence of a state of Michigan elevator inspector every 90 days.~~
~~(4) All control mechanisms shall be inspected daily for misadjustments that might interfere with proper operation and for excessive wear of components.~~

R 408.41072a ~~Personnel hoists generally.~~ **Rescinded.**
~~Rule 1072a. (1) The rated load capacities and special hazard warnings or instructions for personnel hoists shall be posted conspicuously on cars and platforms.~~
~~(2) A hoist tower outside the structure shall be enclosed for the full height on the side or sides used to enter and exit the structure. At the lowest landing, the enclosure on the sides not used to exit or enter the structure shall be enclosed to a height of not less than 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 the floors or scaffolds.~~
~~(3) A hoistway inside a structure shall be enclosed on all 4 sides throughout the full travel of the hoistway.~~
~~(4) A tower shall be anchored to the structure at intervals of not more than 30 feet in height. When tie-ins are not practical, the tower shall be anchored by means of guys which are made of wire rope that is not less than 1/2 of an inch in diameter and which are securely fastened to the anchorage to ensure stability.~~
~~(5) Hoistway doors or gates shall be not less than 6 feet 6 inches high, are provided with mechanical locks that cannot be operated from the landing side, and are accessible only to persons on the car.~~
~~(6) A car shall be permanently enclosed on all sides and the top, except for sides used for entry and exit and sides that have car gates or doors.~~
~~(7) A door or gate shall be provided at each entrance to the car and shall protect the full width and height of the car entrance opening.~~
~~(8) An overhead protective covering that consists of 2-inch planking, 3/4-inch plywood, or other solid material of equivalent strength shall be provided on the top of every personnel cab.~~
~~(9) Doors or gates shall have electric contacts that do not allow movement of the hoist when a door or gate is open.~~
~~(10) A car safety device shall be installed and shall be capable of stopping and holding the car and the rated load when traveling at governor-tripping speed.~~
~~(11) A car shall have a capacity and data plate secured in a conspicuous place on the car or crosshead.~~
~~(12) Normal and final terminal stopping devices shall be provided. Final terminal stopping devices shall be installed in the hoistway and shall be mechanically operated.~~

~~(13) An emergency stop switch shall be provided in the car and marked "STOP."~~
~~(14) A wire rope shall be in compliance with all of the following requirements:~~
~~(a) Not less than 3 hoisting ropes shall be used with traction hoists.~~
~~(b) Hoisting and counterweight wire ropes shall be not less than ½ of an inch in diameter.~~
~~(c) Not less than 2 ropes shall be used for the counterweights on the rack and pinion.~~
~~(d) Safety factors shall be as follows:~~

~~MINIMUM FACTORS OF SAFETY FOR SUSPENSION WIRE ROPES~~

~~Rope speed in Minimum factor Rope speed in Minimum factor feet per minute of safety feet per minute or safety~~

~~50~~	~~7.60~~	~~250~~	~~8.90~~
~~75~~	~~7.75~~	~~300~~	~~9.20~~
~~100~~	~~7.95~~	~~350~~	~~9.50~~
~~125~~	~~8.10~~	~~400~~	~~9.75~~
~~150~~	~~8.25~~	~~450~~	~~10.00~~
~~175~~	~~8.40~~	~~500~~	~~10.25~~
~~200~~	~~8.60~~	~~550~~	~~10.45~~
~~225~~	~~8.75~~	~~600~~	~~10.70~~

~~(e) The following formula shall be used to calculate the allowable gross load: L = SN L = Allowable gross load~~
~~F S = Manufacturer's rated breaking strength~~
~~N = Number of parts of rope~~
~~F = Safety factor~~
~~(15) All personnel hoists used by employees shall be constructed of materials and components that are in compliance with the specifications for materials, construction, safety devices, assembly, and structural integrity as stated in ANSI standard A10.4 "Safety Requirements for Personnel Hoists and Employee Elevators for Construction and Demolition Operations," 1990 edition.~~
~~(16) Internal combustion engines shall not be permitted for direct drive.~~

R 408.41073a ~~Bridge tower personnel hoists.~~ **Rescinded.**
~~Rule 1073a. (1) A personnel hoist that is used in bridge tower construction shall be approved by a registered professional engineer and erected under the supervision of a qualified person competent in the field.~~
~~(2) When a hoist tower is not enclosed, the cab shall be totally enclosed (caged) on all sides for the full height between the floor and the overhead protective covering with not less than 3/4-inch mesh of no.~~
~~14 United States gauge wire or equivalent. The hoist car enclosure shall include the required gates for loading and unloading.~~
~~(3) A hoist shall be inspected for defects, serviced and maintained on a weekly basis, and repaired as necessary. If the hoisting equipment is exposed to winds of more than 35 miles per hour, it shall be inspected and repaired if necessary by authorized personnel before reuse.~~

R 408.41074a ~~Wire rope for personnel hoists.~~ **Rescinded.**

~~Rule 1074a. Wire rope, used on personnel hoists shall be taken out of service when any of the following conditions exist:~~
~~(a) In running ropes, where 6 randomly distributed broken wires in 1 lay or 3 broken wires in 1 strand in 1 lay are present.~~
~~(b) If abrasion or wear of 1/3 of the original diameter of outside individual wires, kinking, crushing, bird-caging, or any other damage that results in distortion of the rope structure occurs.~~
~~(c) If evidence of any heat damage or corrosion from any cause is present.~~
~~(d) If reductions from nominal diameter of more than 3/64 of an inch for diameters to and including 3/4 of an inch, 1/16 of an inch for diameters 7/8 of an inch to 1 1/8 inches, inclusive, or 3/32 of an inch for diameters 1 1/4 to 1 1/2 inches, inclusive, are present.~~
~~(e) In standing ropes where more than 2 broken wires in 1 lay in sections beyond end connections or more than 1 broken wire at an end connection, occur.~~

R 408.41075a ~~Use of multiple permanent elevators; use of endless belt-type manlifts.~~
Rescinded.
~~Rule 1075a. (1) When multiple permanent elevators are available and 1 elevator is being used for construction or renovation purposes, that elevator shall be for the exclusive use of construction personnel and shall be operated by a designated operator. The elevator signal system shall be separate from any other elevators.~~
~~(2) Endless belt-type manlifts shall not be used for construction.~~

~~BASE-MOUNTED DRUM HOISTS~~

HOISTING PERSONNEL

R 408.41080 Hoisting personnel.
Rule 1080. (1) The requirements of these rules are in addition to the other requirements in this standard and apply when 1 or more employees are hoisted.
(2) The use of equipment to hoist employees is prohibited except where the employer demonstrates that the erection, use, and dismantling of conventional means of reaching the work area would be more hazardous, or is not possible ,because of the project's structural design or worksite conditions. Examples of conventional means of reaching the work operations are any of the following:
(a) Personnel hoist.
(b) Ladder.
(c) Stairway.
(d) Aerial lift.
(e) Elevating work platform.
(f) Scaffold.
(3) Subrule (2) of this rule does not apply to work covered by Construction Safety Standard Part 28 "Personnel Hoisting in Steel Erection," as referenced in R 408.41003e.

R 408.41080a Use of personnel platform.
Rule 1080a. (1) When using equipment to hoist employees, the employer shall ensure that the employees in a personnel platform meet the requirements of R 408.41080c.

(2) Exceptions. A personnel platform is not required for hoisting employees under the following conditions:
(a) Into and out of drill shafts that are up to and including 8 feet in diameter. See R 408.41080l or requirements for hoisting these employees.
(b) In pile driving operations. See R 408.41080m for requirements for hoisting these employees.
(c) In storage-tank (steel or concrete), shaft, and chimney operations. See R 408.41080n for requirements for hoisting these employees.
(d) Solely for transfer to or from a marine worksite in a marine-hoisted personnel transfer device. See R 408.41080n for requirements for hoisting these employees

R 408.41080b Equipment set-up.
Rule 1080b. (1) The equipment shall be uniformly level, within 1% of level grade, and located on footing that a qualified person has determined to be sufficiently firm and stable.
(2) Equipment with outriggers or stabilizers shall have all of the outriggers and stabilizers extended and locked. The amount of extension shall be the same for all outriggers and stabilizers, and be in accordance with manufacturer procedures and load charts.

R 408.41080c Equipment criteria.
Rule 1080c. (1) Capacity: Use of suspended personnel platforms. The total load with the platform loaded, including the hook, load line, and rigging, shall not exceed 50% of the rated capacity for the radius and configuration of the equipment, except during proof testing.
(2) Capacity: Use of boom-attached personnel platforms. The total weight of the loaded personnel platform shall not exceed 50% of the rated capacity for the radius and configuration of the equipment, except during proof testing.
(3) Capacity: Hoisting personnel without a personnel platform. When hoisting personnel without a personnel platform in accordance with R 408.41080a(2), the total load, including the hook, load line, rigging, and any other equipment that imposes a load, shall not exceed 50% of the rated capacity for the radius and configuration of the equipment, except during proof testing.
(4) Braking and locking features. Load and boom hoist drum brakes, swing brakes, and operator actuated secondary braking and locking features, such as pawls or dogs, or automatic secondary brakes shall be engaged when the occupied personnel platform is in a stationary working position.
(5) Devices shall be as follows:
(a) Equipment, except for derricks and articulating cranes, with a variable angle boom shall be equipped with both of the following:
(i) A boom angle indicator, readily visible to the operator.
(ii) A boom hoist limiting device.
(b) Articulating cranes shall be equipped with a properly functioning automatic overload protection device.
(c) Equipment with a luffing jib shall be equipped with both of the following:
(i) A jib angle indicator, readily visible to the operator.
(ii) A jib hoist limiting device.

(d) Equipment with telescoping booms must be equipped with a device to indicate the boom's extended length clearly to the operator, or must have measuring marks on the boom.

(e) Anti two-block. An employer shall ensure the use of a device that automatically prevents damage and load failure from contact between the load block, overhaul ball, or similar component, and the boom tip, fixed upper block, or similar component, is used. The device must prevent damage and/or failure at all points where two-blocking could occur.

Exception: This device is not required when hoisting personnel in pile driving operations. Instead, R 408.41080m(3) specifies how to prevent two-blocking during such operations.

(f) Controlled load lowering. The load line hoist drum shall have a system, other than the load line hoist brake, that regulates the lowering rate of speed of the hoist mechanism. This system or device must be used when hoisting personnel.

Note: Free fall of the load line hoist is prohibited under R 408.41080c. The use of equipment in which the boom hoist mechanism can free fall is also prohibited under R 408.41060(1).

(g) Proper operation required. Personnel hoisting operations shall not begin unless the devices listed in this rule are in proper working order. If a device stops working properly during such operations, the operator must safely stop operations. Personnel hoisting operations shall not resume until the device is again working properly. Alternative measures are not permitted. See R 408.41053 to R 408.41053g for tag-out and related requirements.

(6) Direct attachment of a personnel platform to a luffing jib is prohibited.

R 408.41080d Personnel platform criteria.

Rule 1080d. (1) A qualified person familiar with structural design shall design the personnel platform and attachment and/or suspension system used for hoisting personnel.

(2) The system used to connect the personnel platform to the equipment shall allow the platform to remain within 10 degrees of level, regardless of boom angle.

(3) A qualified person shall ensure that the suspension system is designed to minimize tipping of the platform due to movement of employees occupying the platform.

(4) All welding of the personnel platform and its components must be performed by a certified welder familiar with the weld grades, types, and material specified in the platform design.

(5) A qualified person shall ensure that the personnel platform, excluding the guardrail system and personal fall arrest system anchorages, is capable of supporting, without failure, its own weight and at least 5 times the maximum intended load.

(6) The personnel platform shall be equipped with a guardrail system that meets the requirements of Construction Safety Standard Part 45 “Fall Protection,” as referenced in R 408.41003e, and shall be enclosed at least from the toeboard to mid-rail with either solid construction material or expanded metal that have openings not greater than 1⁄2 inch (1.27 cm). Points to which personal fall arrest systems are attached shall meet the anchorage requirements in Construction Safety Standard Part 45 “Fall Protection.”

(7) A grab rail shall be installed inside the entire perimeter of the personnel platform except for access gates/doors.

(8) Access gates or doors. If installed, access gates or doors of all types, including swinging, sliding, folding, or other types, shall not swing outward. If due to the size of the personnel platform, such as a 1-person platform, it is infeasible for the door to swing inward and allow safe entry for the platform occupant, the access gate or door may swing outward. Access gates and doors shall be equipped with a device that prevents accidental opening.

(9) Headroom must be sufficient to allow employees to stand upright in the platform.

(10) In addition to the use of hard hats, employees shall be protected by overhead protection on the personnel platform when employees are exposed to falling objects. The platform overhead protection shall not obscure the view of the operator or platform occupants, such as wire mesh that has openings up to 1⁄2 inch, unless full protection is necessary.

(11) All edges exposed to employee contact must be smooth enough to prevent injury.

(12) A qualified person shall ensure that the weight of the platform and its rated capacity is conspicuously posted on the platform with a plate or other permanent marking.

R 408.41080e Personnel platform loading.

Rule 1080e. (1) The personnel platform shall not be loaded in excess of its rated capacity.

(2) Both of the following apply to the use of a personnel platform:

(a) Personnel platforms shall be used only for employees, their tools, and the materials necessary to do their work. Platforms shall not be used to hoist materials or tools when not hoisting personnel.

(b) Exception. Materials and tools to be used during the lift, if secured and distributed in accordance with subrule (3) of this rule, may be in the platform for trial lifts.

(3) The employer shall ensure that materials and tools comply with both of the following:

(a) Be secured to prevent displacement.

(b) Be evenly distributed within the confines of the platform while the platform is suspended.

(4) The number of employees occupying the personnel platform shall not exceed the maximum number the platform was designed to hold or the number required to perform the work, whichever is less.

R 408.41080f Attachment and rigging.

Rule 1080f. (1) The following apply to hooks and other detachable devices:

(a) Hooks used in the connection between the hoist line and the personnel platform, including hooks on overhaul ball assemblies, lower load blocks, bridle legs, or other attachment assemblies or components, shall be the following:

(i) Of a type that can be closed and locked, eliminating the throat opening.

(ii) Closed and locked when attached.

(b) Shackles used in place of hooks shall be of the alloy anchor type, and include either of the following:

(i) A bolt, nut, and retaining pin, in place.

(ii) Of the screw type, with the screw pin secured from accidental removal.

(c) Where other detachable devices are used, the detachable devices must be of the type that can be closed and locked to the same extent as the devices addressed in subrules (1) and (2) of this rule. The qualified rigger shall ensure that these devices are closed and locked when attached.

(2) Rope bridle. When a rope bridle is used to suspend the personnel platform, the employer shall connect each bridle leg to a master link or shackle in a manner that ensures that the load is evenly divided among the bridle legs.

(3) Rigging hardware, including wire rope, shackles, rings, master links, and other rigging hardware, and hooks shall be capable of supporting, without failure, at least 5 times the maximum intended load applied or transmitted to that component. Where rotation resistant rope is used, the slings must be capable of supporting without failure at least 10 times the maximum intended load.

(4) Eyes in wire rope slings must be fabricated with thimbles.

(5) The qualified rigger shall ensure that bridles and associated rigging for suspending the personnel platform are used only for the platform and the necessary employees, their tools, and materials necessary to do their work. The bridles and associated rigging must not have been used for any purpose other than hoisting personnel.

R 408.41080g Trial lift and inspection.

Rule 1080g. (1) A trial lift with the unoccupied personnel platform loaded at least to the anticipated liftweight shall be made from ground level, or any other location where employees may enter the platform, to each location at which the platform is to be hoisted and positioned. Where there is more than 1 location to be reached from a single set-up position, either individual trial lifts for each location, or a single trial lift, in which the platform is moved sequentially to each location, shall be performed. The method selected must be the same as the method that is to be used to hoist the personnel.

(2) The operator shall ensure that the trial lift is performed immediately prior to each shift in which personnel is hoisted. In addition, the trial lift shall be repeated prior to hoisting employees in each of the following circumstances:

(a) The equipment is moved and set up in a new location or returned to a previously used location.

(b) The lift route is changed, unless the competent person determines that the new route presents no new factors affecting safety.

(3) The competent person shall comply with all the following:

(a) Safety devices and operational aids required by this rule are activated and functioning properly. Other safety devices and operational aids shall meet the requirements of R 408.41040 and R 408.41052 to R 408.41052b.

(b) Nothing interferes with the equipment or the personnel platform in the course of the trial lift.

(c) Determine that the lift does not exceed 50% of the equipment's rated capacity at any time during the lift.

(d) Confirm that the load radius to be used during the lift has been accurately determined.

(4) Immediately after the trial lift, the competent person shall comply with all of the following:

(a) Conduct a visual inspection of the equipment, base support or ground, and personnel platform, to determine whether the trial lift has exposed any defect or problem or produced any adverse effect.
(b) Confirm that, upon the completion of the trial lift process, the test weight has been removed.
(5) Immediately prior to each lift, the operator shall ensure that all of the following shall take place:
(a) The platform is hoisted a few inches with the personnel and materials/tools on board and inspected by a competent person to ensure that it is secure and properly balanced.
(b) The following conditions shall be determined by a competent person to exist before the lift of personnel proceeds:
(i) Hoist ropes are free of deficiencies in accordance with R 408.41038.
(ii) Multiple part lines are not twisted around each other.
(iii) The primary attachment is centered over the platform.
(iv) The hoisting system is inspected if the load rope is slack to ensure that all ropes are properly seated on drums and in sheaves.
(6) Any condition found during the trial lift and subsequent inspection that fails to meet a requirement of this standard or otherwise creates a safety hazard shall be corrected before hoisting personnel. See R 408.41053 to R 408.41053g for tag-out and related requirements.

R 408.41080h Proof testing.
Rule 1080h. (1) At each jobsite, prior to hoisting employees on the personnel platform, and after any repair or modification, the competent person or operator shall ensure that the platform and rigging is proof tested to 125% of the platform's rated capacity. The proof test may be done concurrently with the trial lift.
(2) The platform must be lowered by controlled load lowering, braked, and held in a suspended position for a minimum of 5 minutes with the test load evenly distributed on the platform.
(3) After proof testing, a competent person shall inspect the platform and rigging to determine if the test has been passed. If any deficiencies are found that pose a safety hazard, the platform and rigging shall not be used to hoist personnel unless the deficiencies are corrected, the test is repeated, and a competent person determines that the test has been passed. See R 408.41053 to R 408.41053g for tag-out and related requirements.
(4) Personnel hoisting must not be conducted until the competent person determines that the platform and rigging have successfully passed the proof test.

R 408.41080i Work practices.
Rule 1080i. (1) Hoisting of the personnel platform shall be performed in a slow, controlled, cautious manner, with no sudden movements of the equipment or the platform.
(2) Platform occupants shall comply with all of the following:
(a) Keep all parts of their bodies inside the platform during raising, lowering, and horizontal movement. This subdivision does not apply to an occupant of the platform

when necessary to position the platform or while performing the duties of a signal person.

(b) Not stand, sit on, or work from the top or intermediate rail or toeboard, or use any other means or device to raise their working height.

(c) Not pull the platform out of plumb in relation to the hoisting equipment.

(3) Before employees exit or enter a hoisted personnel platform that is not landed, the platform shall be secured to the structure where the work is to be performed, unless the employer can demonstrate that securing to the structure would create a greater hazard.

(4) If the platform is tied to the structure, the operator shall not move the platform until he or she receives confirmation that it is freely suspended.

(5) Tag lines shall be used when necessary to control the platform.

(6) Platforms without controls. When the platform is not equipped with controls, the equipment operator shall remain at the equipment controls, on site, and in view of the equipment at all times while the platform is occupied.

(7) Platforms with controls. When the platform is equipped with controls, all of the following shall be met at all times while the platform is occupied:

(a) The occupant using the controls in the platform shall be a qualified person with respect to their use, including the safe limitations of the equipment and hazards associated with its operation.

(b) The equipment operator shall be at a set of equipment controls that include boom and swing functions of the equipment, and the equipment operator shall be on site and in view of the equipment.

(c) The platform operating manual must be in the platform or on the equipment.

(8) All of the following apply to environmental conditions:

(a) Wind. When wind speed, sustained or gusts, exceeds 20 miles per hour at the personnel platform, a qualified person shall determine if, in light of the wind conditions, it is not safe to lift personnel. If it is not safe, the lifting operation shall not begin. If the lifting operation is already in progress, it shall be terminated.

(b) Other weather and environmental conditions. A qualified person shall determine if, in light of indications of dangerous weather conditions or other impending or existing danger, it is not safe to lift personnel. If it is not safe, the lifting operation shall not begin. If the lifting operation is already in progress, the lifting operation must be terminated.

(9) Employees being hoisted shall remain in direct communication with the signal person, where used, or the operator.

(10) All of the following apply to fall protection:

(a) Except when over water, employees occupying the personnel platform shall be provided and use a personal fall arrest system. The system shall be attached to a structural member within the personnel platform. When working over or near water, the requirements of Construction Safety Standard Part 6 “Personal Protective Equipment,” as referenced in R 408.41003e, apply.

(b) The fall arrest system, including the attachment point or anchorage used to comply with subdivision (a) of this subrule, shall meet the requirements in Construction Safety Standard Part 45 “Fall Protection,” as referenced in R 408.41003e.

(11) All of the following apply to other load lines:

(a) When a crane is being used to raise or lower persons on a work platform, another load shall not be attached to the work platform and another load shall not be raised or lowered at the same time by the same crane.
(b) Factory-produced boom-mounted personnel platforms that incorporate a winch as original equipment. Loads may be hoisted by this winch while employees occupy the personnel platform only where the load on the winch line does not exceed 500 pounds and does not exceed the rated capacity of the winch and platform.
(12) All of the following apply to traveling-equipment other than derricks:
(a) Hoisting of employees while the equipment is traveling is prohibited, except for either paragraph (i) or (ii) of this subdivision.
(i) Equipment that travels on fixed rails.
(ii) When the employer demonstrates that there is no less hazardous way to perform the work.
(iii) The exception in paragraph (ii) and (iii) of this subdivision does not apply to rubber-tired equipment.
(b) When employees are hoisted while the equipment is traveling, all of the following criteria shall be met:
(i) Equipment travel shall be restricted to a fixed track or runway.
(ii) Where a runway is used, the runway shall be a firm, level surface designed, prepared, and designated as a path of travel for the weight and configuration of the equipment being used to lift and travel with the personnel platform. An existing surface may be used as long as it meets the criteria in this paragraph.
(iii) Equipment travel shall be limited to boom length.
(iv)The boom shall be parallel to the direction of travel, except where it is safer to do otherwise.
(v) A competent person or operator shall perform a complete trial run to test the route of travel before employees are allowed to occupy the platform. This trial run can be performed at the same time as the trial lift required by R 408.41080g which tests the lift route.
(13) Traveling—derricks. Derricks shall be prohibited from traveling while personnel are hoisted.

R 408.41080j Pre-lift meeting.
Rule 1080j. (1) The employer shall hold a pre-lift meeting to review the appropriate requirements and procedures to be followed.
(2) All of the following entities shall attend the pre-lift meeting:
(a) The crane operator.
(b) The signalperson, if used for the lift.
(c) Employees to be lifted.
(d) The person who is responsible for the task to be performed.
(3) The pre-lift meeting shall be held prior to the trial lift at each new work location, and must be repeated for any employees newly assigned to the operation.

R 408.41080k Hoisting personnel near power lines.
Rule 1080k. Hoisting personnel within 20 feet of a power line that is up to 350 kV and hoisting personnel within 50 feet of a power line that is over 350 kV shall be prohibited,

except for work covered by Construction Safety Standard Part 16 "Power Transmission and Distribution," as referenced in R 408.41003e.

R 408.41080l Hoisting personnel in drill shafts.
Rule 1080l. When hoisting employees into and out of drill shafts that are up to and including 8 feet in diameter, all of the following requirements shall be met.
(a) The employee shall be in either a personnel platform or on a boatswain's chair.
(b) If using a personnel platform, R 408.41080 to R 408.41080k shall apply.
(c) If using a boatswain's chair, all of the following requirements shall be met:
(i) The rules in Table 1080-1 apply to this rule.
Where the terms ''personnel platform'' or ''platform'' are used in this subrule, they shall be substituted with the term ''boatswain's chair.''
(ii) A signal person shall be stationed at the shaft opening.
(iii) The employee shall be hoisted in a slow, controlled descent and ascent.
(iv) The employee shall use personal fall protection equipment, including a full body harness, attached independent of the crane or derrick.
(v) The fall protection equipment shall meet the applicable requirements in Construction Safety Standard Part 45 "Fall Protection," as referenced in R 408.41003e.
(vi) The boatswain's chair, excluding the personal fall arrest system anchorages, shall be capable of supporting, without failure, its own weight and at least 5 times the maximum intended load.
(vii) Not more than 1 person shall be hoisted at a time.

TABLE 1080-1 HOISTING PERSONNEL IN DRILL SHAFTS		
RULE NUMBER	RULE TITLE	SPECIFIC RULE
R 408.41080	Hoisting personnel	
R 408.41080b	Equipment set-up	
R 408.41080c	Equipment criteria	(1), (3), (4)
R 408.41080d	Personnel platform criteria	(1), (2), (3)
R 408.41080e	Personnel platform loading	(1), (2)(a), (3)(a)
R 408.41080g	Trial list and inspection	
R 408.41080h	Proof testing	
R 408.41080i	Work practices	(1), (6), (8), (9), (11)(a)
R 408.41080l	Hoisting personnel in drill shafts	
R 408.41080m	Hoisting personnel for pile driving operations	
Where the terms ''personnel platform'' or ''platform'' are used in these rules, they shall be substituted with the term ''boatswain's chair.''		

R 408.41080m Hoisting personnel for pile driving operations.
Rule 1080m. When hoisting an employee in pile driving operations, all of the following requirements shall be met:

(a) The employee must be in a personnel platform or boatswain's chair.

(b) For lattice boom cranes the cable shall be clearly marked so that it can easily be seen by the operator at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, or use a spotter who is in direct communication with the operator to inform the operator when this point is reached. For telescopic boom cranes the cable shall be clearly marked so that it can be easily seen by the operator at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking, and use a spotter who is in direct communication with the operator to inform the operator when this point is reached.

(c) If using a personnel platform, R 408.41080 to R 408.41080k apply.

(d) If using a boatswain's chair, all of the following requirements shall be met:

(i) The rules in Table 1080-2 shall apply to this rule. Where the terms ''personnel platform'' or ''platform'' are used in this subrule, they shall be substituted with the term "boatswains chair.''

(ii) The employee shall be hoisted in a slow, controlled descent and ascent.

(iii) The employee shall use personal fall protection equipment, including a full body harness, independently attached to the lower load block or overhaul ball.

(iv) The fall protection equipment shall meet the applicable requirements in Construction Safety Standard Part 45 "Fall Protection," as referenced in R 408.41003e.

(v) The boatswain's chair, excluding the personal fall arrest system anchorages, shall be capable of supporting, without failure, its own weight and at least 5 times the maximum intended load.

(vi) Not more than 1 person shall be hoisted at a time.

TABLE 1080-2
HOISTING PERSONNEL FOR PILE DRIVING OPERATIONS
and
HOISTING PERSONNEL IN STORAGE-TANKS, SHAFT, AND CHIMNEY OPERATIONS

RULE NUMBER	RULE TITLE	SPECIFIC RULE
R 408.41080	Hoisting personnel	
R 408.41080b	Equipment set-up	
R 408.41080c	Equipment criteria	(1), (3), (4)
R 408.41080d	Personnel platform criteria	(1), (2), (3)
R 408.41080e	Personnel platform loading	(1), (2)(a), (3)(a)
R 408.41080f	Attachment and rigging	
R 408.41080g	Trial lift and inspection	
R 408.41080h	Proof testing	
R 408.41080i	Work practices	(1), (6), (8), (9), (11)(a)
R 408.41080j	Pre-lift meeting	
R 408.41080k	Hoisting personnel near power lines	
Where the terms "personnel platform" or "platform" are used in these rules, they shall be substituted with the term "boatswain's chair."		

R 408.41080n Hoisting personnel in storage-tanks, shaft, and chimney operations.

Rule 1080n. When hoisting an employee in steel or concrete storage tanks, shaft, and chimney operations, the following requirements shall be met:

(a) The employee shall be in a personnel platform except when the employer can demonstrate that use of a personnel platform is infeasible. In this case, a boatswain's chair shall be used.

(b) If using a personnel platform, R 408.41080 to R 408.41080k apply.

(c) If using a boatswain's chair, all of the following requirements shall be met:

(i) The rules in Table 1035n "Hoisting Personnel For Pile Driving Operations and Hoisting Personnel In Storage-Tanks, Shaft, and Chimney Operations" shall apply to this rule. Where the terms ''personnel platform'' or ''platform'' are used in this subrule, they shall be substituted with the term ''boatswain's chair.''

(ii) The employee shall be hoisted in a slow, controlled descent and ascent.

(iii) The employee shall use personal fall protection equipment, including a full body harness, attached independent of the crane or derrick. When there is no adequate structure for attachment of personal fall arrest equipment as required in Construction Safety Standard Part 45 "Fall Protection," 1926.502(d)(15), as referenced in R 408.41003e, the attachment shall be to the lower load block or overhaul ball.

(iv) The fall protection equipment shall meet the applicable requirements in Construction Safety Standard Part 45 "Fall Protection," as referenced in R 408.41003e.

(v) The boatswain's chair, excluding the personal fall arrest system anchorages, shall be capable of supporting, without failure, its own weight and at least 5 times the maximum intended load.

(vi) Not more than 1 person shall be hoisted at a time.

R 408.41080o Hoisting personnel for marine transfer.

Rule 1080o. The employer shall ensure that all of the following requirements are met when hoisting employees solely for transfer to or from a marine worksite:

(a) The employee is in either a personnel platform or a marine-hoisted personnel transfer device.

(b) If using a personnel platform, R 408.41080 to R 408.41080k apply.

(c) If using a marine-hoisted personnel transfer device, all of the following requirements shall be met:

(i) The rules in Table 1080-3 shall apply to this rule. Where the terms ''personnel platform'' or ''platform'' are used in this subrule, they shall be substituted with the term ''marine-hoisted personnel transfer device."

(ii) The transfer device is used only for transferring workers.

(iii) The number of workers occupying the transfer device does not exceed the maximum number it was designed to hold.

(iv) Each employee wears a U.S. Coast Guard personal flotation device approved for industrial use.

TABLE 1080-3 HOISTING PERSONNEL FOR MARINE TRANSFER		
RULE NUMBER	**RULE TITLE**	**SPECIFIC RULE**
R 408.41080	**Hoisting personnel**	
R 408.41080b	**Equipment set-up**	**(2)**
R 408.41080c	**Equipment criteria**	**(1), (3), (4),**
R 408.41080d	**Personnel platform criteria**	**(1) to (5), and (12),**
R 408.41080e	**Personnel platform loading**	**(1)**
R 408.41080f	**Attachment and rigging**	
R 408.41080g	**Trial lift and inspection**	
R 408.41080h	**Proof testing**	
R 408.41080i	**Work practices**	**(1), (8), (9), (10)(b), (11)(a), (12)**
Where the terms ‘‘personnel platform’’ or ‘‘platform’’ are used in these rules, they shall be substituted with the term ‘‘marine-hoisted personnel transfer device		

CRITICAL LIFTS

R 408.41081 Critical lifts; supplemental requirements.

Rule 1081. (1) This rule applies to lifts exceeding 75% of the rated capacity of the crane or derrick as configured, or lifts that require the use of multiple cranes or derricks.

(2) Plan development. Before beginning a crane or derrick operation in which a lift exceeds 75% of the rated capacity of the crane or derrick, or requires the use of multiple cranes or derricks, the lift director shall plan the operation. The planning must meet all of the following requirements:

(a) Be developed by a qualified person.

(b) Be designed to ensure that the requirements of this standard are met.

(c) When the qualified person determines that engineering expertise is needed for the planning, the employer shall ensure that it is provided.

(d) Guidelines for critical lift planning are contained in Appendix E.

(3) Both of the following apply to plan implementation:

(a) The lift shall be directed by a lift director who meets the criteria for both a competent person and a qualified person, or a competent person who is assisted by 1 or more qualified persons.

(b) The lift director shall review the plan in a meeting with all workers who will be involved with the operation.

DESIGN, CONSTRUCTION, AND TESTING

R 408.41082 Design, construction, and testing prior to November 8, 2010.

Rule 1082. (1) This rule applies to equipment that has a manufacturer-rated hoisting or lifting capacity of more than 2,000 pounds.

(2) Mobile cranes, including crawler and truck, and locomotive cranes manufactured prior to November 8, 2010 shall meet at least 1 of the following applicable requirements for design, construction, and testing:

(a) ANSI/ASME B30.5 “Mobile and Locomotive Cranes,” 1994 edition, as adopted in R 408.41003a,

(b) PCSA Standard No. 4 “Mobile Power Crane and Excavator and Hydraulic Crane Standards,” 1983 edition, as adopted in R 408.41003c.

(c) The requirements in R 408.41082a.

(d) The applicable DIN standards that were in effect at the time of manufacture. DIN stands for "Deutsches Institut für Normung", meaning "German institute for standardization".

R 408.41082a Design, construction, and testing after November 8, 2010.

Rule 1082a. (1) Mobile cranes, including crawler and truck, and locomotive cranes manufactured on or after November 8, 2010 shall meet the following portions of ANSI/ASME B30.5 “Mobile and Locomotive Cranes,” 2004 edition, as adopted in R 408.41003a, as applicable:

(a) In section 5–1.1.1 (‘‘Load Ratings-Where Stability Governs Lifting Performance’’), paragraphs (a)-(d) (including subparagraphs).

(b) In section 5–1.1.2 (‘‘Load Ratings-Where Structural Competence Governs Lifting Performance’’), paragraph (b).
(c) Section 5–1.2 (‘‘Stability (Backward and Forward)’’).
(d) In section 5–1.3.1 (‘‘Boom Hoist Mechanism’’), subdivisions (a), (b)(1) and (2) of this subrule, except that when using rotation resistant rope, R 408.41039a(7) applies.
(e) In section 5–1.3.2 (‘‘Load Hoist Mechanism’’), subdivision (a)(2) to (a)(4) (including subparagraphs), (b) (including subparagraphs), (c) (first sentence only) and (d).
(f) Section 5–1.3.3 (‘‘Telescoping Boom’’).
(g) Section 5–1.4 (‘‘Swing Mechanism’’).
(h) In section 5–1.5 (‘‘Crane Travel’’), all provisions except 5-1.5.3(d).
(i) In section 5–1.6 (‘‘Controls’’), all provisions except 5-1.6.1(c).
(j) Section 5–1.7.4 (‘‘Sheaves’’).
(k) Section 5–1.7.5 (‘‘Sheave sizes’’).
(l) In section 5–1.9.1 (‘‘Booms’’), paragraph (f).
(m) Section 5–1.9.3 (‘‘Outriggers’’).
(n) Section 5–1.9.4 (‘‘Locomotive Crane Equipment’’).
(o) Section 5–1.9.7 (‘‘Clutch and Brake Protection’’).
(p) In section 5–1.9.11 (‘‘Miscellaneous equipment’’), paragraphs (a), (c), (e), and (f).

R 408.41082b Prototype testing - Option A and B.
Rule 1082b. (1) Prototype testing: mobile cranes, including crawler and truck, and locomotive cranes manufactured on or after November 8, 2010 shall meet the prototype testing requirements in Test Option A or Test Option B described in this rule. Tower cranes manufactured on or after November 8, 2010 shall meet the prototype testing requirements in British European Standards BS EN 14439 “Cranes – Safety – Tower Cranes,” 2006 edition, as adopted in R 408.41003b.
Note 1 to R 408.41038c: Prototype testing of crawler, locomotive and truck cranes manufactured prior to November 8, 2010 shall conform to R 408.41038a.
Note 2 to R 408.41038c: The standards in this rule are adopted in R 408.41003a or R 408.41003b.
(2) Test Option A shall be as follows:
(a) The following apply to equipment with cantilevered booms, such as hydraulic boom cranes:
(i) All the tests listed in SAE J1063 “Cantilevered Boom Crane Structures – Method of Test,” November 1993 edition Table 1, shall be performed to load all critical structural elements to their respective limits.
(ii) All the strength margins listed in SAE J1063 “Cantilevered Boom Crane Structures – Method of Test,” November 1993 edition Table 2, shall be met.
(b) The following applies to equipment with pendant supported lattice booms:
(i) All the tests listed in SAE J987 “Lattice Boom Cranes – Method of Test,” June 2003 Table 1, shall be performed to load all critical structural elements to their respective limits.
(ii) All the strength margins listed in SAE J987 “Lattice Boom Cranes – Method of Test,” June 2003 Table 2 shall be met.
(3) Test Option B: The testing and verification requirements of BS EN 13000 “Cranes – Mobile Cranes,” 2004 edition, shall be met. In applying BS EN 13000 “Cranes – Mobile Cranes,” 2004 edition, all of the following additional requirements shall be met:

(a) The following applies to equipment with cantilevered booms, such as hydraulic boom cranes: The analysis methodology, computer modeling, shall demonstrate that all load cases listed in SAE J1063 "Cantilevered Boom Crane Structures – Method of Test," November 1993 edition, meet the strength margins listed in SAE J1063 Table 2.
(b) The following applies to equipment with pendant supported lattice booms:
The analysis methodology, computer modeling, shall demonstrate that all load cases listed in SAE J987 "Lattice Boom Cranes – Method of Test," June 2003 edition, meet the strength margins listed in SAE J987 Table 2.
(c) Analysis verification. The physical testing requirements under SAE J1063 "Cantilevered Boom Crane Structures – Method of Test," November 1993 edition, and SAE J987 "Lattice Boom Cranes – Method of Test," June 2003 edition, shall be met unless the reliability of the analysis methodology, computer modeling, has been demonstrated by a documented history of verification through strain gauge measuring or strain gauge measuring in combination with other physical testing.

R 408.41082c Rated capacity and related information.
Rule 1082c. (1) All equipment covered by this standard shall meet all of the requirements of this rule.
(2) Rated capacity and related information. The information available in the cab, as specified in R 408.41053(4) regarding ''rated capacity'' and related information shall include, at a minimum, the following information:
(a) A complete range of the manufacturer's equipment rated capacities, as follows:
(i) At all manufacturer approved operating radii, boom angles, work areas, boom lengths and configurations, jib lengths and angles or offset.
(ii) Alternate ratings for use and nonuse of option equipment that affects rated capacities, such as outriggers, stabilizers, and extra counterweights.
(b) A work area chart for which capacities are listed in the load chart.
Note: An example of this type of chart is in ANSI/ASME B30.5 "Mobile and Locomotive Cranes," 2004 edition, section 5–1.1.3, Figure 11, as adopted in R 408.41003a,
(c) The work area figure and load chart shall clearly indicate the areas where no load is to be handled.
(d) Recommended reeving for the hoist lines shall be shown.
(e) Recommended parts of hoist reeving, size, and type of wire rope for various equipment loads.
(f) Recommended boom hoist reeving diagram, where applicable; size, type, and length of wire rope.
(g) Tire pressure, where applicable.
(h) Caution or warnings relative to limitations on equipment and operating procedures, including an indication of the least stable direction.
(i) Position of the gantry and requirements for intermediate boom suspension, where applicable.
(j) Instructions for boom erection and conditions under which the boom, or boom and jib combinations, may be raised or lowered.
(k) Whether the hoist holding mechanism is automatically or manually controlled, whether free fall is available, or any combination of these.
(l) The maximum telescopic travel length of each boom telescopic section.
(m) Whether sections are telescoped manually or with power.

(n) The sequence and procedure for extending and retracting the telescopic boom section.
(o) Maximum loads permitted during the boom extending operation, and any limiting conditions or cautions.
(p) Hydraulic relief valve settings specified by the manufacturer.
(3) Load hooks, including latched and unlatched types, ball assemblies, and load blocks shall be of sufficient weight to overhaul the line from the highest hook position for boom or boom and jib lengths and the number of parts of the line in use.
(4) Hook and ball assemblies and load blocks shall be marked with their rated capacity and weight.
(5) All of the following apply to latching hooks:
(a) Hooks shall be equipped with latches, except where the requirements of subdivision (b) of this subrule are met.
(b) Hooks without latches, or with latches removed or disabled, shall not be used unless both of the following occur:
(i) A qualified person has determined that it is safer to hoist and place the load without latches, or with the latches removed or tied-back.
(ii) Routes for the loads are preplanned to ensure that no employee is required to work in the fall zone except for employees necessary for the hooking or unhooking of the load.
(c) The latch closes the throat opening and is designed to retain slings or other lifting devices or accessories in the hook when the rigging apparatus is slack.

R 408.41082d Posted warnings; fire extinguisher.
Rule 1082d. (1) The employer shall ensure that posted warnings required by this standard, as well as those originally supplied with the equipment by the manufacturer, are maintained in legible condition.
(2) A portable fire extinguisher that has a rating of not less than 10BC shall be kept in the cab or operating enclosure, or where there is no cab or enclosure, be kept on the jobsite within a 200-foot radius of the equipment and be readily available. The employer shall ensure that the operator and maintenance employees are trained in the use of the fire extinguisher.

R 408.41082e Cab requirements.
Rule 1082e. Equipment with cabs shall meet all of the following requirements:
(a) Cabs shall be designed with a form of adjustable ventilation and method for clearing the windshield for maintaining visibility and air circulation. Examples of means for adjustable ventilation include air conditioner or window that can be opened for ventilation and air circulation. Examples of means for maintaining visibility include heater to prevent windshield icing, defroster, fan, or windshield wiper.
(b) Swinging or sliding cab doors shall be designed to prevent inadvertent opening or closing while traveling or operating the machine. Swinging doors adjacent to the operator shall open outward. Sliding operator doors shall open rearward.
(c) All of the following apply to windows:
(i) The cab shall have windows in front and on both sides of the operator. Forward vertical visibility shall be sufficient to give the operator a view of the boom point at all times.

(ii) Windows may have sections designed to be opened or readily removed. Windows with sections designed to be opened shall be designed so that they can be secured to prevent inadvertent closure.
(iii) Windows shall be made of safety glass or material with similar optical and safety properties that introduce no visible distortion or otherwise obscure visibility that interferes with the safe operation of the equipment.
(d) A clear passageway shall be provided from the operator's station to an exit door on the operator's side.
(e) Areas of the cab roof that serve as a workstation for rigging, maintenance, or other equipment-related tasks shall be capable of supporting 250 pounds without permanent distortion.

R 408.41082f Guarding; exhaust fumes; friction mechanisms; hydraulic load hoists.
Rule 1082f. (1) Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, and other parts or components that reciprocate, rotate, or otherwise move shall be guarded where contact by employees, except for maintenance and repair employees, is possible in the performance of normal duties.
(2) All exhaust pipes, turbochargers, and charge air coolers shall be insulated or guarded where contact by employees, except for maintenance and repair employees, is possible in the performance of normal duties.
(3) Hydraulic and pneumatic lines shall be protected from damage to the extent feasible.
(4) The equipment shall be designed so that exhaust fumes are not discharged in the cab and are discharged in a direction away from the operator.
(5) Friction mechanisms. When friction mechanisms, such as brakes and clutches, are used to control the boom hoist or load line hoist, they shall comply with both of the following:
(a) Be of a size and thermal capacity sufficient to control all rated loads with the minimum recommended reeving.
(b) Be adjustable to permit compensation for lining wear to maintain proper operation.
(6) Hydraulic load hoists. Hydraulic drums shall have an integrally mounted holding device or internal static brake to prevent load hoist movement in the event of hydraulic failure.

R 408.41082g Equipment not changed.
Rule 1082g. The employer's obligations under R 408.41082 to R 408.41082b and R 408.41082e and R 408.41082f are met when the equipment has not changed, except in accordance with R 408.41083 and when an employer can refer to documentation from the manufacturer showing that the equipment has been designed, constructed, and tested in accordance with those rules.

EQUIPMENT MODIFICATIONS

R 408.41083 Equipment modifications.
Rule 1083. (1) Modifications or additions that affect the capacity or safe operation of the equipment shall be prohibited except when the requirements of subrule (2), (3), (4), (5), or (6) of this rule are met.
(2) All of the following apply to manufacturer review and approval:

(a) The manufacturer shall approve the modifications or additions in writing.
(b) The load charts, procedures, instruction manuals and instruction plates, tags, or decals shall be modified as necessary to reflect the modification or addition.
(c) The original safety factor of the equipment shall not be reduced.
(3) Manufacturer refusal to review request. The employer shall provide the manufacturer a detailed description of the proposed modification or addition, and shall be asked to approve the modification or addition. If a manufacturer declines to review the technical merits of the proposal or fails to acknowledge or initiate the review of the request within 30 days, all of the following shall be met:
(a) A registered professional engineer who is a qualified person with respect to the equipment involved shall do both of the following:
(i) Approve the modification or addition and specify the equipment configurations to which that approval applies.
(ii) Modify load charts, procedures, instruction manuals and instruction plates, tags, or decals as necessary to reflect the modification or addition.
(b) The original safety factor of the equipment shall not be reduced.
(4) Unavailable manufacturer. If the manufacturer is unavailable, the requirements of subrule (3)(a) and (b) of this rule are met.
(5) Manufacturer does not complete the review within 120 days of the request. The manufacturer shall be provided a detailed description of the proposed modification or addition and shall be asked to approve the modification or addition. If the manufacturer agreed to review the technical merits of the proposal, but failed to complete the review of the proposal within 120 days of the date it was provided the detailed description of the proposed modification or addition, then the requirements of subrule (3)(a) and (b) of this rule are met.
(6) Multiple manufacturers of equipment designed for use on marine work sites. If the equipment is designed for marine work sites or contains major structural component from more than 1 manufacturer, then the requirements of subrule (3)(a) and (b) of this rule are met.
(7) Modifications or additions that affect the capacity or safe operation of the equipment shall be prohibited when the manufacturer, after a review of the technical safety merits of the proposed modification or addition, rejects the proposal and explains the reasons for the rejection in a written response. If the manufacturer rejects the proposal, but does not explain the reasons for the rejection in writing, the employer may treat this as a manufacturer refusal to review the request under subrule (3) of this rule.

TOWER CRANES

R 408.41084 Tower cranes.
Rule 1084. These rules contain supplemental requirements for tower cranes. All rules of this standard apply to tower cranes unless specified otherwise.

R 408.41084a Erecting, climbing, and dismantling.
Rule 1084a. (1) R 408.41035 applies to tower cranes except as otherwise specified. The term ‘‘assembly/disassembly’’ is replaced by ‘‘erecting, climbing and dismantling,’’ and the term ‘‘disassembly’’ is replaced by ‘‘dismantling’’ when applying R 408.41035 to tower cranes.

(2) Dangerous areas, self-erecting tower cranes. In addition to the requirements in R 408.41035a for self-erecting tower cranes, employees shall not be in or under the tower, jib, or rotating portion of the crane during erecting, climbing, and dismantling operations until the crane is secured in a locked position and the competent person in charge indicates it is safe to enter this area, unless the manufacturer's instructions direct otherwise. Then, only the necessary personnel are permitted in this area.

(3) Tower crane foundations and structural supports, including both the portions of the structure used for support and the means of attachment, shall be designed by the manufacturer or a registered professional engineer.

(4) Addressing specific hazards. The requirements in R 408.41035b (1) to (9) apply. In addition, the A/D director shall address all of the following:

(a) Foundations and structural supports. The A/D director shall determine that tower crane foundations and structural supports are installed in accordance with their design.

(b) Loss of backward stability. Backward stability before swinging self-erecting cranes or cranes on traveling or static undercarriages shall be maintained.

(c) Wind speed. Wind shall not exceed the speed recommended by the manufacturer. When the manufacturer does not specify this information, the speed shall be determined by a qualified person.

(5) Plumb tolerance. Towers shall be erected plumb to the manufacturer's tolerance and verified by a qualified person. When the manufacturer does not specify plumb tolerance, the crane tower shall be plumb to a tolerance of at least 1:500, approximately 1 inch in 40 feet.

(6) Multiple tower crane jobsites. On jobsites where more than 1 fixed jib (hammerhead) tower crane is installed, the cranes must be located so that no crane can come in contact with the structure of another crane. Cranes may be permitted to pass over one another.

(7) Climbing procedures. Prior to, and during, all climbing procedures, including inside climbing and top climbing, the employer shall do both of the following:

(a) Comply with all manufacturer prohibitions.

(b) Have a registered professional engineer verify that the host structure is strong enough to sustain the forces imposed through the braces, brace anchorages, and supporting floors.

(8) Counterweights or ballasts. Both of the following apply to counterweights or ballasts:

(a) Equipment shall not be erected, dismantled, or operated without the amount and position of counterweight, ballast, or both, in place as specified by the manufacturer or a registered professional engineer familiar with the equipment.

(b) The maximum counterweight, ballast, or both, specified by the manufacturer or registered professional engineer familiar with the equipment shall not be exceeded.

R 408.41084b Signs and safety devices.

Rule 1084b. (1) The size and location of signs on tower cranes shall be installed as specified by the manufacturer. When manufacturer specifications are unavailable, a registered professional engineer familiar with the type of equipment involved must approve, in writing, the size and location of any signs.

(2) R 408.41040 does not apply to tower cranes.

(3) All of the following safety devices are required on all tower cranes unless otherwise specified:

(a) Boom stops on luffing boom type tower cranes.

(b) Jib stops on luffing boom type tower cranes, if equipped with a jib attachment.

(c) Travel rail end stops at both ends of travel rail.
(d) Travel rail clamps on all travel bogies.
(e) Integrally mounted check valves on all load supporting hydraulic cylinders.
(f) A hydraulic system pressure limiting device.
(g) All of the following brakes, which automatically set in the event of pressure loss or power failure, shall be required:
(i) A hoist brake on all hoists.
(ii) Swing brake.
(iii) Trolley brake.
(iv) Rail travel brake.
(h) Deadman control or forced neutral return control hand levers.
(i) Emergency stop switch at the operator's station.
(j) Trolley end stops shall be provided at both ends of travel of the trolley.
(4) Proper operation required. Operations shall not begin unless the devices listed in this rule are in proper working order. If a device stops working properly during operations, the operator shall safely stop operations. The equipment shall be taken out of service, and operations shall not resume until the device is again working properly. See R 408.41053b (1) and (2). Alternative measures shall not be used.

R 408.41084c Operational aids.
Rule 1084c. (1) R 408.41052 to R 408.41052b do not apply to tower cranes.
(2) The devices listed in R 408.41084d, R 408.41084e, and this rule are required on all tower cranes covered by this standard, unless otherwise specified.
(3) Operations shall not begin unless the operational aids are in proper working order, except when the employer meets the specified temporary alternative measures. More protective alternative measures specified by the tower crane manufacturer, if any, shall be followed. See R 408.41053d for additional requirements.
(4) If an operational aid stops working properly during operations, the operator shall safely stop operations until the temporary alternative measures are implemented or the device is again working properly. If a replacement part is no longer available, the use of a substitute device that performs the same type of function are permitted and shall not be considered a modification under R 408.41083.

R 408.41084d Category (1) operational aids criteria.
Rule 1084d. (1) Operational aids listed in this subrule that are not working properly must be repaired no later than 7 calendar days after the deficiency occurs. Exception: If the employer documents that it has ordered the necessary parts within 7 calendar days of the occurrence of the deficiency, the repair must be completed within 7 calendar days of receipt of the parts.
(2) Trolley travel limiting device. The travel of the trolley shall be restricted at both ends of the jib by a trolley travel limiting device to prevent the trolley from running into the trolley end stops. Temporary alternative measures must comply with either of the following:
(a) The trolley rope is marked so it can be seen by the operator at a point that will give the operator sufficient time to stop the trolley prior to the end stops.
(b) A spotter who is in direct communication with the operator is used when operations are conducted within 10 feet of the outer or inner trolley end stops.

(3) Boom hoist limiting device. The range of the boom shall be limited at the minimum and maximum radius. Temporary alternative measures must comply with either of the following:

(a) The cable is clearly marked so it can be seen by the operator at a point that will give the operator sufficient time to stop the boom hoist within the minimum and maximum boom radius.

(b) A spotter is in direct communication with the operator to inform the operator when this point is reached.

(4) Anti two-blocking device. The tower crane shall be equipped with a device that automatically prevents damage from contact between the load block, overhaul ball, or similar component, and the boom tip or fixed upper block or similar component. The device or devices shall prevent this damage at all points where two-blocking could occur. Temporary alternative measures shall comply with either of the following:

(a) The cable is clearly marked so it can be seen by the operator at a point that will give the operator sufficient time to stop the hoist to prevent two-blocking.

(b) A spotter is in direct communication with the operator to inform the operator when this point is reached.

(5) Hoist drum lower limiting device. Tower cranes manufactured after November 8, 2011, shall be equipped with a device that prevents the last 2 wraps of hoist cable from being spooled off the drum. Temporary alternative measures must comply with either of the following:

(a) The cable is clearly marked so it can be seen by the operator at a point that will give the operator sufficient time to stop the hoist prior to last 2 wraps of hoist cable being spooled off the drum.

(b) A spotter who is in direct communication with the operator to inform the operator when this point is reached.

(6) Load moment limiting device. The tower crane shall have a device that prevents moment overloading. Temporary alternative measures must comply with either of the following:

(a) A radius indicating device is used.

(b) If the tower crane is not equipped with a radius indicating device, the radius is measured to ensure the load is within the rated capacity of the crane. In addition, the weight of the load is determined from a source recognized by the industry, such as the load's manufacturer, or by a calculation method recognized by the industry, such as calculating a steel beam from measured dimensions and a known per foot weight, or by other equally reliable means. This information shall be provided to the operator prior to the lift.

(7) Hoist line pull limiting device. The capacity of the hoist shall be limited to prevent overloading, including each individual gear ratio if equipped with a multiple speed hoist transmission. Temporary alternative measure: The operator shall ensure that the weight of the load does not exceed the capacity of the hoist, including for each individual gear ratio if equipped with a multiple speed hoist transmission.

(8) Rail travel limiting device. The travel distance in each direction shall be limited to prevent the travel bogies from running into the end stops or buffers. Temporary alternative measure: A spotter who is in direct communication with the operator shall be used when operations are conducted within 10 feet of either end of the travel rail end stops.

The spotter shall inform the operator of the distance of the travel bogies from the end stops or buffers.

(9) Boom hoist drum positive locking device and control. The boom hoist drum shall be equipped with a control that shall enable the operator to positively lock the boom hoist drum from the cab. Temporary alternative measure: The device shall be manually set when required if an electric, hydraulic, or automatic control is not functioning.

R 408.41084e Category (2) operational aids criteria.

Rule 1084e. (1) The following operational aids that are not working properly shall be repaired not later than 30 calendar days after the deficiency occurs. Exception: If the employer documents that it has ordered the necessary parts within 7 calendar days of the occurrence of the deficiency and the part is not received in time to complete the repair in 30 calendar days, the repair shall be completed within 7 calendar days of receipt of the parts.

(2) Boom angle or hook radius indicators. The following apply to boom angle or hook radius indicators:

(a) Luffing boom tower cranes shall have a boom angle indicator readable from the operator's station.

(b) Hammerhead tower cranes manufactured after November 8, 2011 shall have a hook radius indicator readable from the operator's station.

(c) Temporary alternative measure: Hook radii or boom angle shall be determined by measuring the hook radii or boom angle with a measuring device.

(3) Trolley travel deceleration device. The trolley speed shall be automatically reduced prior to the trolley reaching the end limit in both directions. Temporary alternative measure: The employer shall post a notice in the cab of the crane notifying the operator that the trolley travel deceleration device is malfunctioning and instructing the operator to take special care to reduce the trolley speed when approaching the trolley end limits.

(4) Boom hoist deceleration device. The boom speed shall be automatically reduced prior to the boom reaching the minimum or maximum radius limit. Temporary alternative measure: The employer shall post a notice in the cab of the crane notifying the operator that the boom hoist deceleration device is malfunctioning and instructing the operator to take special care to reduce the boom speed when approaching the minimum or maximum radius limits.

(5) Load hoist deceleration device. The load speed shall be automatically reduced prior to the hoist reaching the upper limit. Temporary alternative measure: The employer shall post a notice in the cab of the crane notifying the operator that the load hoist deceleration device is malfunctioning and instructing the operator to take special care to reduce the load speed when approaching the upper limits.

(6) Wind speed indicator. A device shall be provided to display the wind speed and shall be mounted above the upper rotating structure on tower cranes. On self-erecting cranes, the device shall be mounted at or above the jib level. Temporary alternative measures shall comply with either of the following:

(a) Use of wind speed information from a properly functioning indicating device on another tower crane on the same site.

(b) A qualified person estimates the wind speed.

(7) Load indicating device. Cranes manufactured after November 8, 2011 shall have a device that displays the magnitude of the load on the hook. Displays that are part of load

moment limiting devices that display the load on the hook meet this requirement. Temporary alternative measure: The weight of the load shall be determined from a source recognized by the industry, such as the load's manufacturer, or by a calculation method recognized by the industry, such as calculating a steel beam from measured dimensions and a known per foot weight, or by other equally reliable means. This information shall be provided to the operator prior to the lift.

R 408.41084f Inspections.

Rule 1084f. (1) R 408.41037 to R 408.41037f shall apply to tower cranes, except that the term ''assembly'' is replaced by ''erection.'' R 408.41038 applies to tower cranes.

(2) Pre-erection inspection. Before each crane component is erected, it shall be inspected by a qualified person for damage or excessive wear. All of the following apply:

(a) The qualified person shall pay particular attention to components that will be difficult to inspect thoroughly during shift inspections.

(b) If the qualified person determines that a component is damaged or worn to the extent that it would create a safety hazard if used on the crane, that component shall not be erected on the crane unless it is repaired and, upon reinspection by the qualified person, found to no longer create a safety hazard.

(c) If the qualified person determines that the component, though not presently a safety hazard, needs to be monitored, the employer shall ensure that the component is checked in the monthly inspections. Any such determination shall be documented, and the documentation shall be available to any individual who conducts a monthly inspection.

(3) Post-erection inspection. In addition to the requirements in R 408.41037b, the employer shall ensure that the following requirements are met:

(a) A load test using certified weights, or scaled weights using a certified scale with a current certificate of calibration, are conducted after each erection.

(b) The load test is conducted according to the manufacturer's instructions when available. When these instructions are unavailable, the test must be conducted according to written load test procedures developed by a registered professional engineer familiar with the type of equipment involved.

(4) Monthly. The following additional items shall be included in the monthly inspection:

(a) All tower, mast, and other structural bolts, in loose or dislodged condition, from the base of the tower crane up or, if the crane is tied to or braced by the structure, those above the upper-most brace support.

(b) The upper-most tie-in, braces, floor supports, and floor wedges where the tower crane is supported by the structure, for loose or dislodged components.

(5) Annual. In addition to the items that must be inspected under R 408.41037e, all turntable and tower bolts shall be inspected annually for proper condition and torque.

DERRICKS

R 408.41085 Derricks.

Rule 1085. These rules contain supplemental requirements for derricks, whether temporarily or permanently mounted. All provisions of this standard apply to derricks unless specified otherwise.

R 408.41085a Operation procedures.

Rule 1085a. (1) R 408.41053 to R 408.41053g apply, except for R 408.41053(3).
(2) Load charts shall contain at least all the following information:
(a) Rated capacity at corresponding ranges of boom angle or operating radii.
(b) Specific lengths of components to which the rated capacities apply.
(c) Required parts for hoist reeving.
(d) Size and construction of rope, which also may be included in the operating manual.
(3) An employer shall ensure that the load chart location complies with both of the following:
(a) For permanently installed derricks with fixed lengths of boom, guy, and mast, a load chart is posted where it is visible to personnel responsible for the operation of the equipment.
(b) For derricks that are not permanently installed, the load chart is readily available at the job site to personnel responsible for the operation of the equipment.

R 408.41085b Construction criteria.
Rule 1085b. (1) General requirements consist of both of the following:
(a) Derricks shall be constructed to meet all stresses imposed on members and components when installed and operated in accordance with the manufacturer's or builder's procedures and within its rated capacity.
(b) Welding of load sustaining members shall conform to recommended practices in either of the following:
(i) ANSI/AWS D14.3 "Specification for Welding Earthmoving and Construction Equipment," 1994 edition.
(ii) AWS D1.1/D1.1M "Structural Welding Code–Steel Updates Every 5 Years," 2002 edition.
These standards are adopted in R 408.41003a.
(2) All of the following apply to guy derricks:
(a) The minimum number of guys shall be 6, with equal spacing, except where a qualified person or derrick manufacturer approves variations from these requirements and revises the rated capacity to compensate for such variations.
(b) Guy derricks shall not be used unless the employer has the following guy information from the manufacturer or a qualified person when not available from the manufacturer:
(i) The number of guys.
(ii) The spacing around the mast.
(iii) The size, grade, and construction of rope to be used for each guy.
(c) For guy derricks manufactured after December 18, 1970, in addition to the information required in subdivision (b) of this subrule, the employer must have the following guy information from the manufacturer or a qualified person, when not available from the manufacturer:
(i) The amount of initial sag or tension.
(ii) The amount of tension in guy line rope at anchor.
(d) The mast base shall permit the mast to rotate freely with allowance for slight tilting of the mast caused by guy slack.
(e) The mast cap shall comply with all of the following:
(i) Permit the mast to rotate freely.
(ii) Withstand tilting and cramping caused by the guy loads.
(iii) Be secured to the mast to prevent disengagement during erection.

(iv) Be provided with means for attaching guy ropes.
(3) All of the following apply to stiffleg derricks:
(a) The mast shall be supported in the vertical position by at least 2 stifflegs. One end of each stiffleg shall be connected to the top of the mast and the other end securely anchored.
(b) The stifflegs shall be capable of withstanding the loads imposed at any point of operation within the load chart range.
(c) The mast base shall comply with both of the following:
(i) Permit the mast to rotate freely, when necessary.
(ii) Permit deflection of the mast without binding.
(d) The mast shall be prevented from lifting out of its socket when the mast is in tension.
(e) The stiffleg connecting member at the top of the mast shall comply with all of the following:
(i) Permit the mast to rotate freely, when necessary.
(ii) Withstand the loads imposed by the action of the stifflegs.
(iii) Be secured so as to oppose separating forces.
(4) All of the following apply to gin pole derricks:
(a) Guy lines shall be sized and spaced so as to make the gin pole stable in both boomed and vertical positions. Exception: When the size, spacing, or both, of guy lines do not result in the gin pole being stable in both boomed and vertical positions, the employer shall ensure that the derrick is not used in an unstable position.
(b) The base of the gin pole shall permit movement of the pole, when necessary.
(c) The gin pole shall be anchored at the base against horizontal forces, when such forces are present.
(5) Chicago boom derricks. The fittings for stepping the boom and for attaching the topping lift shall be arranged to comply with all of the following:
(a) Permit the derrick to swing at all permitted operating radii and mounting heights between fittings.
(b) Accommodate attachment to the upright member of the host structure.
(c) Withstand the forces applied when configured and operated in accordance with the manufacturer's or builder's procedures and within its rated capacity.
(d) Prevent the boom or topping lift from lifting out under tensile forces.

R 408.41085c Anchoring and guying.
Rule 1085c. (1) Load anchoring data developed by the manufacturer or a qualified person shall be used in anchoring and guying operations.
(2) All of the following apply to guy derricks:
(a) The mast base shall be anchored.
(b) The guys shall be secured to the ground or other firm anchorage.
(c) The anchorage and guying shall be designed to withstand maximum horizontal and vertical forces encountered when operating within rated capacity with the particular guy slope and spacing specified for the application.
(3) All of the following apply to stiffleg derricks:
(a) The mast base and stifflegs shall be anchored.
(b) The mast base and stifflegs shall be designed to withstand maximum horizontal and vertical forces encountered when operating within rated capacity with the particular stiffleg spacing and slope specified for the application.

R 408.41085d Boom, swinger mechanisms, and hoists.

Rule 1085d. (1) The boom, swinger mechanisms, and hoists shall be suitable for the derrick work intended and shall be anchored to prevent displacement from the imposed loads.

(2) Base mounted drum hoists shall meet the requirements in the following sections of ASME B30.7 "Base Mounted Drum Hoists," 2001 edition, as adopted in R 408.41003a:

(a) Section 7–1.1 (''Load ratings and markings'').

(b) Section 7–1.2 (''Construction''), except: 7–1.2.13 (''Operator's cab''); 7–1.2.15 (''Fire extinguishers'').

(c) Section 7–1.3 (''Installation'').

(d) Applicable terms in section 7–0.2 (''Definitions'').

(3) Load tests for new hoists. The employer shall ensure that new hoists are load tested to a minimum of 110% of rated capacity, but not more than 125% of rated capacity, unless otherwise recommended by the manufacturer. This requirement shall be met when the manufacturer has conducted this testing.

(4) Repaired or modified hoists. Hoists that have had repairs, modifications, or additions affecting their capacity or safe operation shall be evaluated by a qualified person to determine if a load test is necessary. If it is necessary, load testing shall be conducted in accordance with subrule (3) and (5) of this rule.

(5) Load test procedure. Load tests required by subrule (3) or (4) of this rule shall be conducted to comply with all of the following:

(a) The test load shall be hoisted a vertical distance to assure that the load is supported by the hoist and held by the hoist brake or brakes.

(b) The test load shall be lowered, stopped, and held with the brake or brakes.

(c) The hoist shall not be used unless a competent person determines that the test has been passed.

R 408.41085e Operational aids.

Rule 1085e. (1) R 408.41052 to R 408.41052b apply to subrules (2) and (3) of this rule, except for R 408.41052a(2), and R 408.41052b (2) and (5).

(2) Boom angle aid. A boom angle indicator shall not be required. If the derrick is not equipped with a functioning boom angle indicator, the employer shall ensure that 1 of the following is met:

(a) The boom hoist cable shall be marked with caution and stop marks. The stop marks shall correspond to maximum and minimum allowable boom angles. The caution and stop marks shall be in view of the operator or a spotter who is in direct communication with the operator.

(b) An electronic or other device that signals the operator in time to prevent the boom from moving past its maximum and minimum angles, or automatically prevents such movement, shall be used.

(3) Load weight and capacity devices. All of the following apply to load weight or capacity devices:

(a) Derricks manufactured more than 1 year after November 8, 2010 with a maximum rated capacity over 6,000 pounds shall have at least 1 of the following: a load weighing device, a load moment or rated capacity indicator, or a load moment or rated capacity limiter. Temporary alternative measures: The weight of the load shall be determined from a source recognized by the industry, such as the load's manufacturer, or by a calculation

method recognized by the industry, such as calculating a steel beam from measured dimensions and a known per foot weight, or by other equally reliable means. The employer shall ensure that this information is provided to the operator prior to the lift. See R 408.41053d for additional requirements.

(b) A load weight or capacity device that is not working properly shall be repaired not later than 30 days after the deficiency occurs. Exception: If the employer documents that it has ordered the necessary parts within 7 days of the occurrence of the deficiency and the part is not received in time to complete the repair in 30 days, the repair shall be completed within 7 days of receipt of the parts.

R 408.41085f Post-assembly approval and testing; new or reinstalled derricks.

Rule 1085f. (1) Anchorages, including the structure to which the derrick is attached, if applicable, must be approved by a qualified person.

(2) If a rock or hairpin anchorage is used, the qualified person shall determine if any special testing of the anchorage is needed. If so, it must be tested accordingly.

(3) Functional test. Prior to initial use, new or reinstalled derricks shall be tested by a competent person with no hook load to verify proper operation. This test shall include all of the following:

(a) Lifting and lowering the hook or hooks through the full range of hook travel.

(b) Raising and lowering the boom through the full range of boom travel.

(c) Swinging in each direction through the full range of swing.

(d) Actuating the anti-two-block and boom hoist limit devices, if provided.

(e) Actuating locking, limiting, and indicating devices, if provided.

(4) Load test. Prior to initial use, new or reinstalled derricks shall be load tested by a competent person. The test load shall meet all of the following requirements:

(a) Test loads shall be at least 100%, and not more than 110%, of the rated capacity, unless otherwise recommended by the manufacturer or qualified person. The test load shall not be less than the maximum anticipated load.

(b) The test shall consist of all of the following:

(i) Hoisting the test load a few inches and holding to verify that the load is supported by the derrick and held by the hoist brake or brakes.

(ii) Swinging the derrick, if applicable, the full range of its swing, at the maximum allowable working radius for the test load.

(iii) Booming the derrick up and down within the allowable working radius for the test load.

(iv) Lowering, stopping, and holding the load with the brake or brakes.

(c) The derrick shall not be used unless the competent person determines that the test has been passed.

(5) Documentation. The employer shall ensure that tests conducted under this rule are documented. The document shall contain the date, test results, and the name of the tester. The employer shall retain the document until the derrick is retested or dismantled, whichever occurs first. The employer shall make all of these documents available, during the applicable document retention period, to all persons who conduct inspections in accordance with R 408.41037 to R 408.41037f.

R 408.41085g Additional requirements.

Rule 1085g. (1) Derricks that have had repairs, modifications, or additions affecting the derrick's capacity or safe operation shall be evaluated by a qualified person to determine if a load test is necessary. If a load test is needed, it shall be conducted and documented in accordance with R 408.41085f.
(2) If power fails during operations, the derrick operator shall safely stop operations, which shall include both of the following:
(a) Setting all brakes or locking devices.
(b) Moving all clutch and other power controls to the off position.
(3) When using a winch head, both of the following apply:
(a) Ropes shall not be handled on a winch head without the knowledge of the operator.
(b) While a winch head is being used, the operator shall be within reach of the power unit control lever.
(4) When securing a boom, both of the following apply:
(a) When the boom is being held in a fixed position, the operator must engage dogs, pawls, or other positive holding mechanisms on the boom hoist.
(b) When taken out of service for 30 days or more, the boom shall be secured by 1 of the following methods:
(i) Laid down.
(ii) Secured to a stationary member, as nearly under the head as possible, by attachment of a sling to the load block.
(iii) For guy derricks, lifted to a vertical position and secured to the mast.
(iv) For stiffleg derricks, secured against the stiffleg.

R 408.41085h Supervision; inspections; operator qualifications and training.
Rule 1085h. (1) The process of jumping the derrick shall be supervised by the assembly/disassembly director.
(2) Derrick operations shall be supervised by a competent person
(3) In addition to the requirements in R 408.41037 to R 408.41037f, the following additional items shall be included in the inspections:
(a) Daily: Guys for proper tension.
(b) Both of the following items shall be included in annual inspections:
(i) Gudgeon pin for cracks, wear, and distortion.
(ii) Foundation supports for continued ability to sustain the imposed loads.
(4) The employer shall train each operator of a derrick on the safe operation of equipment the individual will operate. R 408.41061 to R 408.41061g do not apply.

FLOATING AND LAND CRANES OR DERRICKS ON BARGES

R 408.41086 Supplemental requirements for floating and land cranes or derricks on barges.
Rule 1086. (1) This rule contains supplemental requirements for floating cranes or derricks, and land cranes or derricks on barges, pontoons, vessels, or other means of flotation device. The rules of this standard apply to floating cranes or derricks and land cranes or derricks on barges, pontoons, vessels, or other means of flotation, unless specified otherwise. The requirements of this rule do not apply when using jacked barges when the jacks are deployed to the river, lake, or sea bed and the barge is fully supported by the jacks.

(2) The requirements in subrules (3) to (11) of this rule apply to both floating cranes or derricks and land cranes or derricks on barges, pontoons, vessels, or other means of flotation.
(3) The requirements of R 408.41057 apply, except for R 408.41057(2)(b).
(4) The employer shall do either of the following:
(a) Erect and maintain control lines, warning lines, railings, or similar barriers to mark the boundaries of the hazard areas.
(b) Clearly mark the hazard areas by a combination of warning signs, such as, "Danger—Swing or Crush Zone," and high visibility markings on the equipment that identify the hazard areas. In addition, the employer must train each employee to understand what these markings signify
(5) The employer shall ensure that employees keep clear of the load. R 408.41058 does not apply.
(6) In addition to the safety devices listed in R 408.41040, the following safety devices are required:
(a) Barge, pontoon, vessel, or other means of flotation list and trim device. The safety device shall be located in the cab or, when there is no cab, at the operator's station.
(b) Positive equipment house lock.
(c) Wind speed and direction indicator. A competent person shall determine if wind is a factor that needs to be considered. If wind needs to be considered, a wind speed and direction indicator shall be used.
(7) An anti-two-block device is required only when hoisting personnel or hoisting over an occupied cofferdam or shaft.
(8) R 408.41052b(5) does not apply to dragline, clamshell, grapple, magnet, drop ball, container handling, concrete bucket, and pile driving work performed under this rule.
(9) If the crane or derrick has a cab, the requirements of R 408.410152(5) apply. If the crane or derrick does not have a cab, the employer shall ensure that both of the following are met:
(a) Rated capacities and load charts, are posted at the operator's station. If the operator's station is moveable, such as with pendant-controlled equipment, the load charts shall be posted on the equipment.
(b) Procedures, other than the load charts, applicable to the operation of the equipment, recommended operating speeds, special hazard warnings, instructions and operator's manual, shall be readily available on board the vessel or flotation device.

R 408.41086a Inspections.
Rule 1086a. (1) In addition to meeting the requirements of R 408.41037 to R 408.41037f for inspecting the crane or derrick, the employer shall inspect the barge, pontoons, vessel, or other means of flotation used to support a floating crane or derrick and land crane or derrick, and ensure that all of the requirements in this rule are met.
(2) Each shift. An employer shall ensure that for each shift inspection, the means used to secure or attach the equipment to the vessel or flotation device is in proper condition, including wear, corrosion, loose or missing fasteners, defective welds, and, when applicable, insufficient tension.
(3) Monthly. An employer shall ensure that for each monthly inspection all of the following are met:

(a) The means used to secure or attach the equipment to the vessel or flotation device is in proper condition, including inspection for wear, corrosion, and, when applicable, insufficient tension.

(b) The vessel or flotation device is not taking on water.

(c) The deckload is properly secured.

(d) The vessel or flotation device is watertight based on the condition of the chain lockers, storage, fuel compartments, and hatches.

(e) The firefighting and lifesaving equipment is in place and functional.

(4) Competent person. An employer shall ensure that the shift and monthly inspections are conducted by a competent person, resulting in the following:

(a) If any deficiency is identified, an immediate determination is made by a qualified person whether the deficiency constitutes a hazard.

(b) If the deficiency is determined to constitute a hazard, the vessel or flotation device is removed from service until the deficiency is corrected.

(5) Annual external vessel or flotation device inspection. For each annual inspection, the employer shall ensure that all of the following are met:

(a) The external portion of the barge, pontoons, vessel, or other means of flotation used are inspected annually by a qualified person who has expertise with respect to vessels or flotation devices and that the inspection includes all of the following items:

(i) The items identified in subrules (2) and (3) of this rule.

(ii) Cleats, bitts, chocks, fenders, capstans, ladders, and stanchions, for significant corrosion, wear, deterioration, or deformation that could impair the function of these items.

(iii) External evidence of leaks and structural damage. Evidence of leaks and damage below the waterline may be determined through internal inspection of the vessel or flotation device.

(iv) Four-corner draft readings.

(v) Firefighting equipment for serviceability.

(b) Rescue skiffs, lifelines, work vests, life preservers, and ring buoys shall be inspected for proper condition.

(c) If any deficiency is identified, an immediate determination shall be made by the qualified person whether the deficiency constitutes a hazard or, though not yet a hazard, needs to be monitored in the monthly inspections resulting in the following:

(i) If the qualified person determines that the deficiency constitutes a hazard, the vessel or flotation device is removed from service until it is corrected. See requirements in R 408.41053b.

(ii) If the qualified person determines that, though not presently a hazard, the deficiency needs to be monitored, the deficiency is checked in the monthly inspections.

(6) Four-year internal vessel or flotation device inspection. For each 4-year inspection, the employer shall ensure that the following are included:

(a) A marine engineer, marine architect, licensed surveyor, or other qualified person who has expertise with respect to vessels or flotation devices surveys the internal portion of the barge, pontoons, vessel, or other means of flotation.

(b) If the surveyor identifies a deficiency, an immediate determination is made by the surveyor as to whether the deficiency constitutes a hazard or, though not yet a hazard, needs to be monitored in the monthly or annual inspections, as appropriate. Both of the following apply:

(i) If the surveyor determines that the deficiency constitutes a hazard, the vessel or flotation device shall be removed from service until it has been corrected.
(ii) If the surveyor determines that, though not presently a hazard, the deficiency needs to be monitored, the deficiency shall be checked in the monthly or annual inspections, as appropriate.
(7) Documentation. Both of the following requirements apply to documentation:
(a) The monthly and annual inspections required in subrules (3) and (5) of this rule shall be documented in accordance with R 408.41037d(3) and R 408.41037e(6).
(b) The employer shall ensure that the 4-year inspection required in subrule (6) of this rule is documented in accordance with R 408.41037e(6) except that the documentation for that inspection must be retained for a minimum of 4 years. The employer shall make all of these documents available during the applicable document retention period to all persons who conduct inspections in accordance with R 408.41037 to R 408.41037f.

R 408.41086b Working with diver.
Rule 1086b. (1) The employer shall meet the requirements in subrules (2) to (5) of this rule when working with a diver in the water.
(2) If a crane or derrick is used to get a diver into and out of the water, the crane or derrick shall not be used for any other purpose until the diver is back on board. When used for more than 1 diver, a crane or derrick shall not be used for any other purpose until all divers are back on board.
(3) The operator shall remain at the controls of the crane or derrick at all times.
(4) In addition to the requirements in R 408.41055 to R 408.41055c, either of the following shall be met:
(a) A clear line of sight is maintained between the operator and tender.
(b) The signals between the operator and tender are transmitted electronically.
(5) The means used to secure the crane or derrick to the vessel or flotation device, as specified in R 408.41086f, shall not allow any amount of shifting in any direction.

R 408.41086c Manufacturer's specifications and limitations.
Rule 1086c. (1) The employer shall ensure that the barge, pontoons, vessel, or other means of flotation are capable of withstanding imposed environmental, operational and in transit loads when used in accordance with the manufacturer’s specifications and limitations.
(2) The employer shall ensure that the manufacturer’s specifications and limitations with respect to environmental, operational, and in transit loads for a barge, pontoon, vessel, or other means of flotation are not exceeded or violated.
(3) When the manufacturer’s specifications and limitations are unavailable, the employer shall ensure that the specifications and limitations established by a qualified person with respect to environmental, operational, and in-transit loads for the barge, pontoons, vessel, or other means of flotation are not exceeded or violated.

R 408.41086d Floating cranes or derricks.
Rule 1086d. (1) For equipment designed by the manufacturer or employer for marine use by permanent attachment to barges, pontoons, vessels, or other means of flotation, all of the following shall be met.
(2) Both of the following apply to load charts:

(a) The employer shall not exceed the manufacturer load charts applicable to operations on water. When using these charts, the employer shall comply with all parameters and limitations, such as dynamic and environmental parameters, applicable to the use of the charts.

(b) The employer shall ensure that load charts take into consideration a minimum wind speed of 40 miles per hour.

(3) The employer shall ensure that the requirements for maximum allowable list and maximum allowable trim, as specified in Table 1086-1 of this rule, are met.

(4) The employer shall ensure that the equipment is stable under the conditions specified in Tables 1086-2 and 1086-3 of this rule.

Note: Freeboard means the vertical distance between the water line and the main deck of the vessel.

(5) If the equipment is employer-made, it shall not be used unless the employer has documents demonstrating that the load charts and applicable parameters for use meet the requirements of subrules (2) to (4) of this rule. These documents must be signed by a registered professional engineer who is a qualified person with respect to the design of this type of equipment, including the means of flotation.

(6) The employer shall ensure that the barge, pontoons, vessel, or other means of flotation used comply with all of the following:

(a) Are structurally sufficient to withstand the static and dynamic loads of the crane or derrick when operating at the crane or derrick's maximum rated capacity with all planned and actual deck loads and ballasted compartments.

(b) Have a subdivided hull with 1 or more longitudinal watertight bulkheads for reducing the free-surface effect.

(c) Have access to void compartments to allow for inspection and pumping.

TABLE 1086-1 FLOATING AND LAND CRANES OR DERRICKS ON BARGES		
RATED CAPACITY	MAXIMUM ALLOWABLE LIST (degrees)	MAXIMUM ALLOWABLE TRIM (degrees)
Equipment designed for marine use by permanent attachment (other than derricks):		
25 tons or less	5	5
Over 25 tons	7	7
Derricks designed for marine use by permanent attachment:		
Any rated capacity	10	10

TABLE 1086-2 FLOATING AND LAND CRANES OR DERRICKS ON BARGES		
OPERATED AT	WIND SPEED (mph)	MINIMUM FREEBOARD (ft)
Rated capacity	60	2

Rated capacity plus 25%	**60**	**1**
High boom, no load	**60**	**2**

TABLE 1086-3 FLOATING AND LAND CRANES OR DERRICKS ON BARGES	
OPERATED AT	**WIND SPEED**
For backward stability of the boom: High boom, no load, full back list (least stable condition).	**90 mph.**

R 408.41086e Land cranes or derricks.

Rule 1086e. (1) For land cranes or derricks used on barges, pontoons, vessels, or other means of flotation, the employer shall ensure all of the requirements in subrules (2) to (5) of this rule are met.

(2) The rated capacity of the equipment, including, but not limited to, modification of load charts, applicable for use on land is reduced to do the following:

(a) Account for increased loading from list, trim, wave action, and wind.

(b) Be applicable to a specified location or locations on the specific barge, pontoons, vessel, or other means of flotation that is used, under the environmental conditions expected and encountered.

(c) The conditions required in subrules (4) and (5) of this rule are met.

(3) The rated capacity modification required in subrule (1) of this rule shall be performed by the equipment manufacturer, or a qualified person who has expertise with respect to both land crane or derrick capacity and the stability of vessels or flotation devices.

(4) For list and trim, the following apply:

(a) The maximum allowable list and the maximum allowable trim for the barge, pontoon, vessel, or other means of flotation shall not exceed the amount necessary to ensure that the conditions in subrule (5) this rule are met. In addition, the maximum allowable list and the maximum allowable trim shall not exceed the least of the following: 5 degrees, the amount specified by the crane or derrick manufacturer, or, when an amount is not specified, the amount specified by the qualified person.

(b) The maximum allowable list and the maximum allowable trim for the land crane or derrick shall not exceed the amount specified by the crane or derrick manufacturer, or, when an amount is not specified, the amount specified by the qualified person.

(5) The employer shall ensure that the following requirements are met:

(a) All deck surfaces of the barge, pontoons, vessel, or other means of flotation used must be above water.

(b) The entire bottom area of the barge, pontoons, vessel, or other means of flotation used must be submerged.

R 408.41086f Attachment, corralling, rails system, and centerline cable system options.

Rule 1086f. (1) Physical attachment, corralling, rails system, and centerline cable system shall meet the requirements in Option (1), Option (2), Option (3), or Option (4) described in subrules (2) to (5) of this rule. Whichever option is used shall also meet the requirements of subrule (6) of this rule.

(2) Option (1)—Physical attachment. The crane or derrick shall be physically attached to the barge, pontoons, vessel, or other means of flotation. Methods of physical attachment include crossed-cable systems attached to the crane or derrick and vessel or flotation device, bolting or welding the crane or derrick to the vessel or flotation device, strapping the crane or derrick to the vessel or flotation device with chains, or other methods of physical attachment.

(3) Option (2)—Corralling. The crane or derrick shall be prevented from shifting by installing barricade restraints, such as a corralling system. The employer shall ensure that corralling systems do not allow the equipment to shift by any amount in any direction.

(4) Option (3)—Rails. The crane or derrick shall be prevented from shifting by being mounted on a rail system. The employer shall ensure that rail clamps and rail stops are used unless the system is designed to prevent movement during operation by other means.

(5) Option (4)—Centerline cable system. The crane or derrick shall be prevented from shifting by being mounted to a wire rope system. The employer shall ensure that the wire rope system meets the following requirements:

(a) The wire rope and attachments are of sufficient size and strength to support the side load of crane or derrick.

(b) The wire rope is attached physically to the vessel or flotation device.

(c) The wire rope is attached to the crane or derrick by appropriate attachment methods, such as shackles or sheaves, on the undercarriage, and that the method used will allow the crew to secure the crane or derrick from movement during operation and to move the crane or derrick longitudinally along the vessel or flotation device for repositioning.

(d) Means are installed to prevent the crane or derrick from passing the forward or aft end of the wire rope attachments.

(e) The crane or derrick is secured from movement during operation.

(6) The systems or means used to comply with Option (1), Option (2), Option (3), or Option (4) described in subrules (2) to (5) of this rule shall be designed by a marine engineer, registered professional engineer familiar with floating crane or derrick design, or qualified person familiar with floating crane or derrick design.

R 408.41086g Exceptions.

Rule 1086g. (1) For mobile auxiliary cranes used on the deck of a floating crane or derrick, the requirement specified by R 408.41086f to use Option (1), Option (2), Option (3), or Option (4) does not apply when the employer demonstrates implementation of a plan and procedures that meet the following requirements:

(a) A marine engineer or registered professional engineer familiar with floating crane or derrick design develops and signs a written plan for the use of the mobile auxiliary crane.

(b) The plan is designed so that the applicable requirements of this rule will be met despite the position, travel, operation, and lack of physical attachment, or corralling, use of rails or cable system, of the mobile auxiliary crane.

(c) The plan specifies the areas of the deck where the mobile auxiliary crane is permitted to be positioned, travel, and operate, and the parameters and limitations of such movements and operation.

(d) The deck is marked to identify the permitted areas for positioning, travel, and operation.

(e) The plan specifies the dynamic and environmental conditions that must be present for use of the plan.

(f) If the dynamic and environmental conditions in subrule (1)(e) of this rule are exceeded, the mobile auxiliary crane shall be attached physically or corralled according to Option (1), Option (2) or Option (4) of R 408.41086f.

(2) The barge, pontoons, vessel, or other means of flotation used shall comply with the following:

(a) Be structurally sufficient to withstand the static and dynamic loads of the crane or derrick when operating at the crane's or derrick's maximum rated capacity with all anticipated deck loads and ballasted compartments.

(b) Have a subdivided hull with 1 or more longitudinal watertight bulkheads for reducing the free surface effect.

(c) Have access to void compartments to allow for inspection and pumping.

OVERHEAD AND GANTRY CRANES

R 408.41087 Overhead and gantry cranes.

Rule 1087. (1) All overhead and gantry cranes when used in construction and are permanently installed in a facility shall comply with the applicable requirements for design, construction, installation, testing, maintenance, inspection, and operation as prescribed in General Industry Safety Standard Part 18 "Overhead and Gantry Cranes," as referenced in R 408.41003e, and shall comply with the requirements of R 408.41061 to R 408.41061g.

(2) This rule shall applies to all of the following overhead and gantry cranes when used in construction and that are not permanently installed in a facility:

(a) Overhead and gantry cranes.

(b) Overhead and bridge cranes.

(c) Semi-gantry.

(d) Cantilever gantry.

(e) Wall cranes.

(f) Storage bridge cranes.

(g) Launching gantry cranes.

(h) Similar equipment having the same fundamental characteristics, irrespective of whether it travels on tracks, wheels, or other means.

(3) The following requirements in Table 1044-1 apply to equipment identified in subrule (2) of this rule:

(4) The following requirements in Table 1044-2 apply to equipment identified in subrule (2) of this rule from the following portions of General Industry Safety Standard Part 18 "Overhead and Gantry Cranes," as referenced in R 408.41003e.

(5) The following requirements in Table 1044-3 apply to equipment identified in subrule (2) of this rule:

(a) The definitions in General Industry Safety Standard Part 18 "Overhead and Gantry Cranes," as referenced in R 408.41003e, except for "hoist" and "load." For those terms, the definitions in this standard apply.

(b) GI Part 18 R 408.11821(3), but only when the equipment identified in subrule (1) of this rule was manufactured before September 19, 2001.

(c) For equipment manufactured on or after September 19, 2001, the sections of ASME B30.2 "Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top

Running Trolley Hoist),” 2005 edition, as adopted in R 408.41003a, apply, as identified in Table 1044-3.

TABLE 1044-1 OVERHEAD AND GANTRY CRANES	
SECTIONS	**RULES**
Scope	**R 408.41001**
Definitions	**R 408.41006 to R 408.41006e**
Ground conditions	**R 408.41007**
Assembly Or Disassembly	**R 408.41035 to R 408.41035d**
Power line safety	**R 408.41036 to R 408.41036d**
Equipment inspection requirements	**R 408.41037 to R 408.41037f**
Wire Rope Inspection Requirements	**R 408.41038 to R 408.41038c**
Wire Rope Selection And Installation	**R 408.41039 to R 408.41039b**
Operations	**R 408.41053 to R 408.41053g**
Authority To Stop Operations	**R 408.41054**
Signal Requirements	**R 408.41055 to R 408.41055c**
Fall Protection	**R 408.41056 to R 408.41056i**
Work Area Control	**R 408.41057**
Keeping Clear Of The Load	**R 408.41058**
Controlled Load Lowering	**R 408.41060c**
Operator Qualification And Certification	**R 408.41061 to R 408.41061g**
Signal Person Qualifications	**R 408.41062**
Qualifications of Maintenance and Repair Employees	**R 408.41063**
Hoisting Personnel	**R 408.41080 to R 408.41080o**
Critical Lifts	**R 408.41081**
Design, Construction, And Testing	**R 408.41082 to R 408.41082g**
Equipment Modifications	**R 408.41083**
Floating And Land Cranes Or Derricks On Barges	**R 408.41086 to R 408.41086g**
Dedicated Pile Drivers	**R 408.41088**
Equipment With A Rated Hoisting Or Lifting Capacity Of 2,000 Pounds Or Less	**R 408.41090 to R 408.41090e**

TABLE 1044-2 GENERAL INDUSTRY SAFETY STANDARD PART 18 “OVERHEAD AND GANTRY CRANES”		
RULE NUMBER	**RULE TITLE**	**SPECIFIC RULE**
CONSTRUCTION, INSTALLATION AND EQUIPMENT		
R 408.11821	**Certification; modification; guards; adoption of standards by reference**	**(5)**
R 408.11822	**Marking rated capacity; classifications; clearances**	**(1), (3), (4)**
R 408.11824	**Wire rope**	**(10)**
R 408.11827	**Sheaves**	**(1)**
R 408.11832	**Trolley stops**	**(1)**
R 408.11833	**Bridge bumpers; trolley bumpers; rail sweeps**	**(3)**
R 408.11843	**Controls**	**(13)**
OPERATORS AND OPERATIONS		
R 408.11855	**Limitations on use of cranes**	**(4)**
R 408.11861	**General conduct of operators**	**(1)(b)**
R 408.11865	**Lifting**	**(2)(b)**
R 408.11872	**Frequent and periodic inspections**	**(1)**
R 408.11873	**Operational tests**	**(1)**

TABLE 1044-3 ASME B30.2 "OVERHEAD AND GANTRY CRANES" (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist) 2005 edition	
CHAPTERS	**RULES**
2.1 General Construction and Installation	**2–1.3.1**
	2–1.3.2
	2–1.4.1
	2–1.6
	2–1.7.2
	2–1.8.2
	2–1.9.1
	2–1.9.2
	2–1.11
	2–1.12.2
	2–1.13.7
	2–1.14.2
	2–1.14.3
	2–1.14.5
	2–1.15.
2.2 Inspection, Testing, and Maintenance	**2–2.2.2**
	2–3.2.1.1.
In addition, 2–3.5 shall apply, except in 2–3.5.1(b), ''29 CFR 1910.147'' is substituted for ''ANSI Z244.1.''	

DEDICATED PILE DRIVERS

R 408.41088 Dedicated pile drivers.

Rule 1088. (1) The provisions of this standard apply to dedicated pile drivers, except as specified in this rule.

(2) R 408.41052a(4) anti two-blocking device does not apply to dedicated pile drivers.

(3) R 408.41052b(5) load weighing and similar devices shall apply only to dedicated pile drivers manufactured after November 8, 2011.

(4) R 408.41082c to R 408.41082g apply to dedicated pile drivers.

SIDEBOOM CRANES

R 408.41089 Sideboom cranes.

Rule 1089. (1) The provisions of this standard apply, except for the following:

(a) R 408.41006b(14).

(b) R 408.41040.

(c) R 408.41052 to R 408.41052b.

(d) R 408.41061 to R 408.41061g.

(2) R 408.41060 shall apply, except R 408.41060(2)(a). Sideboom cranes in which the boom is designed to free fall, live boom, are permitted only if manufactured prior to November 8, 2010.

(3) Sideboom cranes mounted on wheel or crawler tractors shall meet all of the following requirements of ASME B30.14 "Side Boom Tractors," 2004 edition, as adopted in R 408.41003a:

(a) Section 14–1.1 (''Load Ratings'').

(b) Section 14–1.3 (''Side Boom Tractor Travel'').

(c) Section 14–1.5 (''Ropes and Reeving Accessories'').

(d) Section 14–1.7.1 (''Booms'').

(e) Section 14–1.7.2 (''General Requirements-Exhaust Gases'').

(f) Section 14–1.7.3 (''General Requirements-Stabilizers (Wheel-Type Side Boom Tractors)'').

(g) Section 14–1.7.4 (''General Requirements-Welded Construction'').

(h) Section 14–1.7.6 (''General Requirements-Clutch and Brake Protection'').

(i) Section 14–2.2.2 (''Testing—Rated Load Test''), except that it shall apply only to equipment that has been altered or modified.

(j) In section 14–3.1.2 (''Operator Qualifications''), paragraph (a), except the phrase ''When required by law.''

(k) In section 14–3.1.3 (''Operating Practices''), paragraphs (e), (f)(1) to (4), (f)(6), (f)(7), (h), and (i).

(l) In section 14–3.2.3 (''Moving the Load''), paragraphs (j), (l), and (m).

EQUIPMENT WITH A RATED HOISTING OR LIFTING CAPACITY OF 2,000 POUNDS OR LESS

R 408.41090 Equipment with a rated hoisting or lifting capacity of 2,000 pounds or less.

Rule 1090. (1) This rule specifies requirements for employers using equipment with a maximum rated hoisting or lifting capacity of 2,000 pounds or less.

(2) The employer using equipment described in subrule (1) of this rule shall comply with the following provisions in Table 1048:

TABLE 1048 EQUIPMENT WITH A RATED HOISTING OR LIFTING CAPACITY OF 2,000 POUNDS OR LESS.	
SECTIONS	**RULES**
Scope	R 408.41001
Definitions	R 408.41006 to R 408.41006e
Ground conditions	R 408.41007
Assembly or Disassembly	R 408.41035 to R 408.41035d
Power line safety	R 408.41036 to R 408.41036d
Post-assembly inspection.	R 408.41037b
Wire Rope Inspection Requirements	R 408.41038 to R 408.41038c
Wire Rope Selection And Installation	R 408.41039 to R 408.41039b
Authority to stop operation.	R 408.41054
Signal Requirements	R 408.41055 to R 408.41055c
Fall Protection	R 408.41056 to R 408.41056i
Keeping Clear Of The Load	R 408.41058 except for R 408.41058(3)(c)
Free Fall And Controlled Load Lowering	R 408.41060 to R 408.41060c
Critical Lifts	R 408.41081
Equipment Modifications	R 408.41083
Tower Cranes	R 408.41084 to R 408.41084f
Derricks	R 408.41085 to R 408.41085h
Floating And Land Cranes Or Derricks On Barges	R 408.41086 to R 408.41086g
Overhead And Gantry Cranes	R 408.41087

R 408.41090a Assembly or disassembly.

Rule 1090a. (1) In addition to complying with R 408.41035 and R 408.41035c, the employer shall comply with subrules (2) and (3) of this rule.

(2) Components and configuration. The employer shall ensure the following:

(a) The selection of components, and the configuration of the equipment, that affect the capacity or safe operation of the equipment complies with 1 of the following:

(i) Manufacturer's instructions, recommendations, limitations, and specifications. When these documents and information are unavailable, a registered professional engineer familiar with the type of equipment involved shall approve, in writing, the selection and configuration of components.
(ii) Approved modifications that meet the requirements of R 408.41083.
(b) Post-assembly inspection. Upon completion of assembly, the equipment shall be inspected to ensure that it complies with subdivision (a) of this subrule. See R 408.41037b for post assembly inspection requirements.
(3) Manufacturer prohibitions. The employer shall comply with applicable manufacturer prohibitions.

R 408.41090b Operation procedures.
Rule 1090b. (1) The employer shall comply with all manufacturer procedures applicable to the operational functions of the equipment, including its use with attachments.
(2) Unavailable operation procedures. The employer shall comply with the following:
(a) When the manufacturer's procedures are unavailable, develop and ensure compliance with all procedures necessary for the safe operation of the equipment and attachments.
(b) Ensure that procedures for the operational controls are developed by a qualified person.
(c) Ensure that procedures related to the capacity of the equipment are developed and signed by a registered professional engineer who is familiar with the equipment.
(3) Accessibility. The employer shall ensure all of the following:
(a) The load chart is available to the operator at the control station.
(b) Procedures applicable to the operation of the equipment, recommended operating speeds, special hazard warnings, instructions, and operator's manual are readily available for use by the operator.
(c) When rated capacities are available at the control station only in electronic form and a failure occurs that makes the rated capacities inaccessible, the operator immediately ceases operations or follows safe shut-down procedures until the rated capacities, in electronic or other form, are available.

R 408.41090c Safety devices and operational aids.
Rule 1090c. (1) The employer shall ensure that safety devices and operational aids that are part of the original equipment are maintained in accordance with manufacturer procedures.
(2) Anti two-blocking. The employer shall ensure that equipment covered by this rule manufactured more than 1 year after November 8, 2010 have either an anti-two block device that meets the requirements of R 408.41052a(4) or is designed so that in the event of a two-block situation no damage or load failure will occur, such as by using a power unit that stalls in response to a two-block situation.

R 408.41090d Operator and signal person qualifications.
Rule 1090d. (1) The employer shall train each operator, prior to operating the equipment, on the safe operation of the type of equipment the operator will be using.
(2) The employer shall train each signal person in the proper use of signals applicable to the use of the equipment.

R 408.41090e Inspections; hoisting personnel; design criteria.

Rule 1090e. (1) The employer shall ensure that equipment is inspected in accordance with manufacturer procedures.

(2) The employer shall ensure that equipment covered by this standard is not used to hoist personnel.

(3) The employer shall ensure that the equipment is designed by a qualified engineer.

ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

PUBLIC SERVICE COMMISSION

BASIC LOCAL EXCHANGE SERVICE CUSTOMER MIGRATION

Draft August 26, 2015

Filed with the Secretary of State on

These rules become effective June 17, 2016.

(By authority conferred on the public service commission by sections 202 and 213 of 1991 PA 179, MCL 484.2202 and 484.2213)

R 484.81, R 484.82, R 484.83, R 484.84, R 484.85, R 484.86, R 484.87, R 484.88, R 484.89, and R 484.90 of the Michigan Administrative Code are amended as follows:

PART 1. GENERAL PROVISIONS

R 484.81 Applicability.
Rule 1. These rules apply to the timely and complete transfer of an end user from 1 provider of basic local exchange service to another provider.

R 484.82 Exclusions.
Rule 2. Nothing in these rules prohibits providers from adopting more stringent standards in an interconnection agreement or other stand alone agreement.

R 484.83 Definitions.
Rule 3. (1) As used in these rules:
(a) "Act" means 1991 PA 179, MCL 484.2101 to 484.2602.
(b) “Basic local exchange service” or “local exchange service” or “service” means the provision of an access line and usage within a local calling area for the transmission of high-quality 2-way interactive switched voice or data communication.
(c) “Business day” means a day on which a provider’s office is scheduled to be open for business.
(d) “Business hours” means the times that a provider’s office is scheduled to be open for business. As scheduled business days and hours may vary, the schedule to be followed by each provider is the one posted on its website.
(e) "Commission" means the Michigan public service commission.
(f) “Customer service record” or “customer service information” means account information including, but not limited to, the customer’s address, features, services, equipment, directory listings, and network information, as appropriate.

(g) “Directory service provider” means the entity that receives or implements the local service provider’s directory service requirements for the end user, including white page listings, and may also include providing end user directory assistance.
(h) “End user” means the retail subscriber of a telecommunication service.
(i) “End user’s authorization” means the data or record indicating that the end user has authorized a new local service provider to change the end user’s service provider or view the end user’s customer service record.
(j) "Federal act" means the telecommunications act of 1996, 101 Stat 101 (1996).
(k) “Interconnection agreement” means an agreement between 2 or more providers entered into under sections 251 and 252 of the federal act.
(l) “Line level” means features or activities associated with a specific line.
(m) “Local service provider” means the provider that administers and bills local exchange and related services for the end user, and includes both of the following:
(i) "New local service provider" means the planned or actual provider of record following the completion of the migration process.
(ii) "Old local service provider" means the provider of record prior to the migration process or the current local service provider prior to service migration.
(n) “Local service request” means an industry standard document used among providers to request installation, changes, or disconnections of local services.
(o) “Loop” or “Unbundled loop” means the transmission facility between the network interface on a subscriber’s premises and the main distribution frame in the servicing central office.
(p) “Loss notification” means provider notification initiated by the underlying network service provider at the completion of a service migration to notify the old local service provider of the loss of end user facilities.
(q) “Number portability” means the ability of users of telecommunications services to retain, at the same location, existing telecommunications numbers without impairment of quality, reliability, or convenience when switching from 1 telecommunications provider to another.
(r) “Plain old telephone service” means the provision of a standard telephone line and telephone number, as subscribed to by a residential or small business end user.
(s) “Primary interexchange carrier” or “primary interexchange carriers” means the provider or providers designated by a wire line end user to carry intraLATA and/or interLATA long distance traffic.
(t) "Provider" means a person, firm, partnership, corporation, or other entity that provides basic local exchange service as defined by section 102(b) of the act.
(u) “Service configuration” means identification of the type of serving arrangement used by the local service provider to provide service to the end user, including resale, facility-based service, and other arrangements.
(v) “Service provider” means each provider involved in supplying service to an end user, including local service providers and/or underlying network service providers.
(w) “Underlying network service provider” means a provider that provides some or all of the facilities and equipment components used to make up an end user’s local telecommunications service, including both of the following:
(i) "New underlying network service provider" means a provider that provides some or all of the facilities and equipment components used to make up an end user’s local telecommunications service following the completion of the migration process or the potential network service provider prior to service migration.
(ii) "Old underlying network service provider" means a provider that provides some or all of the facilities and equipment components used to make up an end user’s local telecommunications

service prior to the migration process or the current network service provider prior to service migration.
(2) A term defined in the act has the same meaning when used in these rules.

R 484.84 Expiration.
Rule 4. These rules expire 3 years from the effective date of the rules. The commission may promulgate new rules at any time.

PART 2. TRANSFER OF END USER BY PROVIDERS
R 484.85 Migration responsibilities of local service providers.
Rule 5. (1) Each service provider shall maintain a publicly accessible website with all of the following information:
(a) All applicable processes and procedures for end user migration.
(b) Company contact escalation list, which shall include a company contact for operational issues and a contact for escalation of those issues.
(2) The old local service provider shall release any assigned telephone numbers associated with the end user's service that are properly requested in accordance with industry standards and federal law.
(3) Except for migrations described in 47 CFR 64.1120(e), the new local service provider shall communicate directly with the end user, receive the end user's authorization to switch service providers, and provide all pertinent information to the end user associated with the end user migration.
(4) The new local service provider is responsible for the coordination required to migrate the end user. The underlying network service providers shall promptly provide necessary support and assistance to migrate the end user. Neither the old local service provider nor underlying network service provider shall interfere in the transfer or otherwise use this opportunity to win back the customer.
(5) Before requesting a customer service record, the new local service provider or authorized agent shall have obtained an end user's authorization.
(6) All providers shall follow industry standard procedures and federal law for porting an end user's telephone number and processing to actual completion the migration of the end user upon receipt of an accurate request from the new local service provider. For requests received outside of business hours, the date and time of receipt shall be considered to be the beginning of the next business day.
(7) When local exchange service to be migrated is currently provided using resale or local wholesale arrangements, the old underlying network service provider shall provide a loss notification to the old local service provider upon completion of a request.
(8) Upon completion of the service order, the old underlying network service provider shall unlock the end user's E911 records that are being migrated, within industry standard or federally mandated timeframes, whichever is earlier. The new underlying network service provider shall assure the new E911 database record is accurately entered into the E911 database and that the database is locked.
(9) Directory listing information shall be submitted by the new local service provider to the directory service provider using a local service request or other mutually agreeable format. If the old local service provider is a facilities-based provider and directory listing migration capabilities are not available from the directory service provider, then the old local service provider shall remove its listings upon completion of a local service request to migrate local

service. The new local service provider shall ensure that the directory listing information is accurate.

(10) The new local service provider may reuse an unbundled loop upon request if reuse is technically feasible. Any of the following exclusions shall apply:

(a) The new local service provider has made all reasonable efforts to obtain the circuit identification for reuse, and the circuit identification information was not provided by the old local service provider.

(b) Upgrade or downgrade of existing facilities is required.

(11) The old local service provider shall release the circuit identification and facilities for reuse when the existing circuit or facilities are no longer needed by the old local service provider to provide service to the migrating end user or any other end user that is currently using those facilities.

(12) The old local service provider shall not retain a requested facility for possible future use.

(13) An unbundled loop shall be considered released for reuse when the old local service provider provides the circuit identification for release.

(14) Subject to subrule (10) of this rule, when requested, and reuse of the unbundled loop facility is available, the old local service provider shall provide the circuit identification number with the associated telephone number for the requested unbundled loop facility to the new local service provider as part of the customer service record or firm order confirmation response. To order the reuse of an unbundled loop facility, the new local service provider shall furnish the circuit identification number on the local service request issued to the new underlying network service provider.

(15) If the new local service provider requests reuse of the unbundled loop facility, and it is not available, then the old local service provider shall use best efforts to indicate as part of the customer service record or firm order confirmation response the reason why the unbundled loop is not reusable.

(16) The local service providers and underlying network service providers involved in the transfer shall maintain accurate unbundled loop circuit identification information and customer service record content, as applicable, to the end user service to facilitate migration activity as described in these rules.

(17) The underlying network service provider shall notify the local service providers involved in the transfer of changes affecting information contained in this rule within 5 business days of completion of the transfer.

R 484.86 Exchanging customer service information.

Rule 6. (1) Unless otherwise agreed to by the providers involved, all of the following shall be the responsibility of the local service providers in any migration of an end user's local service.

(a) The new local service provider may request and receive the customer service record information, which may include a request for circuit identification with associated telephone number from the old local service provider as part of the customer service record or firm order confirmation.

(b) To the extent resale and local wholesale arrangement information is available via current pre-order functionality in the underlying network service provider's operational support systems and is made available under current local business practice, it shall be made available to all new local service providers upon request and acknowledgement of end user permission. Underlying network service provider customer service record information might not reflect all end user services subscribed and received from the old local service provider.

(c) Customer service record requests shall only be submitted after proper authorization from the end user to review the end user's account and only with the intent to obtain information to facilitate the migration of local service.
(d) A customer service request or local service request shall not be used by a local service provider to trigger retention activity. The new local service provider shall not be required to share a copy of the end user's authorization with the old local service provider prior to receipt of the records, but shall retain records for a reasonable period of time to resolve issues about proper use of operational support systems or to assist in the resolution of a claim of unauthorized transfer, should one arise.
(e) All responses to customer service record requests shall be provided promptly, without unreasonable delay, and consistent with federal law.
(f) The deadline for submitting service requests shall be posted on a provider's website.
(g) Upon receiving a local service request, the receiving provider shall issue either a confirmation or rejection of an electronic request within the time required by federal law.
(h) A provider may require a customer service record request to include some or all of the following:
(i) Billed assigned telephone number.
(ii) Acknowledgement of end user consent to review the customer service record or customer service information.
(iii) End user name.
(iv) Contact information detailing to whom, how, and where to respond with the customer service record or customer service information.
(v) A telephone number and person to contact for questions about the customer service record or customer service information request.
(vi) The name of the company requesting the customer service record or customer service information.
(vii) The date and time the request was sent.
(viii) Indication whether circuit identification with associated telephone number is requested for loop reuse.
(ix) Indication whether directory information is requested.
(i) The old local service provider shall provide to the new local service provider all of the following information:
(i) Account level information including the following:
(A) Billing telephone number.
(B) Complete customer billing name and address.
(C) Directory listing information, including address and listing type, to the extent that it is maintained by the old local service provider.
(D) Complete service address including floor, suite, unit, or similar designation.
(E) Type of service.
(ii) Line level information shall include all services and features associated with the service provider, including the following:
(A) Assigned telephone number, which identifies all telephone numbers that are billed on the account.
(B) Current primary interexchange carrier selections including freeze status.
(C) Local freeze status, if offered.
(D) All vertical features such as custom calling features identified in a manner so that the new local service provider can understand to which products and services the end user currently subscribes.

(E) Other service options, such as lifeline, 900 blocking, toll blocking, remote call forwarding, and off premises extensions, if applicable.
(F) Service configuration information.
(G) Identification of the local service or underlying network service provider when different from the provider providing the response.
(H) Identification of any data services on the migrating end user's line or any other services such as alarm services that utilize the unbundled loop.
(I) Circuit identification with associated telephone number, provided with the customer service record, when requested and the unbundled loop is not being used for other services.
(J) Indication as to whether any circuit identifications are not reusable and therefore not provided.
(K) Type of service.
(j) If requested, the old local service provider shall provide the network information, including loop circuit identification (when the unbundled loop is available for reuse) and associated telephone number, with the customer service record or firm order confirmation. When service components such as loop and directory services are currently being provided to the end user by an entity other than the local service provider or the underlying network service provider the customer service record shall also include identification of those components and the associated service provider.
(k) The transmission of customer service records and customer service information requests and information shall be through electronic facsimile, electronic mail, electronic data interchange, graphical user interface, or any other means negotiated between the 2 providers. The transmission of customer service records and customer service information requests shall not be by voice telephone call. All providers shall, at a minimum, allow transmission of customer service record requests by facsimile.

Rule 484.87 Order process requirements.
Rule 7. All migration and ordering processes between providers shall follow the applicable industry standards and comply with federal law.

Rule 484.88 Service quality standards.
Rule 8. (1) Upon receipt of an accurate request from the new local service provider, the old local service provider shall port the telephone number and, if requested, transfer the unbundled loop to the new local service provider within the specified time period listed in subdivisions (a) and (b) of this subrule, unless a later due date is requested. If the old local service provider reschedules the original due date without the consent of the new local service provider, or the old local service provider fails to complete the migration by the original due date, the original due date shall be the one measured against. The following apply to due dates:
(a) Due dates for migrations involving number portability with or without a loop. For a migration request involving 1 to 18 lines, the due date is a monthly average of 5 business days after a request is made. Any migration request involving 19 or more lines involving number portability with or without a loop is a project for which a due date shall be negotiated.
(b) Due dates for migrations involving a simple port request only, for example, not for orders that require other facilities, such as loops. For a migration involving a simple port, the due date is the date required by 47 CFR 52.35. For migration involving simple ports for 2 to 30 lines, the old local service provider shall send a firm order confirmation within 24 hours and complete the porting of the telephone number to the new local service provider within 3 business days of the

firm order confirmation. Any migration request that involves simple ports for 31 or more lines is a project for which a due date shall be negotiated.

(2) The provider shall keep records on provisioning due dates that are not met. This measurement shall be reported by the provider at an order level for resale plain old telephone service, and at a feature or circuit level for resale specials and local wholesale arrangements. The records shall be available for review upon the request of commission staff.

(3) Data used to measure performance concerning due dates shall not include misses caused by either of the following:

(a) Action or inaction of the new local service provider or the end user.

(b) The number portability administration center.

PART 3. REMEDIES, WAIVER, AND GENERAL EXEMPTIONS

R 484.89 Remedies.

Rule 9. (1) If, after 3 consecutive months, a provider fails to meet 1 or more of the standards as set forth by these rules for each of the 3 months, then the provider shall notify commission staff within 10 days of such failure and the commission shall require the provider to take corrective action. This corrective action shall include, but is not limited to, the 2-part report described as follows:

(a) Part 1 of the report shall be a “root-cause” analysis of the reported level of performance, explaining why the reported performance failed to meet applicable service quality standard(s).

(b) Part 2 of the report shall be a “corrective action plan.” The plan shall be based on the causes for substandard performance identified in part 1, and it shall define actions proposed to bring performance up to a level at or above the applicable standard. This plan shall have a 90-day timeline within which the provider commits to bring its performance up to a level at or above the applicable standard.

(2) A provider shall deliver its 2-part report to the commission staff within 30 days after it files the report showing a failure to meet the prescribed standards. Unless otherwise requested by the commission staff, the provider shall provide a status report for each month thereafter until the provider meets the applicable service quality standard.

(3) This rule does not prohibit a provider from seeking commission action against another provider, nor does it prohibit the commission from investigating a provider’s compliance under its own motion under the Michigan telecommunications act, 1991 PA 179, MCL 484.2101 to MCL 484.2602.

(4) Violation of these rules may result in penalties issued under section 601 of the act, MCL 484.2601.

Rule 484.90 Waiver and general exemptions.

Rule 10. (1) A provider may petition for a permanent or temporary waiver or exception from these rules when qualifying circumstances beyond the control of the provider render compliance impossible or when compliance would be unduly economically burdensome or technologically infeasible.

(2) Qualifying circumstances include any of the following:

(a) The problem is or was attributable to an "act of God." The term "act of God” includes events such as any of the following:

(i) Flood.

(ii) Lightning.

(iii) Tornado.

(iv) Earthquake.
(v) Fire.
(vi) Blizzard.
(vii) Ice storm.
(viii) Widespread electrical power outage.
(ix) Other unusual natural or man-made disasters.
(b) There is a work stoppage or other work action, beyond the control of the provider, that causes or caused a significant reduction in hours worked.
(c) The problem occurs or occurred during a major failure. A major failure is a single event or occurrence that is not the direct result of action taken by the provider and that generates out-of-service reports affecting 100 or more access lines.
(d) The problem is or was caused by either the end user or by malicious damage to facilities by a third party outside the control of the provider.
(3) A provider may request a temporary waiver in order to have sufficient time to implement procedures and systems to comply with these rules.
(4) The provider shall notify the commission, in writing, within 20 business days of such an event that it intends to invoke the occurrence of an event described in subrule (2) of this rule. The notification to the commission shall include all of the following information:
(a) Specific description of the event and general impact.
(b) Date or dates of the event.
(c) Location affected, such as exchanges or wire centers.
(d) Estimated number of customers affected.
(5) The commission staff shall have 10 business days following the notification to advise the provider, in writing, of a dispute concerning the validity of the company's invocation of an event described in subrule (2) of this rule and the reasons for such dispute. If the dispute cannot be resolved within 10 business days of the commission staff's advice, then the provider shall file an application with the commission within 10 business days thereafter for resolution of the dispute.

NOTICE OF PUBLIC HEARING

STATE OF MICHIGAN
BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

NOTICE OF HEARING
REGARDING THE RE-ADOPTION OF ADMINISTRATIVE RULES
GOVERNING BASIC LOCAL EXCHANGE SERVICE CUSTOMER MIGRATION
CASE NO. U-17931; ORR #2015-048

- The Michigan Public Service Commission is considering the re-adoption of rules governing basic local exchange service customer migration, located at R 484.81 to R 484.90. The Commission will hold a public hearing to solicit comments from anyone who wishes to comment on the proposed rules. The re-adopted rules are proposed to take effect on June 17, 2016.

- The information below describes how a person may participate in this case.

- You may contact the Michigan Public Service Commission, P.O. Box 30221, Lansing, Michigan 48909, (800) 292-9555 for a free copy of the proposed rules. Any person may review the rules on the Commission's E-Docket Website at michigan.gov/mpscedockets. The rules will be published in the November 1, 2015 issue of the Michigan Register under ORR #2015-048, and may be accessed at the ORR website, www.michigan.gov/lara, under "Office of Regulatory Reinvention" and "Pending Rule Changes," then search by ORR#.

- The public hearing will be held:

DATE:	November 24, 2015
TIME:	10:00 a.m.
LOCATION:	7109 W. Saginaw Hwy. Lansing, Michigan
PARTICIPATION:	Any interested person may attend and participate. The hearing site is accessible, including handicapped parking. People needing any accommodation to participate should contact the Commission's Executive Secretary at (517) 284-8090 at least a week in advance to request mobility, visual, hearing or other assistance.

This is a proposal to re-adopt this existing rule set (which currently expires on June 17, 2016). The hearing will be for the purpose of providing an opportunity for all interested persons to present statements, views, data, questions, or arguments concerning the proposed rules. The public hearing will continue until all parties present have had a reasonable opportunity to present statements regarding the proposed rules. Persons presenting statements may be asked questions

by the Commission and its Staff, as well as by the presiding officer. Statements may be limited in duration by the presiding officer in order to ensure that all interested parties have an opportunity to participate in the proceedings.

Written and electronic comments may be filed with the Commission and must be received no later than 5:00 p.m. on December 8, 2015. Written comments should be sent to the: Executive Secretary, Michigan Public Service Commission, P.O. Box 30221, Lansing, Michigan 48909. Electronic comments may be e-mailed to mpscedockets@michigan.gov. If you require assistance, contact Commission staff at (517) 284-8090 or by e-mail at mpscedockets@michigan.gov. All information submitted to the Commission in this matter will become public information available on the Commission's website and subject to disclosure. All comments should reference Case No. U-17931. Please do not include information you wish to remain private.

Jurisdiction is pursuant to sections 202 and 213 of 1991 PA 179, MCL 484.2202 and 484.2213.

October 7, 2015
Lansing, Michigan

ADMINISTRATIVE RULES

DEPARTMENT OF ~~CONSUMER AND INDUSTRY SERVICES~~ **LICENSING AND REGULATORY AFFAIRS**

DIRECTOR'S OFFICE

OCCUPATIONAL HEALTH STANDARDS ~~– ABRASIVE BLASTING~~

Draft October 15, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of **licensing and regulatory affairs** ~~consumer and industry services~~ by sections 14 and 24 of 1974 PA 154, MCL 408.1014 and 408.1024, and Executive Reorganization Order Nos. 1996-1**,** ~~and~~ 1996-2, **2003-1, 2008-4, and 2011-4, MCL 330.3101, 445.2001, 445.2011, 445.2025 and 445.2030.)** ~~MCL 330.3101 and 445.2001)~~

R 325.50251, R 325.50252, R 325.50253, R 325.50254, R 325.50255, R 325.50256, R 325.50257, and R 325.50258 of the Michigan administrative code are amended, as follows:

PART 523 ABRASIVE BLASTING

R 325.50251 **Scope.** ~~Abrasive Blasting.~~
Rule 1. ~~(1) Scope. This rule applies~~ **These rules apply** to all operations where an abrasive is forcibly applied to a surface by pneumatic or hydraulic pressure, or by centrifugal force. **These rules do** ~~It does~~ not apply to steam blasting or steam cleaning, or hydraulic-cleaning methods where work is done without the aid of abrasives.
~~(2) This rule replaces O.H. rule 3205.~~

R 325.50252 Adoption of standards.
Rule 2. (1) **The following standards are adopted by reference in these rules and are available from IHS Global, 15 Inverness Way East, Englewood, Colorado, 80112, USA, telephone number: 1-800-854-7179 or via the internet at website: http://global.ihs.com; at a cost as of the time of adoption of these rules, as stated in this subrule:** ~~The National Fire Protection Association standard NFPA 68 "Explosion Venting Guide," 1954 edition is adopted by reference and is available from the National Fire Protection Association, One Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101 or via the internet at website:www.nfpa.org, at a cost as of the time of adoption of these amendatory rules of $26.00 or is available for inspection at the Michigan Department of Consumer and Industry Services, Standards Division, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan 48909.~~

(a) American National Standards Institute Standard ANSI Z9.3 "Spray Finishing Operations: Safety Code for Design, Construction, and Ventilation," 1985 edition. Cost: $25.00.

(b) ANSI Z33.1 "Blower and Exhaust Systems for Dust, Stock and Vapor Removal or Conveying," 1961 edition. Cost: $25.00.

(c) National Fire Protection Association NFPA 68 "Standard on Explosion Protection by Deflagration Venting," 1954 edition. Cost: $38.00.

(2) The standards adopted in these rules are available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143. ~~The following occupational safety and health administrative standards as referenced in these rules are available for inspection or distribution to the public at the offices of the Michigan Department of Consumer and Industry Services, Standards Division, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan 48909 or via the internet at website:www.cis.state.mi.us/bsr/divisions/std.~~

~~(a) General industry safety standard part 39. "Design Safety Standard for Electrical Systems" being R 408.13901 et seq. of the Michigan Administrative Code.~~

~~(b) Occupational health standard part 451. "Respiratory Protection" being R 325.60051 et seq. of the Michigan administrative code.~~

~~(c) Occupational health standard part 301. "Air Contaminants" being R 325.51101 et seq. of the Michigan administrative code.~~

(3) Copies of the standards adopted in these rules may be obtained from the publisher or may be obtained from the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143, at the cost charged in this rule, plus $20.00 for shipping and handling.

(4) The following Michigan occupational safety and health standards (MIOSHA) are referenced in these rules. Up to 5 copies of these standards may be obtained at no charge from the Michigan Department of Licensing and Regulatory affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143 or via the internet at website: www.michigan.gov/mioshastandards. For quantities greater than 5, the cost, at the time of adoption of these rules, is 4 cents per page.

(a) General Industry Safety Standard Part 39 "Design Safety Standards for Electrical Systems," R 408.13901 to R 408.13905.

(b) Occupational Health Standard Part 301 "Air Contaminants for General Industry," R 325.51101 to R 325.51108.

(c) Occupational Health Standard Part 451 "Respiratory Protection," R 325.60051 to R 325.60052.

(5) Appendix A is informational only and is not intended to create any additional obligations or requirements not otherwise imposed or to detract from any established obligations or requirements.

R 325.50253 Definitions.

Rule 3. ~~As used in these rules:~~

(1)~~(a)~~ "Abrasive" means a solid substance used in an abrasive-blasting operation.

(2)~~(b)~~ "Abrasive-blasting respirator" means a respirator constructed so that it covers the wearer's head, neck, and shoulders to protect the wearer from rebounding abrasive.

(3)~~(c)~~ "Blast-cleaning barrel" means a complete enclosure **that** ~~which~~ rotates on an axis, or **that** ~~which~~ has an internal moving tread to tumble the parts, in order to expose various surfaces of the parts to the action of an automatic blast spray.

(4)~~(d)~~ "Blast-cleaning room" means a complete enclosure in which blasting operations are performed and where the operator works inside of the room to operate the blasting nozzle and direct the flow of the abrasive material.

(5)~~(e)~~ "Blasting cabinet" means an enclosure where the operator stands outside and operates the blasting nozzle through an opening or openings in the enclosure.

(6)~~(f)~~ "Clean air" means air that will not cause harm or discomfort to an individual if it is inhaled for extended periods of time.

(7)~~(g)~~ "Dust collectors" means a device or combination of devices for separating dust from the air handled by an exhaust ventilation system.

(8)~~(h)~~ "Exhaust ventilation system" means a system for removing contaminated air from a space that is comprised of 2 or more of the following elements:

(a)~~(i)~~ An enclosure or hood.

(b)~~(ii)~~ Duct work.

(c)~~(iii)~~ Dust-collecting equipment.

(d)~~(iv)~~ Exhauster.

(e)~~(v)~~ Discharge stack.

(9)~~(i)~~ "Particulate-filter respirator" means an air-purifying respirator, commonly referred to as a dust or a fume respirator, **that** ~~which~~ removes most of the dust or fume from the air passing through the device.

(10)~~(j)~~ "Respirable dust" means airborne dust in sizes capable of passing throughout the upper respiratory system to reach the lower lung passages.

(11)~~(k)~~ "Rotary blast-cleaning table" means an enclosure where the pieces to be cleaned are positioned on a rotating table and are passed automatically through a series of blast sprays.

(12)~~(l)~~ "Abrasive blasting" means the forcible application of an abrasive to a surface by pneumatic pressure, hydraulic pressure, or centrifugal force.

R 325.50254 Dust hazards from abrasive blasting.

Rule 4. **(1)**~~(a)~~ Abrasives and the surface coatings on the materials blasted are shattered and pulverized during blasting operations and the dust formed will contain particles of respirable size. An employer shall consider the composition and toxicity of the dust from these sources in making an evaluation of the potential health hazards.

(2)~~(b)~~ An employer shall ensure that the concentration of respirable dust or fume in the breathing zone of the abrasive-blasting operator or any other worker is kept below the exposure levels specified in **Occupational Health Standard Part 301 "Air Contaminants for General Industry," as referenced in R 325.50252.** ~~R 325.51102 et seq., being the Michigan occupational health air contaminant standard.~~

(3)~~(c)~~ **An employer shall ensure that only organic** ~~Organic~~ abrasives that are combustible **are used** ~~shall be used only~~ in automatic systems. If flammable or explosive dust mixtures may be present, then the construction of the equipment, including the exhaust system and all electric wiring, shall conform to the requirements of ~~American National Standard (ANS) Installation of Blower~~ **ANSI Z33.1 "Blower** and Exhaust Systems for Dust, Stock, and Vapor Removal or **Conveying," 1961 edition, as adopted in R 325.50252; and General Industry Safety Standard Part 39 "Design Safety Standards for Electrical Systems," as referenced in R 325.50252.** ~~Conveying, Z33.1-1961 (NFPA 91- 1961) as adopted by reference~~ ~~in this rule,~~

~~and R 408.13901 et seq. being the Michigan general industry safety standard part 39, Design Safety Standard for Electrical Systems. Printed copies of ANS Z33.1-1961 are available from Global Engineering Documents, 15 Inverness Way East, Englewood, Colorado 80112, telephone number 1-800-854- 7179, website: www.global.ihs.com, at a cost as of the time of adoption of these amendatory rules of $20.00 or is available for inspection at the Michigan Department of Consumer and Industry Services, Standards Division, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan 48909. The blast nozzle shall be bonded and grounded to prevent the buildup of static charges. If flammable or explosive dust mixtures may be present, then the abrasive blasting enclosure, the ducts, and the dust collector shall be constructed with loose panels or explosion venting areas, located on sides away from any occupied area, to provide for pressure relief in case of explosion, following the principles set forth in the National Fire Protection Association Explosion Venting Guide (NFPA 68-1954).~~

(4) An employer shall ensure that the blast nozzle is bonded and grounded to prevent the buildup of static charges. If flammable or explosive dust mixtures are present, then the abrasive blasting enclosure, the ducts, and the dust collector shall be constructed with loose panels or explosion venting areas, located on sides away from any occupied area, to provide for pressure relief in case of explosion, following the principles set forth in the NFPA 68 "Standard on Explosion Protection by Deflagration Venting," 1954 edition, as adopted in R 325.50252.

(5)~~(d)~~ With respect to operational procedures and general safety, dust shall not be permitted to accumulate on the floor or on ledges outside of an abrasive-blasting enclosure, and dust spills shall be cleaned up promptly. Aisles and walkways shall be kept clear of steel shot or similar abrasive that may create a slipping hazard.

R 325.50255 Blast-cleaning enclosures.

Rule 5. **(1)**~~(a)~~ **An employer shall ensure that blast-cleaning** ~~Blast-cleaning~~ enclosures **are** ~~shall be~~ exhaust ventilated so that a continuous inward flow of air will be maintained at all openings in the enclosure during the blasting operation.

(2)~~(b)~~ **An employer shall ensure that all** ~~All~~ air inlets and access openings **are** ~~shall be~~ baffled or arranged so that, by combining inward air flow and baffling, the escape of abrasive or dust particles into an adjacent work area will be minimized and visible spurts of dust will not be observed.

(3)~~(c)~~ The rate of exhaust shall be sufficient to provide prompt clearance of dust-laden air within the enclosure after the cessation of blasting.

(4)~~(d)~~ Before the enclosure is opened, the blast shall be turned off and the system shall be run for a sufficient period of time to remove the dusty air within the enclosure.

(5)~~(e)~~ Where hard deep-cutting abrasives are used, **an employer shall ensure that** safety glass protected by screening **is** ~~shall be~~ used in observation windows.

(6)~~(f)~~ Slit abrasive-resistant baffles shall be installed in multiple sets of all small access openings where dust might escape and shall be inspected regularly and replaced when needed.

(7)~~(g)~~ Doors on blast-cleaning enclosures shall be flanged and tight when closed.

(8)~~(h)~~ **An employer shall ensure that doors** ~~Doors~~ on blast-cleaning rooms **are** ~~shall be~~ operable from both inside and outside, except that where there is a small operator access door, the large work access door may be closed or opened from the outside only.

R 325.50256 Exhaust ventilation systems.

Rule 6. **(1)**~~(a)~~ **An employer shall ensure that the** ~~The~~ construction, installation, inspection, and maintenance of exhaust systems ~~shall~~ conform to the principles and requirements set forth in **ANSI Z9.3 "Spray Finishing Operations: Safety Code for Design, Construction, and Ventilation," 1985 edition, and ANSI Z33.1 "Blower and Exhaust Systems for Dust, Stock and Vapor Removal or Conveying," 1961 edition, as adopted in R 325.50252.** ~~American National Standard fundamentals governing the design, construction, and ventilation for spray finishing exhaust systems, Z9.3-1985, and ANS Z33.1-1961 which is adopted by reference in R 325.50254. Printed copies of ANSI Z9.3-1985 are available from Global Engineering Documents, 15 Inverness Way East, Englewood, Colorado 80112, telephone number 1-800-854-7179, website: www.global.ihs.com, at a cost as of the time of adoption of these amendatory rules of $25.00 or is available for inspection at the Michigan Department of Consumer and Industry Services, Standards Division, 7150 Harris Drive, P.O. Box 30643, Lansing, Michigan 48909.~~

(2)~~(b)~~ If dust leaks are noted, then repairs shall be made as soon as possible.

(3)~~(c)~~ The static pressure drop at the exhaust ducts leading from the equipment shall be checked when the installation is completed and periodically thereafter to assure continued satisfactory operation. If an appreciable change in the pressure drop indicates a partial blockage, then the system shall be cleaned and returned to normal operating condition.

(4)~~(d)~~ In installations where the abrasive is recirculated, the exhaust ventilation system for the blasting enclosure shall not be relied upon for the removal of fines from the spent abrasive instead of an abrasive separator. An abrasive separator shall be provided for **this** ~~the~~ purpose.

(5)~~(e)~~ The air exhausted from blast-cleaning equipment shall be discharged through dust-collecting equipment. Dust collectors shall be set up so that the accumulated dust can be emptied and removed without contaminating other working areas.

R 325.50257 Respiratory protection.

Rule 7. **(1)**~~(a)~~ An employer shall implement a respiratory protection program in accordance with **Occupational Health Standard Part 451 "Respiratory Protection," as referenced in R 325.50252,** ~~R 325.60051 et seq., being the Michigan occupational health respiratory protection standard part 451.,~~ when respirators are required by this rule.

(2)~~(b)~~ Abrasive-blasting respirators shall be worn by all abrasive-blasting operators in all of the following situations:

(a)~~(i)~~ When working inside blast-cleaning rooms.

(b)~~(ii)~~ When using silica sand in manual blasting operations where the nozzle and blast are not physically separated from the operator in an exhaust-ventilated enclosure.

(c)~~(iii)~~ Where concentrations of toxic dust dispersed by the abrasive blasting may exceed the exposure limits set in **Occupational Health Standard Part 301 "Air Contaminants for General Industry," as referenced in R 325.50252,** ~~R 325.51102 et seq., being the Michigan occupational health air contaminant standard,~~ and the nozzle and blast are not physically separated from the operator in an exhaust-ventilated enclosure.

(3)~~(c)~~ Employers may use properly fitted particulate-filter respirators, commonly referred to as dust-filter respirators, for short, intermittent, or occasional dust exposures such as cleanup, dumping of dust collectors, or unloading shipments of sand at a receiving point when it is not feasible to control the dust by enclosure, exhaust ventilation, or other means. The respirator used shall be for protection against the specific type of dust encountered.

(4)~~(d)~~ Dust-filter respirators may be used to protect the operator of outside **abrasive blasting** ~~abrasiveblasting~~ operations where nonsilica abrasives are used on materials that have low toxicities.

(5)~~(e)~~ Dust-filter respirators shall not be used for continuous protection if silica sand is used as the blasting abrasive or if toxic materials are blasted.

R 325.50258 Air supply and air compressors.

Rule 8. An employer shall ensure that air for abrasive-blasting respirators is free of harmful quantities of dusts, mists, or noxious gases, and meets the requirements for supplied-air quality and use specified in **Occupational Health Standard Part 451 "Respiratory Protection," as referenced in R 325.50252.** ~~R 325.60051 et seq., being the Michigan occupational health respiratory protection standard part 451.~~

APPENDIX A
APPLICABLE MIOSHA STANDARDS

The following table provides links to several MIOSHA standards (not all-inclusive) that may contain requirements that apply to abrasive blasting operations. For example, the removal of lead paint by abrasive blasting will likely require employers to follow provisions of the MIOSHA lead standards. MIOSHA standards listed in this appendix provide employers and workers with information that may be useful for safely conducting abrasive blasting.

GENERAL INDUSTRY	CONSTRUCTION INDUSTRY
OH Part 520 Ventilation Control for General Industry	**OH Part 620 Ventilation Control for Construction**
OH Part 301 Air Contaminants for General Industry	**OH Part 601 Air Contaminants for Construction**
OH Part 310 Lead	**OH Part 603 Lead Exposure in Construction**
OH Part 308 Inorganic Arsenic	**OH Part 308 Inorganic Arsenic**
OH Part 309 Cadmium	**OH Part 309 Cadmium**
OH Part 315 Chromium (VI) in General Industry	**OH Part 604 Chromium (VI) in Construction**
OH Part 451 Respiratory Protection	**OH Part 451 Respiratory Protection**
OH Part 308 Inorganic Arsenic	**OH Part 308 Inorganic Arsenic**
OH Part 430 Hazard Communication	**OH Part 430 Hazard Communication**

OH Part 433 Personal Protective Equipment	**CS Part 6 Personal Protective Equipment**
OH Part 474 Sanitation	**CS Part 1 General Rules**

ADMINISTRATIVE RULES

DEPARTMENT OF **LICENSING AND REGULATORY AFFAIRS** ~~CONSUMER AND INDUSTRY SERVICES~~

DIRECTOR'S OFFICE ~~BUREAU OF SAFETY AND REGULATION~~

GENERAL INDUSTRY SAFETY STANDARDS ~~COMMISSION~~

Draft August 25, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the **director of the department of licensing and regulatory affairs by sections 16 and 21 of 1974 PA 154, MCL 408.1016 and 408.1021, and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, and 2011-4, MCL 445.2001, 445.2011, 445.2025, and 445.2030)** ~~general industry safety standards commission by sections 16 and 21 of Act No. 154 of the Public Acts of 1974, as amended, being SS408.1016 and 408.1021 of the Michigan Compiled Laws)~~

R 408.18502 and R 408.18599 of the Michigan Administrative Code are amended as follows:

PART 85. THE CONTROL OF HAZARDOUS ENERGY SOURCES

R 408.18502 Adoption by reference of federal standard.

Rule 8502. **(1)** The **following federal occupational safety and health administration (OSHA) regulations are adopted by reference in these rules:**

(a) 29 C.F.R. §1910.147 "The control of hazardous energy (lockout/tagout)," as amended May 2, 2011.

(b) 29 C.F.R. §1910.147 Appendix A "Typical minimal lockout procedures," as amended February 13, 1996. ~~provisions of 29 C.F.R. S1910.147, (1990), entitled "Control of Hazardous Energy Sources (Lockout/Tagout)," are adopted in these rules by reference,~~ with the limitation set forth in R 408.18501(2). ~~The adopted regulations are available from the United States Department of Labor, Occupational Safety and Health Administration, 801 South Waverly, Room 306, Lansing, Michigan 48917, at no charge at the time of adoption of these rules, or from the Michigan Department of Consumer and Industry Services, Safety Standards Division, 7150 Harris Drive, Box 30015, Lansing, Michigan 48909, at no charge at the time of adoption of these rules.~~

(2) The adopted federal regulations shall have the same force and effect as a rule promulgated under 1974 PA 154, MCL 408.1001 to 408.1094.

R 408.18599 **Availability of adopted rules.** ~~Rescission.~~

Rule 8599. **(1) The standards adopted in these rules are available from the United States Department of Labor, Occupational Safety and Health Administration website: www.osha.gov, at no charge, as of the time of adoption of these rules.** ~~R 408.10032 of the Michigan Compiled Laws, appearing on pages 3401 and 3402 of the 1979 Michigan Administrative Code, is rescinded.~~

(2) The standards adopted in these rules are available for inspection at the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143.

(3) The standards adopted in these rules may be obtained from the publisher or may be obtained from the Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143, at the cost charged in this rule, plus $20.00 for shipping and handling.

ADMINISTRATIVE RULES

DEPARTMENT OF LICENSING AND REGULATORY AFFAIRS

DIRECTOR'S OFFICE

GENERAL INDUSTRY SAFETY STANDARDS

Draft October 13, 2015

Filed with the Secretary of State on

These rules become effective immediately upon filing with the Secretary of State unless adopted under section 33, 44, or 45a(6) of 1969 PA 306. Rules adopted under these sections become effective 7 days after filing with the Secretary of State.

(By authority conferred on the director of the department of licensing and regulatory affairs by sections 16 and 21 of 1974 PA 154, **MCL 408.1016 and 408.1021**, and Executive Reorganization Order Nos. 1996-2, 2003-1, 2008-4, and 2011-4, MCL 445.2001, 445.2011, 445.2025, and 445.2030)

R 408.10711, R 408.10712, R 408.10713, R 408.10727, and R 408.10753 are amended, and R 408.10702 is added, to the Michigan Administrative Code, as follows:

PART 7. GUARDS FOR POWER TRANSMISSION

R 408.10702. Referenced standard.

Rule 702. The Michigan occupational safety and health standard General Industry Safety Standard Part 2 "Floor and Wall Openings, Stairways, and Skylights," R 408.10201 to R 408.10241, is referenced in these rules. Up to 5 copies of this standard may be obtained at no charge from the Michigan Department of Licensing and Regulatory Affairs, MIOSHA Regulatory Services Section, 530 West Allegan Street, P.O. Box 30643, Lansing, Michigan, 48909-8143 or via the internet at website: www.michigan.gov/mioshastandards. For quantities greater than 5, the cost, at the time of adoption of these rules, is 4 cents per page.

POWER TRANSMISSION EQUIPMENT

R 408.10711 Flywheels.

Rule 711. **An employer shall ensure that any** ~~Any~~ part of a flywheel 7 feet or less above the floor or platform **is** ~~shall be~~ guarded in 1 of the following ways:

(a) Enclosed by a **guard** ~~construction~~ pursuant to R 408.10751 to R 408.10754.

(b) With standard barriers and toeboards placed not less than 15, nor more than 20, inches from the rim of the flywheel pursuant to **General Industry Safety Standard Part 2 "Floor and Wall Openings, Stairways, and Skylights," as referenced in R 408.10702.** ~~rule 231 and subrule(2) of rule 233 of the general industry safety standards commission standard, Part 2. Floor and Wall~~

~~Openings, Stairways, and Skylights, being R 408.10231 and R 408.10233(2) of the Michigan Administrative Code.~~

(c) The upper rim of a flywheel protruding through a working floor **is** ~~shall be~~ enclosed or surrounded by a standard barrier and toeboard pursuant to **General Industry Safety Standard Part 2 "Floor and Wall Openings, Stairways, and Skylights," as referenced in R 408.10702.** ~~rule 231 and subrule(2) of rule 233 of the general industry safety standards commission standard, Part 2. Floor and Wall Openings, Stairways, and Skylights, being R 408.10231 and R 408.10233(2) of the Michigan Administrative Code.~~

(d) A flywheel with a smooth rim 5 feet or less in diameter may be guarded pursuant to R 408.10756.

R 408.10712 Cranks and connecting rods.

Rule 712. A crank and a connecting rod, if exposed to contact, shall be guarded pursuant to R 408.10751 to R 408.10754 or by a standard barrier pursuant to **General Industry Safety Standard Part 2 "Floor and Wall Openings, Stairways, and Skylights," as referenced in R 408.10702.** ~~rule 231 of the general industry safety standards commission standard, Part 2. Floor and Wall Openings, Stairways, and Skylights, being R 408.10231 of the Michigan Administrative Code.~~

R 408.10713 Tail rods and extension piston rods.

Rule 713. Tail rods and extension piston rods exposed to contact shall be guarded pursuant to R 408.10751 to R 408.10754 or by a standard barrier pursuant to **General Industry Safety Standard Part 2 "Floor and Wall Openings, Stairways, and Skylights," as referenced in R 408.10702,** ~~rule 231 of the general industry safety standards commission standard, Part 2. Floor and Wall Openings, Stairways, and Skylights, being R 408.10231 of the Michigan Administrative Code,~~ which allows a clearance of not less than 15, nor more than 20, inches from the fully extended tail rod or extension piston rod.

R 408.10727 Belts.

Rule 727. (1) A belt and pulley **that** ~~which~~ is 7 feet or less above the floor or platform and **that** ~~which~~ is exposed to contact shall be guarded pursuant to R 408.10751 to R 408.10754. In a power plant or power-development room, a standard barrier and toeboard may be used pursuant to **General Industry Safety Standard Part 2 "Floor and Wall Openings, Stairways, and Skylights," as referenced in R 408.10702.** ~~rule 231 and subrule(2) of rule 233 of the general industry safety standards commission standard, Part 2. Floor and Wall Openings, Stairways, and Skylights, being R 408.10231 and R 408.10233(2) of the Michigan Administrative Code.~~

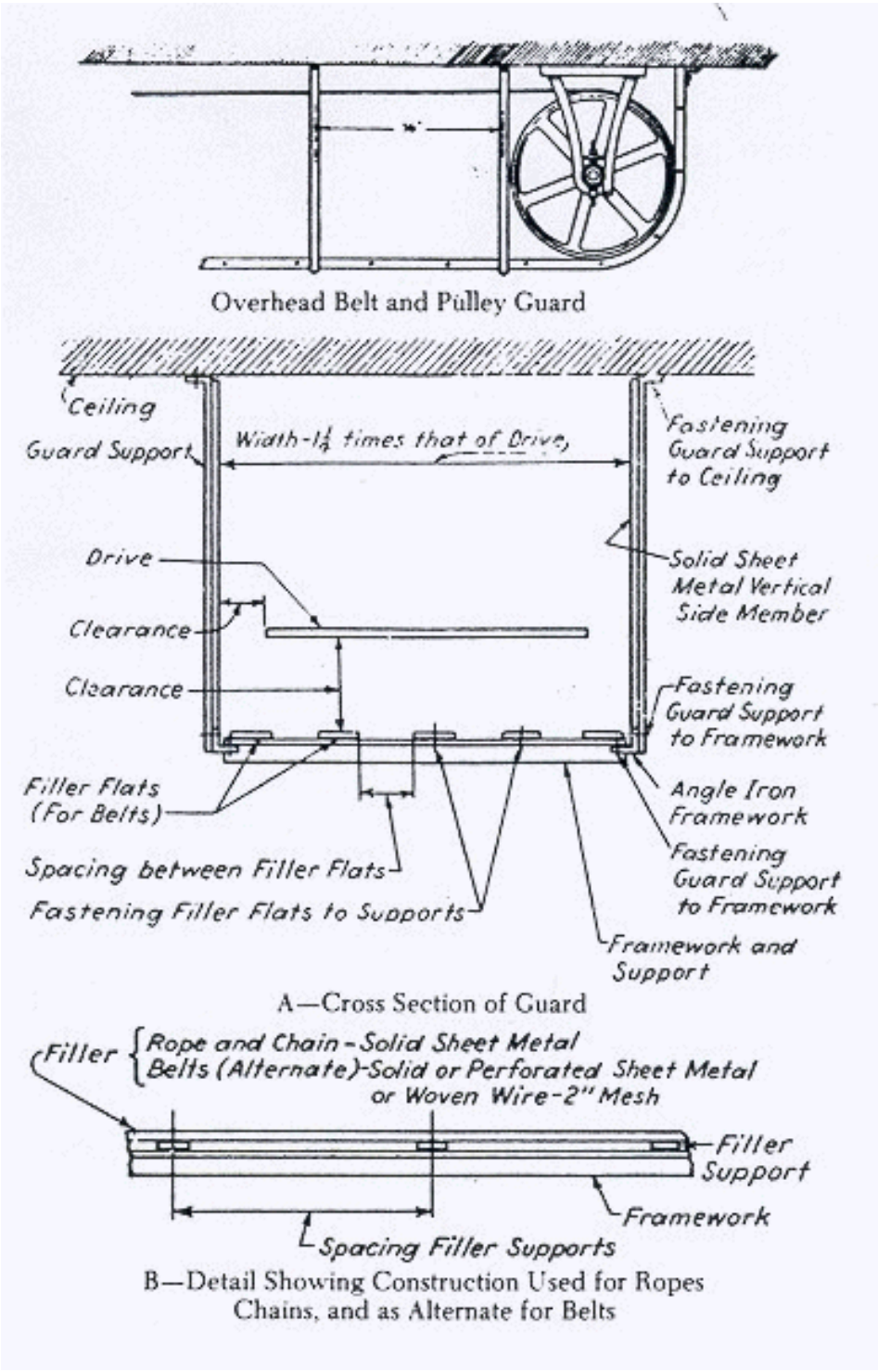
(2) A horizontal belt more than 7 feet above the floor or platform shall be guarded for its entire length if located over a passageway or work place pursuant to R 408.10753 and figure 2 **contained in subrule (5) of this rule**.

(3) A passageway between horizontal belts shall have a lower run guarded by a platform **that** ~~which~~ is provided with a standard barrier and toeboard pursuant to **General Industry Safety Standard Part 2 "Floor and Wall Openings, Stairways, and Skylights," as referenced in R 408.10702,** ~~rule 231 and subrule(2) of rule 233 of the general industry safety standards commission standard, Part 2. Floor and Wall Openings, Stairways, and Skylights, being R 408.10231 and R 408.10233(2) of the Michigan Administrative Code,~~ and the upper run guarded **pursuant to subrule (2) of this rule.** ~~pursuant to R 408.10727(2).~~

(4) A vertical or inclined belt running over a lower pulley more than 7 feet above the floor or platform and located over a passageway or work place shall be guarded **pursuant to subrule (2) of this rule.** ~~pursuant to R 408.10727(2).~~

(5) Figure 2 reads as follows:

FIGURE 2 ~~Figure for R 408.10727~~



R 408.10753 Materials.

Rule 753.(1) Wood guards may be used if the presence of fumes or if manufacturing conditions cause rapid deterioration of metal guards, in construction work, and in locations outdoors if extreme cold or extreme heat makes metal guards and railings undesirable.

(2) Material sizes and clearances shall be pursuant to table A. See **Figure** ~~figures~~ 2, **and Appendices A and B.** ~~3, and 4.~~

(3) Table A reads as follows:

TABLE A
STANDARD MATERIALS AND DIMENSIONS FOR MACHINERY GUARDS

Size and Clearance of Filler Materials			
Material	**Clearance From Moving Part At All Points (Inches)**	**Largest Mesh or Opening Allowable B (Inches)**	**Minimum Gauge (U.S. Standard) Or Thickness**
Woven Wire	**Under 2 2-4 4-15**	**3/8 1/2 2**	**No. 16-1/8 In. No. 16-1/2 No. 12-2**
Expanded Metal	**Under 4 4-15**	**1/2 2**	**No. 18-1/2 In. No. 13-2**
Perforated Metal	**Under 4 4-15**	**1/2 2**	**No. 20-1/2 In. No. 14-2**
Sheet Metal	**Under 4 4-15**	**- - -**	**No. 22 No. 22**
Wood Or Metal Strips Crossed	**}** **Under 4 4-15**	**1/2 2**	**}** **3/4 In. Wood Or No. 16 Metal**
Wood Or Metal Strips Not Crossed	**}** **Under 4 4-15**	**1/2 The Width One Width**	
Plywood, Plastic Or Equivalent	**Under 4 4-15**	**- - -**	**1/4 In. 1/4 In.**
Standard Railing	**Min. 15 Max. 20**	**- - -**	**- - -**

~~Figure for R 408.10753~~

TABLE A

Standard Materials and Dimensions for Machinery Guards
Size and Clearance of Filler Materials

Material	Clearance from Moving Part at All Points (inches)	Largest Mesh or Opening Allowable B (inches)	Minimum Gauge (U.S. Standard) or Thickness
Woven Wire	Under 2 2-4 4-15	⅜ ½ 2	No. 16 - ⅜ in. No. 16 - ½ No. 12 - 2
Expanded Metal	Under 4 4-15	½ 2	No. 18 - ½ in. No. 13 - 2
Perforated Metal	Under 4 4-15	½ 2	No. 20 - ½ in. No. 14 - 2
Sheet Metal	Under 4 4-15	...	No. 22 No. 22
Wood or Metal Strips Crossed	Under 4 4-15	⅜ 2	¾ in. wood or No. 16 metal
Wood or Metal Strips Not Crossed	Under 4 4-15	½ the width One width	¾ in. wood or No. 16 metal
Plywood, Plastic or Equivalent	Under 4 4-15	...	¼ in. ¼ in.
Standard Railing	Min. 15 Max. 20	...	...

OTHER OFFICIAL INFORMATION

MCL 24.208 states in part:

Sec. 8. (1) The office of regulatory reform shall publish the Michigan register at least once each month. The Michigan register shall contain all of the following:

* * *

(i) Other official information considered necessary or appropriate by the office of regulatory reinvention.

OTHER OFFICIAL INFORMATION

October 1, 2015

Ms. Deidre O'Berry
Office of Regulatory Reinvention
611 W. Ottawa – 2nd Floor
Lansing, MI 48909

Dear Ms. O'Berry:

Rules related to regional educational media centers, R 380.1 to R 380.10, were promulgated by the State Board of Education in 1981 pursuant to the express mandate of MCL 388.1683. Also cited as authority for rulemaking when the rules were promulgated was MCL 380.671, which mandates that the State Board of Education establish criteria for regional educational media centers. MCL 380.671 did not at that time, and does not currently, confer rulemaking authority.

MCL 388.1683, the sole express statutory provision conferring rulemaking authority on the State Board of Education for regional educational media centers, was repealed by 1993 PA 336, effective October 1, 1994. Thus, the rules should have been rescinded on that date, which preceded the transfer of authority over regional educational media centers to the Department of Management and Budget by Executive Order 1995-14 (Executive Reorganization Order 1995-12, MCL 18.1695).

Pursuant to your request under sections 31(2) and 56(1) of the Administrative Procedures Act, MCL 24.231(2) and MCL 24.256(1), the Department of Education hereby requests that the Michigan Administrative Code be corrected immediately to reflect rescission of:

R 380.1 to R 380.10

If you have any questions, please contact me at 373-8369.

Thank you.

Sincerely,

Mary Fielding
Regulatory Affairs Officer, Department of Education

(2015 SESSION)

MCL 24.208 states in part:

"Sec. 8. (1) The Office of Regulatory Reform shall publish the Michigan register at least once each month. The Michigan register shall contain all of the following:

* * *

(i) Other official information considered necessary or appropriate by the Office of Regulatory Reform."

The following table cites administrative rules promulgated during the year 2000, and indicates the effect of these rules on the Michigan Administrative Code (1979 ed.).

MICHIGAN ADMINISTRATIVE CODE TABLE
(2015 RULE FILINGS)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
30.58	*	9	38.1672	R	1	205.2009	A	9
38.22	R	1	38.1673	R	1	205.2010	A	9
38.23	R	1	38.1674	R	1	205.2011	A	9
38.24	R	1	38.1675	R	1	225.1	R	1
38.25	R	1	38.1676	R	1	225.2	R	1
38.28	R	1	38.1677	R	1	225.3	R	1
38.71	R	1	38.1678	R	1	225.4	R	1
38.72	R	1	38.1679	R	1	225.5	R	1
38.73	R	1	38.1680	R	1	225.6	R	1
38.74	R	1	38.1681	R	1	225.7	R	1
38.75	R	1	38.1682	R	1	225.8	R	1
38.76	R	1	38.1683	R	1	225.9	R	1
38.77	R	1	38.1684	R	1	225.10	R	1
38.78	R	1	38.1685	R	1	247.351	R	1
38.79	R	1	38.1686	R	1	247.403	R	1
38.80	R	1	38.2171	R	1	247.404	R	1
38.81	R	1	38.2172	R	1	247.405	R	1
38.82	R	1	38.2173	R	1	247.406	R	1
38.83	R	1	38.2174	R	1	247.741	R	1
38.84	R	1	38.2175	R	1	247.742	R	1
38.85	R	1	38.2176	R	1	247.748	R	1
38.86	R	1	38.2177	R	1	281.423	*	12
38.1371	R	1	38.2178	R	1	281.511	*	17
38.1372	R	1	38.2179	R	1	281.514	*	17
38.1373	R	1	38.2180	R	1	281.515	*	17
38.1374	R	1	38.2181	R	1	281.519	*	17
38.1375	R	1	38.2182	R	1	281.520	A	17
38.1376	R	1	38.2183	R	1	281.521	A	17
38.1377	R	1	38.2184	R	1	281.522	A	17
38.1378	R	1	38.2185	R	1	281.523	A	17
38.1379	R	1	38.2186	R	1	281.524	A	17
38.1380	R	1	205.2001	A	9	281.811	*	5
38.1381	R	1	205.2002	A	9	285.635.15	R	13
38.1382	R	1	205.2003	A	9	285.635.16	R	13
38.1383	R	1	205.2004	A	9	285.635.17	R	13
38.1384	R	1	205.2005	A	9	285.900.1	R	3
38.1385	R	1	205.2006	A	9	299.4101	*	5
38.1386	R	1	205.2007	A	9	299.4102	*	5
38.1671	R	1	205.2008	A	9	299.4103	*	5

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
299.4104	*	5	299.5061	R	14	324.203	*	5
299.4105	*	5	324.1	R	1	324.206	*	5
299.4106a	*	5	324.2	R	1	324.210	*	5
299.4110	*	5	324.3	R	1	324.301	*	5
299.4111	*	5	324.21	R	1	324.302	*	5
299.4117	*	5	324.23	R	1	324.303	*	5
299.4121	*	5	324.24	R	1	324.407	*	5
299.4128	*	5	324.31	R	1	324.411	*	5
299.4201	*	5	324.32	R	1	324.102	*	5
299.4203	*	5	324.33	R	1	324.130	*	5
299.4302	*	5	324.41	R	1	324.201	*	5
299.4307	*	5	324.42	R	1	324.202	*	5
299.4318	*	5	324.43	R	1	324.203	*	5
299.4420	*	5	324.51	R	1	324.206	*	5
299.4428	*	5	324.52	R	1	324.210	*	5
299.4430	*	5	324.53	R	1	324.301	*	5
299.4440	*	5	324.54	R	1	324.302	*	5
299.4701	*	5	324.55	R	1	324.303	*	5
299.4702	*	5	324.56	R	1	324.407	*	5
299.4703	*	5	324.57	R	1	324.411	*	5
299.4706	*	5	324.58	R	1	324.413	*	5
299.4707	*	5	324.59	R	1	324.418	*	5
299.4708	*	5	324.59a	R	1	324.503	*	5
299.4709	*	5	324.59b	R	1	324.511	*	5
299.4710	*	5	324.59c	R	1	324.613	*	5
299.4711	*	5	324.59d	R	1	324.705	*	5
299.4712	*	5	324.59e	R	1	324.801	*	5
299.4806	*	5	324.61	R	1	324.1015	*	5
299.4118a	A	5	324.62	R	1	324.1103	*	5
299.5051	R	14	324.63	R	1	324.1202	*	5
299.5052	R	14	324.64	R	1	324.1204	*	5
299.5053	R	14	324.65	R	1	324.1206	*	5
299.5054	R	14	324.71	R	1	324.1401	A	5
299.5055	R	14	324.72	R	1	324.1402	A	5
299.5056	R	14	324.75	R	1	324.1403	A	5
299.5057	R	14	324.102	*	5	324.1404	A	5
299.5058	R	14	324.130	*	5	324.1405	A	5
299.5059	R	14	324.201	*	5	324.1406	A	5
299.5060	R	14	324.202	*	5	325.151	R	16

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
325.152	R	16	325.22360	R	1	325.50069	*	7
325.153	R	16	325.22361	R	1	325.50070	*	7
325.154	R	16	325.22362	R	1	325.50071	*	7
325.155	R	16	325.47401	A	4	325.50072	*	7
325.156	R	16	325.47403	A	4	325.50051a	A	7
325.971	R	15	325.47405	A	4	325.50053a	A	7
325.9087	R	9	325.47407	A	4	325.50056a	A	7
325.9081	*	9	325.47408	A	4	325.50056b	A	7
325.9082	*	9	325.47409	A	4	325.50056c	A	7
325.9083	*	9	325.47410	A	4	325.50056d	A	7
325.9084	*	9	325.47411	A	4	325.50056e	A	7
350.9085	*	9	325.47414	A	4	325.50059a	A	7
325.9086	*	9	325.47415	A	4	325.50059b	A	7
325.9571	R	1	325.47416	A	4	325.50060a	A	7
325.9572	R	1	325.47417	A	4	325.50060b	A	7
325.9573	R	1	325.47418	A	4	325.50061a	A	7
325.9574	R	1	325.47419	A	4	325.50061b	A	7
325.9575	R	1	325.47420	A	4	325.50061c	A	7
325.9576	R	1	325.47424	A	4	325.50062a	A	7
325.9577	R	1	325.47425	A	4	325.50062b	A	7
325.9578	R	1	OHR 4201	R	4	325.50063a	A	7
325.9579	R	1	OHR 4202	R	4	325.50063b	A	7
325.9580	R	1	325.50051	*	7	325.50064a	A	7
325.9581	R	1	325.50052	*	7	325.50064b	A	7
325.9582	R	1	325.50054	*	7	325.50067a	A	7
325.22346	R	1	325.50055	*	7	325.50067b	A	7
325.22347	R	1	325.50056	*	7	325.50067c	A	7
325.22348	R	1	325.50057	*	7	325.50069a	A	7
325.22349	R	1	325.50058	*	7	325.50070a	A	7
325.22350	R	1	325.50059	*	7	325.50902	R	10
325.22351	R	1	325.50060	*	7	325.51004	R	10
325.22352	R	1	325.50061	*	7	325.51152	*	4
325.22353	R	1	325.50062	*	7	325.51156	*	4
325.22354	R	1	325.50063	*	7	325.51158	*	4
325.22355	R	1	325.50064	*	7	325.51162	*	4
325.22356	R	1	325.50065	*	7	325.51163	*	4
325.22357	R	1	325.50066	*	7	325.51164	*	4
325.22358	R	1	325.50067	*	7	325.51166	*	4
325.22359	R	1	325.50068	*	7	325.51167	*	4

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
325.51169	*	4	325.51909	*	4	325.51950a	*	4
325.51172	*	4	325.51910	*	4	325.51950b	*	4
325.51173	*	4	325.51912	*	4	325.51951	*	4
325.51174	*	4	325.51913	*	4	325.51952	*	4
325.51175	*	4	325.51914	*	4	325.51953	*	4
325.51151a	A	4	325.51915	*	4	325.51955	*	4
325.51156a	A	4	325.51916a	*	4	325.51956	*	4
325.51168a	A	4	325.51916b	*	4	325.51957	*	4
325.51177	R	4	325.51917	*	4	325.51902a	A	4
325.51501	*	4	325.51918	*	4	325.51924a	A	4
325.51502	*	4	325.51922	*	4	325.51921	R	4
325.51505	*	4	325.51923	*	4	325.51958	R	4
325.51507	*	4	325.51924	*	4	333.101	*	1
325.51508	*	4	325.51925	*	4	333.103	*	1
325.51509	*	4	325.51926	*	4	333.105	*	1
325.51510	*	4	325.51928	*	4	333.109	*	1
325.51511	*	4	325.51929	*	4	333.111	*	1
325.51513	*	4	325.51930	*	4	333.113	*	1
325.51516	*	4	325.51931	*	4	333.117	*	1
325.51517	*	4	325.51931a	*	4	333.119	*	1
325.51519	*	4	325.51932	*	4	333.123	*	1
325.51520	*	4	325.51933	*	4	333.125	*	1
325.51521	*	4	325.51934	*	4	333.131	*	1
325.51522	*	4	325.51935	*	4	333.133	*	1
325.51523	*	4	325.51936	*	4	333.126	A	1
325.51524	*	4	325.51937	*	4	333.107	R	1
325.51525	*	4	325.51938	*	4	333.121	R	1
325.51526	*	4	325.51938a	*	4	333.127	R	1
325.51501a	A	4	325.51939	*	4	336.1901	*	10
325.51519a	A	4	325.51940	*	4	336.1902	*	10
325.51504	R	4	325.51941	*	4	336.1906	*	10
325.51527	R	4	325.51943	*	4	336.1911	*	10
325.51902	*	4	325.51944	*	4	336.1912	*	10
325.51903	*	4	325.51945	*	4	336.1930	*	10
325.51904	*	4	325.51946	*	4	336.1940	*	10
325.51905	*	4	325.51947	*	4	336.1941	*	10
325.51906	*	4	325.51948	*	4	336.1942	*	10
325.51907	*	4	325.51949	*	4	336.1943	*	10
325.51908	*	4	325.51950	*	4	336.1944	*	10

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
336.1945	*	10	338.1629	R	1	338.2571	A	17
336.1946	*	10	338.1633	R	1	338.2573	A	17
336.1947	*	10	338.1634	R	1	338.2581	A	17
336.1948	*	10	338.1635	R	1	338.2583	A	17
336.1949	*	10	338.1636	R	1	338.3001	R	5
336.1950	*	10	338.1637	R	1	338.3002	R	5
336.1971	*	10	338.2501	R	17	338.3003	R	5
336.1951	A	10	338.2502	R	17	338.3004	R	5
336.1952	A	10	338.2504	R	17	338.3005	R	5
336.1953	A	10	338.2505	R	17	338.3006	R	5
336.1954	A	10	338.2505a	R	17	338.3007	R	5
336.1955	A	10	338.2506	R	17	338.3801	R	6
336.1956	A	10	338.2507	R	17	338.7121	*	17
336.1957	A	10	338.2507a	R	17	338.7131	*	17
336.1958	A	10	338.2510	R	17	338.7132	*	17
336.1959	A	10	338.2510a	R	17	338.7134	*	17
336.1960	A	10	338.2511	R	17	338.7135	*	17
336.1972	A	10	338.2511a	R	17	338.7136	*	17
336.1931	R	10	338.2513	R	17	338.7137	*	17
336.1932	R	10	338.2514	R	17	338.7139	*	17
336.1970	R	10	338.2515	R	17	338.7141	*	17
338.1601	R	1	338.2516	R	17	338.7142	*	17
338.1602	R	1	338.2521	A	17	338.7146	*	17
338.1610	R	1	338.2523	A	17	338.7147	*	17
338.1611	R	1	338.2527	A	17	338.7148	*	17
338.1614	R	1	338.2529	A	17	338.7149	*	17
338.1616	R	1	338.2541	A	17	338.7161	A	17
338.1617	R	1	338.2543	A	17	338.7163	A	17
338.1618	R	1	338.2545	A	17	338.7165	A	17
338.1619	R	1	338.2547	A	17	338.7123	R	17
338.1620	R	1	338.2549	A	17	338.7125	R	17
338.1621	R	1	338.2551	A	17	338.7143	R	17
338.1622	R	1	338.2553	A	17	338.7144	R	17
338.1623	R	1	338.2555	A	17	338.7150	R	17
338.1624	R	1	338.2561	A	17	338.11109	R	6
338.1625	R	1	338.2563	A	17	338.11115	R	6
338.1626	R	1	338.2565	A	17	338.30310	R	5
338.1627	R	1	338.2567	A	17	339.1701	R	1
338.1628	R	1	338.2569	A	17	339.1705	R	1

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
339.1709	R	1	390.1202	R	1	400.941	R	1
339.1713	R	1	390.1206	R	1	400.3151	*	6
339.1721	R	1	390.1207	R	1	400.3155	*	6
339.1741	R	1	390.1209	R	1	400.3156	*	6
339.1743	R	1	390.1210	R	1	400.3157	*	6
339.1745	R	1	390.1212	R	1	400.3158	*	6
339.1747	R	1	390.1213	R	1	400.3159	*	6
339.1751	R	1	390.1214	R	1	400.3160	*	6
339.1755	R	1	390.1251	R	1	400.3161	*	6
339.1757	R	1	400.10	A	9	400.3162	*	6
339.1759	R	1	400.11	A	9	400.3163	*	6
339.1761	R	1	400.12	A	9	400.3164	*	6
339.1763	R	1	400.13	A	9	400.3165	*	6
339.1765	R	1	400.14	A	9	400.3168	*	6
339.1767	R	1	400.15	A	9	400.3169	*	6
339.1771	R	1	400.16	A	9	400.3170	*	6
339.23102	*	5	400.17	A	9	400.3171	*	6
339.23403	*	5	400.18	A	9	400.3173	*	6
340.1793a	*	18	400.901	R	1	400.3178	*	6
340.1883	R	1	400.902	R	1	400.3179	*	6
340.1884	R	1	400.903	R	1	400.3167	R	6
340.1885	R	1	400.905	R	1	400.3401	R	1
380.1	R	19	400.906	R	1	400.3403	R	1
380.2	R	19	400.907	R	1	400.3409	R	1
380.3	R	19	400.908	R	1	400.3410	R	1
380.4	R	19	400.909	R	1	400.3411	R	1
380.5	R	19	400.910	R	1	400.3412	R	1
380.6	R	19	400.911	R	1	400.3413	R	1
380.7	R	19	400.912	R	1	400.3414	R	1
380.8	R	19	400.913	R	1	400.3415	R	1
380.9	R	19	400.914	R	1	400.3416	R	1
380.10	R	19	400.915	R	1	400.3417	R	1
380.126	R	1	400.916	R	1	400.3418	R	1
380.127	R	1	400.917	R	1	400.3419	R	1
380.128	R	1	400.918	R	1	400.3420	R	1
380.129	R	1	400.919	R	1	400.3421	R	1
380.132	R	1	400.920	R	1	400.3422	R	1
380.133	R	1	400.921	R	1	400.3423	R	1
380.134	R	1	400.922	R	1	400.4101	*	9

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
400.4104	*	9	400.4504	*	9	400.4102	A	9
400.4105	*	9	400.4510	*	9	400.4103	A	9
400.4106	*	9	400.4512	*	9	400.4107	A	9
400.4108	*	9	400.4515	*	9	400.4110	A	9
400.4109	*	9	400.4517	*	9	400.4115	A	9
400.4111	*	9	400.4520	*	9	400.4122	A	9
400.4112	*	9	400.4522	*	9	400.4123	A	9
400.4113	*	9	400.4523	*	9	400.4124	A	9
400.4114	*	9	400.4524	*	9	400.4125	A	9
400.4116	*	9	400.4527	*	9	400.4129	A	9
400.4117	*	9	400.4532	*	9	400.4135	A	9
400.4118	*	9	400.4535	*	9	400.4136	A	9
400.4119	*	9	400.4538	*	9	400.4139	A	9
400.4120	*	9	400.4540	*	9	400.4140	A	9
400.4121	*	9	400.4545	*	9	400.4149	A	9
400.4126	*	9	400.4546	*	9	400.4151	A	9
400.4127	*	9	400.4548	*	9	400.4153	A	9
400.4128	*	9	400.4552	*	9	400.4154	A	9
400.4131	*	9	400.4554	*	9	400.4155	A	9
400.4132	*	9	400.4555	*	9	400.4156	A	9
400.4134	*	9	400.4559	*	9	400.4157	A	9
400.4137	*	9	400.4560	*	9	400.4158	A	9
400.4138	*	9	400.4562	*	9	400.4159	A	9
400.4141	*	9	400.4563	*	9	400.4162	A	9
400.4142	*	9	400.4566	*	9	400.4164	A	9
400.4143	*	9	400.4568	*	9	400.4165	A	9
400.4144	*	9	400.4601	*	9	400.4166	A	9
400.4145	*	9	400.4602	*	9	400.4505	A	9
400.4146	*	9	400.4612	*	9	400.4604	A	9
400.4147	*	9	400.4618	*	9	400.4605	A	9
400.4148	*	9	400.4620	*	9	400.4621	A	9
400.4150	*	9	400.4623	*	9	400.4168	R	9
400.4152	*	9	400.4632	*	9	400.4169	R	9
400.4160	*	9	400.4635	*	9	400.4170	R	9
400.4161	*	9	400.4638	*	9	400.4172	R	9
400.4163	*	9	400.4640	*	9	400.4173	R	9
400.4167	*	9	400.4652	*	9	400.4175	R	9
400.4501	*	9	400.4657	*	9	400.4176	R	9
400.4502	*	9	400.4666	*	9	400.4177	R	9

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
400.4178	R	9	400.7020	*	9	408.10644	*	8
400.4181	R	9	400.7021	*	9	408.10645	*	8
400.4182	R	9	400.7022	*	9	408.10647	*	8
400.4183	R	9	400.7024	*	9	408.10661	*	8
400.4201	R	9	400.7026	*	9	408.10664	*	8
400.4231	R	9	400.7027	*	9	408.10671	*	8
400.4232	R	9	400.7029	*	9	408.10673	*	8
400.4234	R	9	400.7030	*	9	408.10675	*	8
400.4237	R	9	400.7031	*	9	408.10677	*	8
400.4238	R	9	400.7032	*	9	408.10685	*	8
400.4302	R	9	400.7033	*	9	408.10686	*	8
400.4331	R	9	400.7034	*	9	408.10695	*	8
400.4332	R	9	400.12101	*	17	408.10696	*	8
400.4334	R	9	400.12413	*	17	408.10627	A	8
400.4335	R	9	408.6203	R	5	408.10680	A	8
400.4336	R	9	408.6204	R	5	408.10637	R	8
400.4337	R	9	408.6206	R	5	408.10638	R	8
400.4338	R	9	408.6208	R	5	408.13301a	*	10
400.4513	R	9	408.6209	R	5	408.13385	*	10
400.7025	R	9	408.6301	R	5	408.13387	*	10
400.7028	R	9	408.10601	*	8	408.13387a	*	10
400.7001	*	9	408.10603	*	8	408.13388	A	10
400.7002	*	9	408.10604	*	8	408.13389	A	10
400.7003	*	9	408.10605	*	8	408.13901	*	9
400.7004	*	9	408.10606	*	8	408.13902	*	9
400.7006	*	9	408.10611	*	8	408.13905	A	9
400.7007	*	9	408.10612	*	8	408.14001	*	7
400.7008	*	9	408.10613	*	8	408.14002	*	7
400.7009	*	9	408.10621	*	8	408.14004	*	7
400.7010	*	9	408.10623	*	8	408.14005	*	7
400.7011	*	9	408.10624	*	8	408.14008	*	7
400.7012	*	9	408.10631	*	8	408.14009	*	7
400.7013	*	9	408.10632	*	8	408.14001a	A	7
400.7014	*	9	408.10633	*	8	408.14001b	A	7
400.7015	*	9	408.10634	*	8	408.14511	*	10
400.7016	*	9	408.10636	*	8	408.14522	*	10
400.7017	*	9	408.10639	*	8	408.14555	*	10
400.7018	*	9	408.10641	*	8	408.14502	A	10
400.7019	*	9	408.10643	*	8	408.14527	R	10

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
408.15001	*	8	408.22112	*	10	408.22968	R	1
408.15002	*	8	408.22113	*	10	408.22969	R	1
408.15003	*	8	408.22115	*	10	408.22970	R	1
408.15004	A	8	408.22117	*	10	408.22971	R	1
408.15501	*	8	408.22119	*	10	408.30501	*	19
408.15601	*	8	408.22129	*	10	408.30505	*	19
408.15915	*	7	408.22130	*	10	408.30506	*	19
408.15922	*	7	408.22138	*	10	408.30507	*	19
408.15923	*	7	408.22139	*	10	408.30510	*	19
408.15903	A	7	408.22151	*	10	408.30512	*	19
408.15911	R	7	408.22156	*	10	408.30513	*	19
408.16204	*	7	408.22102a	A	10	408.30514	*	19
408.16223	*	7	408.22110a	A	10	408.30518	*	19
408.16227	*	7	408.22110b	A	10	408.30520	*	19
408.16234	*	7	408.22112a	A	10	408.30522	*	19
408.16237	*	7	408.22112b	A	10	408.30522a	*	19
408.16251	*	7	408.22112c	A	10	408.30527	*	19
408.16202	A	7	408.22112d	A	10	408.30528a	*	19
408.17310	*	10	408.22112e	A	10	408.30529	*	19
408.17312	*	10	408.22112f	A	10	408.30536	*	19
408.17314	*	10	408.22161	R	10	408.30536a	*	19
408.17315	*	10	408.22162	R	10	408.30537	*	19
408.17316	*	10	408.22951	R	1	408.30537a	*	19
408.17317	*	10	408.22952	R	1	408.30537b	*	19
408.17318	*	10	408.22953	R	1	408.30537c	*	19
408.17320	*	10	408.22954	R	1	408.30541	*	19
408.17302	A	10	408.22955	R	1	408.30542	*	19
408.17801	*	8	408.22956	R	1	408.30544	*	19
408.18602	*	9	408.22957	R	1	408.30545	*	19
408.18605	A	9	408.22958	R	1	408.30545a	*	19
408.22101	*	10	408.22959	R	1	408.30546	*	19
408.22102	*	10	408.22960	R	1	408.30500	A	19
408.22103	*	10	408.22961	R	1	408.30501a	A	19
408.22104	*	10	408.22962	R	1	408.30509a	A	19
408.22105	*	10	408.22963	R	1	408.30510a	A	19
408.22106	*	10	408.22964	R	1	408.30521a	A	19
408.22107	*	10	408.22965	R	1	408.30523	A	19
408.22109	*	10	408.22966	R	1	408.30523a	A	19
408.22110	*	10	408.22967	R	1	408.30525a	A	19

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
408.30533a	A	19	408.40130	*	4	408.41638	R	10
408.30533b	A	19	408.40131	*	4	408.41639	R	10
408.30537d	A	19	408.40132	*	4	408.41640	R	10
408.30547d	A	19	408.40133	*	4	408.41641	R	10
408.30547e	A	19	408.40105	A	4	408.41642	R	10
408.30547f	A	19	408.40601	*	6	408.41643	R	10
408.30547g	A	19	408.40603	*	6	408.41644	R	10
408.30526	R	19	408.40617a	*	6	408.41645	R	10
408.30531	R	19	408.40623	*	6	408.41646	R	10
408.30543	R	19	408.40625	*	6	408.41647	R	10
408.30547	R	19	408.40631	*	6	408.41648	R	10
408.30801	*	12	408.40650	A	6	408.41649	R	10
408.30811	*	12	408.40655	A	6	408.41650	R	10
408.30813	*	12	408.40660	A	6	408.41651	R	10
408.30818	*	12	408.40709	*	4	408.41652	R	10
408.30819	*	12	408.40713	*	4	408.41653	R	10
408.30834	*	12	408.40721	*	4	408.41654	R	10
408.30838	*	12	408.40722	*	4	408.41655	R	10
408.30869	*	12	408.40723	*	4	408.41656	R	10
408.30870	*	12	408.40731	*	4	408.41657	R	10
408.30871	*	12	408.40751	*	4	408.41658	R	10
408.30873	*	12	408.40761	*	4	408.41802	*	7
408.30865	R	12	408.40762	*	4	408.41836	*	7
408.31059	*	19	408.41601	*	10	408.41837	*	7
408.31060	*	19	408.41610	*	10	408.41838	*	7
408.31063	*	19	408.41605	A	10	408.41841	*	7
408.31063a	*	19	408.41625	R	10	408.41851	*	7
408.31065	*	19	408.41626	R	10	408.41852	*	7
408.31066	*	19	408.41627	R	10	408.41853	*	7
408.31069	*	19	408.41628	R	10	408.41854	*	7
408.31070	*	19	408.41629	R	10	408.41855	*	7
408.31071	R	19	408.41630	R	10	408.41861	*	7
408.31071a	R	19	408.41631	R	10	408.41862	*	7
408.40115	*	4	408.41632	R	10	408.41863	*	7
408.40120	*	4	408.41633	R	10	408.41864	*	7
408.40121	*	4	408.41634	R	10	408.41865	*	7
408.40122	*	4	408.41635	R	10	408.41866	*	7
408.40123	*	4	408.41636	R	10	408.41867	*	7
408.40128	*	4	408.41637	R	10	408.41868	*	7

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
408.41869	*	7	408.42754	R	7	421.1101	R	1
408.41874	*	7	408.42755	R	7	421.1102	R	1
408.41875	*	7	408.42757	R	7	421.1103	R	1
408.41877	*	7	408.42758	R	7	421.1104	R	1
408.41884	*	7	408.42759	R	7	421.1105	R	1
408.41861a	A	7	408.42761	R	7	421.1106	R	1
408.41861b	A	7	408.42762	R	7	421.1107	R	1
408.41861c	A	7	408.42763	R	7	421.1108	R	1
408.41861d	A	7	408.42799	R	7	421.1109	R	1
408.41877a	A	7	408.44501	*	7	421.1110	R	1
408.41871	R	7	408.44502	*	7	421.1201	R	1
408.41872	R	7	409.2	*	18	421.1202	R	1
408.41876	R	7	409.3	*	18	421.1203	R	1
408.41878	R	7	409.4	*	18	421.1204	R	1
408.41879	R	7	409.5	*	18	421.1205	R	1
408.41881	R	7	418.1	R	1	421.1206	R	1
408.41882	R	7	418.2	R	1	421.1207	R	1
408.41883	R	7	418.3	R	1	421.1208	R	1
408.42701	*	7	418.4	R	1	421.1209	R	1
408.42705	A	7	418.5	R	1	421.1210	R	1
408.42710	R	7	418.6	R	1	421.1211	R	1
408.42724	R	7	418.7	R	1	421.1212	R	1
408.42725	R	7	418.8	R	1	421.1213	R	1
408.42726	R	7	418.51	R	1	421.1214	R	1
408.42727	R	7	418.52	R	1	421.1301	R	1
408.42728	R	7	418.53	R	1	421.1302	R	1
408.42731	R	7	418.54	R	1	421.1304	R	1
408.42732	R	7	418.55	R	1	421.1305	R	1
408.42733	R	7	418.56	R	1	421.1306	R	1
408.42734	R	7	418.57	R	1	421.1307	R	1
408.42735	R	7	418.58	R	1	421.1308	R	1
408.42737	R	7	418.10904	*	17	421.1309	R	1
408.42741	R	7	418.10915	*	17	421.1310	R	1
408.42742	R	7	418.10922	*	17	421.1311	R	1
408.42743	R	7	418.10923	*	17	421.1313	R	1
408.42744	R	7	418.101007	*	17	421.1314	R	1
408.42751	R	7	418.101008	*	17	421.1315	R	1
408.42752	R	7	418.101015	*	17	421.1316	R	1
408.42753	R	7	418.101208	*	17	421.1317	R	1

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
456.101	R	19	456.1302	A	19	460.17329	R	1
456.111	R	19	456.1303	A	19	460.17331	R	1
456.121	R	19	456.1401	A	19	460.17333	R	1
456.123	R	19	456.1501	A	19	460.17335	R	1
456.124	R	19	456.1502	A	19	460.17337	R	1
456.125	R	19	456.1503	A	19	460.17339	R	1
456.126	R	19	456.1601	A	19	460.17341	R	1
456.131	R	19	456.1701	A	19	460.17401	R	1
456.132	R	19	456.1702	A	19	460.17403	R	1
456.133	R	19	456.1801	A	19	460.17405	R	1
456.134	R	19	456.1802	A	19	460.17501	R	1
456.136	R	19	456.1803	A	19	460.17503	R	1
456.137	R	19	460.17101	R	1	460.17505	R	1
456.138	R	19	460.17103	R	1	460.17507	R	1
456.139	R	19	460.17105	R	1	460.17509	R	1
456.144	R	19	460.17107	R	1	460.17511	R	1
456.145	R	19	460.17109	R	1	460.17513	R	1
456.146	R	19	460.17111	R	1	460.17515	R	1
456.151	R	19	460.17113	R	1	460.17601	R	1
456.152	R	19	460.17115	R	1	460.17701	R	1
456.153	R	19	460.17201	R	1	484.903	*	12
456.154	R	19	460.17203	R	1	500.101	A	12
456.161	R	19	460.17205	R	1	500.102	A	12
456.162	R	19	460.17207	R	1	500.103	A	12
456.163	R	19	460.17209	R	1	500.104	A	12
456.164	R	19	460.17301	R	1	500.105	A	12
456.165	R	19	460.17303	R	1	500.106	A	12
456.166	R	19	460.17305	R	1	500.107	A	12
456.167	R	19	460.17307	R	1	500.108	A	12
456.191	R	19	460.17309	R	1	500.109	A	12
456.192	R	19	460.17311	R	1	500.110	A	12
456.193	R	19	460.17313	R	1	500.111	A	12
456.194	R	19	460.17315	R	1	500.2101	R	1
456.195	R	19	460.17317	R	1	500.2105	R	1
456.196	R	19	460.17319	R	1	500.2106	R	1
456.1101	A	19	460.17321	R	1	500.2107	R	1
456.1201	A	19	460.17323	R	1	500.2109	R	1
456.1202	A	19	460.17325	R	1	500.2110	R	1
456.1301	A	19	460.17327	R	1	500.2111	R	1

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
500.2112	R	1	554.31	R	5	792.10114	A	1
500.2113	R	1	554.32	R	5	792.10115	A	1
500.2114	R	1	554.33	R	5	792.10116	A	1
500.2115	R	1	554.34	R	5	792.10117	A	1
500.2116	R	1	554.35	R	5	792.10118	A	1
500.2117	R	1	554.41	R	5	792.10119	A	1
500.2118	R	1	554.42	R	5	792.10120	A	1
500.2119	R	1	554.51	R	5	792.10121	A	1
500.2120	R	1	554.52	R	5	792.10122	A	1
500.2121	R	1	554.53	R	5	792.10123	A	1
500.2122	R	1	554.61	R	5	792.10124	A	1
500.2123	R	1	554.62	R	5	792.10125	A	1
500.2124	R	1	554.63	R	5	792.10126	A	1
500.2125	R	1	554.64	R	5	792.10128	A	1
500.2126	R	1	554.65	R	5	792.10129	A	1
500.2127	R	1	554.66	R	5	792.10130	A	1
500.2128	R	1	554.67	R	5	792.10131	A	1
500.2129	R	1	554.68	R	5	792.10132	A	1
500.2130	R	1	554.69	R	5	792.10133	A	1
500.2131	R	1	554.70	R	5	792.10134	A	1
500.2134	R	1	554.71	R	5	792.10135	A	1
500.2136	R	1	791.3301	R	1	792.10136	A	1
500.2137	R	1	791.3305	R	1	792.10137	A	1
500.2138	R	1	791.3310	R	1	792.10201	*	1
554.1	R	5	791.3315	R	1	792.10203	*	1
554.2	R	5	791.33100	A	17	792.10205	*	1
554.3	R	5	792.10101	A	1	792.10207	*	1
554.4	R	5	792.10102	A	1	792.10209	*	1
554.5	R	5	792.10103	A	1	792.10211	*	1
554.6	R	5	792.10104	A	1	792.10213	*	1
554.21	R	5	792.10105	A	1	792.10215	*	1
554.22	R	5	792.10106	A	1	792.10219	*	1
554.23	R	5	792.10107	A	1	792.10221	*	1
554.24	R	5	792.10108	A	1	792.10223	*	1
554.25	R	5	792.10109	A	1	792.10225	*	1
554.26	R	5	792.10110	A	1	792.10227	*	1
554.27	R	5	792.10111	A	1	792.10229	*	1
554.28	R	5	792.10112	A	1	792.10231	*	1
554.29	R	5	792.10113	A	1	792.10233	*	1

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
792.10237	*	1	792.10412	A	1	792.10503	A	1
792.10239	*	1	792.10413	A	1	792.10504	A	1
792.10241	*	1	792.10414	A	1	792.10505	A	1
792.10243	*	1	792.10415	A	1	792.10506	A	1
792.10247	*	1	792.10416	A	1	792.10507	A	1
792.10251	*	1	792.10417	A	1	792.10508	A	1
792.10253	*	1	792.10418	A	1	792.10509	A	1
792.10255	*	1	792.10419	A	1	792.10510	A	1
792.10257	*	1	792.10420	A	1	792.10511	A	1
792.10259	*	1	792.10421	A	1	792.10512	A	1
792.10261	*	1	792.10422	A	1	792.10601	A	1
792.10263	*	1	792.10423	A	1	792.10602	A	1
792.10265	*	1	792.10424	A	1	792.10603	A	1
792.10269	*	1	792.10425	A	1	792.10604	A	1
792.10271	*	1	792.10426	A	1	792.10605	A	1
792.10273	*	1	792.10427	A	1	792.10606	A	1
792.10275	*	1	792.10428	A	1	792.10607	A	1
792.10277	*	1	792.10429	A	1	792.10608	A	1
792.10279	*	1	792.10430	A	1	792.10609	A	1
792.10283	*	1	792.10431	A	1	792.10701	A	1
792.10287	*	1	792.10432	A	1	792.10702	A	1
792.10289	*	1	792.10433	A	1	792.10703	A	1
792.10301	A	1	792.10434	A	1	792.10704	A	1
792.10302	A	1	792.10435	A	1	792.10705	A	1
792.10303	A	1	792.10436	A	1	792.10706	A	1
792.10304	A	1	792.10437	A	1	792.10707	A	1
792.10305	A	1	792.10438	A	1	792.10708	A	1
792.10306	A	1	792.10439	A	1	792.10709	A	1
792.10401	A	1	792.10440	A	1	792.10710	A	1
792.10402	A	1	792.10441	A	1	792.10711	A	1
792.10403	A	1	792.10442	A	1	792.10712	A	1
792.10404	A	1	792.10443	A	1	792.10713	A	1
792.10405	A	1	792.10444	A	1	792.10714	A	1
792.10406	A	1	792.10445	A	1	792.10715	A	1
792.10407	A	1	792.10446	A	1	792.10801	A	1
792.10408	A	1	792.10447	A	1	792.10802	A	1
792.10409	A	1	792.10448	A	1	792.10803	A	1
792.10410	A	1	792.10501	A	1	792.10804	A	1
792.10411	A	1	792.10502	A	1	792.10805	A	1

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
792.10806	A	1	792.11024	A	1	792.11311	A	1
792.10807	A	1	792.11025	A	1	792.11312	A	1
792.10808	A	1	792.11026	A	1	792.11313	A	1
792.10809	A	1	792.11027	A	1	792.11314	A	1
792.10901	A	1	792.11101	A	1	792.11315	A	1
792.10902	A	1	792.11102	A	1	792.11316	A	1
792.10903	A	1	792.11103	A	1	792.11317	A	1
792.10904	A	1	792.11104	A	1	792.11318	A	1
792.10905	A	1	792.11105	A	1	792.11319	A	1
792.10906	A	1	792.11106	A	1	792.11320	A	1
792.10907	A	1	792.11107	A	1	792.11321	A	1
792.10908	A	1	792.11108	A	1	792.11401	A	1
792.10909	A	1	792.11109	A	1	792.11402	A	1
792.10910	A	1	792.11110	A	1	792.11403	A	1
792.10911	A	1	792.11111	A	1	792.11404	A	1
792.10912	A	1	792.11112	A	1	792.11405	A	1
792.11001	A	1	792.11113	A	1	792.11406	A	1
792.11002	A	1	792.11114	A	1	792.11407	A	1
792.11003	A	1	792.11115	A	1	792.11408	A	1
792.11004	A	1	792.11116	A	1	792.11409	A	1
792.11005	A	1	792.11117	A	1	792.11410	A	1
792.11006	A	1	792.11118	A	1	792.11411	A	1
792.11007	A	1	792.11201	A	1	792.11412	A	1
792.11008	A	1	792.11202	A	1	792.11413	A	1
792.11009	A	1	792.11203	A	1	792.11414	A	1
792.11010	A	1	792.11204	A	1	792.11415	A	1
792.11011	A	1	792.11205	A	1	792.11416	A	1
792.11012	A	1	792.11206	A	1	792.11417	A	1
792.11013	A	1	792.11207	A	1	792.11418	A	1
792.11014	A	1	792.11208	A	1	792.11419	A	1
792.11015	A	1	792.11301	A	1	792.11420	A	1
792.11016	A	1	792.11302	A	1	792.11421	A	1
792.11017	A	1	792.11303	A	1	792.11422	A	1
792.11018	A	1	792.11304	A	1	792.11423	A	1
792.11019	A	1	792.11305	A	1	792.11424	A	1
792.11020	A	1	792.11306	A	1	792.11425	A	1
792.11021	A	1	792.11307	A	1	792.11426	A	1
792.11022	A	1	792.11309	A	1	792.11427	A	1
792.11023	A	1	792.11310	A	1	792.11428	A	1

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

R Number	Action	2015 MR Issue	R Number	Action	2015 MR Issue
792.11429	A	1	792.11707	A	1
792.11430	A	1	792.11708	A	1
792.11431	A	1	792.11709	A	1
792.11432	A	1	792.11801	A	1
792.11433	A	1	792.11802	A	1
792.11501	A	1	792.11803	A	1
792.11502	A	1	792.11901	A	1
792.11503	A	1	792.11902	A	1
792.11504	A	1	792.11903	A	1
792.11505	A	1			
792.11506	A	1			
792.11507	A	1			
792.11508	A	1			
792.11509	A	1			
792.11510	A	1			
792.11511	A	1			
792.11512	A	1			
792.11513	A	1			
792.11514	A	1			
792.11515	A	1			
792.11516	A	1			
792.11517	A	1			
792.11601	A	1			
792.11602	A	1			
792.11603	A	1			
792.11604	A	1			
792.11605	A	1			
792.11606	A	1			
792.11607	A	1			
792.11608	A	1			
792.11609	A	1			
792.11610	A	1			
792.11611	A	1			
792.11701	A	1			
792.11702	A	1			
792.11703	A	1			
792.11704	A	1			
792.11705	A	1			
792.11706	A	1			

(***** Amendment to Rule, **A** Added Rule, **N** New Rule, **R** Rescinded Rule)

CUMULATIVE INDEX

A

ARGICULTURE AND RURAL DEVELOPMENT, DEPARTMENT OF
Repeal
Regulation No 900 Hearing Procedures (2015-3)
Michigan Commercial Feed Law (2015-13)

ATTORNEY GENERAL, DEPARTMENT OF
Opinions
Payment restrictions on purchases of scrap metal
OAG Opinion No. 7281 (2015-6)

Payment for transporting agricultural commodities
OAG Opinion No. 7282 (2015-6)

Payment of interest with future revenues of profits
OAG Opinion No. 7283 (2015-9)

Assessment of fees on motor vehicles insured in state
OAG Opinion No. 7284 (2015-10)

Building official as employee of governmental subdivision
OAG Opinion No. 7285 (2015-12)

Preemption of local ordinance prohibiting taking of wild birds
OAG Opinion No. 7286 (2015-18)

C

CORRECTIONS, DEPARTMENT OF

General Rules (2015-17)

E

EXECUTIVE OFFICE
Executive Reorganization
No. 1 (2015-1)
No. 2 (2015-2)
No. 3 (2015-2)
No. 4 (2015-2)
No. 5 (2015-3)
No. 6 (2015-3)
No. 7 (2015-3)
No. 8 (2015-4)
No. 9 (2015-5)
No. 10 (2015-6)
No. 11 (2015-6)
No. 12 (2015-17)

EDUCATION, DEPARTMENT OF
Repeal
Repeal PA 336 of 1993 (2015-19)

Special Education Programs and Services (2015-18)
Standards for Issuance of Work Permits (2015-18)
Youth Employment Standards (2015-5)

ENVIRONMENTAL QUALITY, DEPARTMENT OF
Corrections
Oil and Gas Operations (2015-15)

Inland Lakes and Streams (2015-5)
Oil and Gas Operations (2015-5)
Part 4 Emission Limitations and Prohibitions – Sulfur Bearing Compounds (2015-5*)
Part 9. Emission Limitations and Prohibitions – Miscellaneous (2015-11)
Site Reclamation Grant/Loan Program (2015-14)
Solid Waste Management (2015-5)

H

HEALTH AND HUMAN SERVICES, DEPARTMENT OF
Certificate of Need Review
Cardiac Catheterization (CC) Services (2015-18)
Hospital Beds (2015-6) (2015-18)
Megavoltage Radiation Therapy (MRT) Services/Unit (2015-18)
Nursing Home and Hospital Long Term Care Unit (HLTCU) Beds (2015-6) (2015-18)
Positron Emission Tomography (PET) Scanner Services (2015-18)

Corrections
Interstate Compact on the Placement of Children (2015-9)

Repeal
Repeal PA 368 of 1978 Cancer Reporting (2015-15)
Repeal PA 368 of 1978 Family Planning Services (2015-16)
Repeal PA 124 of 1979 (2015-17)

Blood Lead Analysis Reporting (2015-9)
Child Caring Institution (2015-9)
Child Placing Agencies (2015-17)
Crime Victims (2015-7*)
Interstate Compact on the Placement of Children (2015-9)
State Emergency Relief Program (2015-9)

I

INSURANCE AND FINANCE, DEPARTMENT OF
Captive Insurance Company Rules (2015-12)

L

LICENSING AND REGULATORY AFFAIRS, DEPARTMENT OF
Corrections
Hearing and Appeal Practice (2015-11)
Michigan Medical Marihuana (2015-1)
Part 11 Recording and Reporting of Occupational Injuries and Illnesses (2015-11)
Payment of Wages and fringe Benefits (2015-1)
Proprietary Schools (2015-10)
Uniform System of Accounts for Major and Nonmajor Electric Utilities (2015-11)
Uniform System of Accounts for Major and Nonmajor Gas Utilities (2015-11)

Adopted Guideline
Guideline Applicable to Documents Filed Electronically (2015-17)

Proposed Guideline
Guideline Applicable to Documents Filed Electronically (2015-12)

Repeal
Repeal PA 440 of 1976 (2015-5)

Acupuncture General Rules (2015-19*)
Administrative Appellate Procedures (2015-1)
Advertising Adjacent to Highways – Hearings (2015-1)
Administrator Certification Hearings (2015-1)
Administrative Hearings for the Suspension and Revocation of Michigan Teaching Certificates and School Administrators Certificates (2015-1)
Athletic Training General Rules (2015-19*)
Audiology General Rules (2015-19*)

Basic Local Exchange Service Customer Migration (2015-19*)
Board of Marriage and Family Therapy General Rules (2015-19*)
Board of Pharmacy – Public Participation at Open Board Meetings (2015-5)
Board of Pharmacy – Radiopharmaceuticals (2015-5)
Cemetery Commissioner – General Rules (2015-19)
Certificate of Need Hearing Procedures (2015-1)
Chiropractic General Rules (2015-19*)
Community Status; Eligibility Criteria (2015-1)
Construction Code - Part 5 Residential Code (2015-8*)
Construction Code - Part 10 Michigan Energy Code (2015-8*)
Contested Case and Declaratory Ruling Procedures (2015-1)
Counseling General Rules (2015-19*)
Disciplinary Proceedings (2015-1)
Driveway, Banners, and Parades on and Over Highways (2015-1)
Due Process Procedures for Special Education Hearings (2015-1)
Emergency 9 1 1 Services Multiline Telephone Systems (2015-12)
General Rules (2015-1)
Hearings, Appeals, and Declaratory Rulings (2015-1)
Hearings Emergency Medical Services Personnel Licensing (2015-1)
Hearings on Traffic Control Orders (2015-1)
Ionizing Radiation Rules Governing the Use of Radiation Machines (2015-15*)
Judges Retirement – General Hearing Rules (2015-1)
Liquor Control Commission General Rules (2015-19*)
Michigan Administrative Hearing System Uniform Hearing Rules (2015-1)
Michigan Medical Marihuana (2015-1)
MSA Provider Hearings (2015-1)
New and Existing School, College and University Fire Safety (2015-18*)
Nursing Home Administrators (2015-19*)
Part 1 General Rules (2015-1)
Part 1 General Rules CS (2015-4) (2015-14*)
Part 5. Residential Code (2015-19)
Part 8.Electrical Code CS (2015-12)
Part 10. Cranes and Derricks – CS (2015-19*)
Part 10. Michigan Energy Code (2015-19)
Part 11 Recording and Reporting of Occupational Injuries and Illnesses (2015-10)
Part 6 Fire Exits GI (2015-8)
Part 7. Disciplinary Proceedings (2015-1)
Part 7. Guards for Power Transmission- GI (2015-19*)
Part 7. Welding and Cutting CS (2015-4) (2015-14*)
Part 15. Excavators, Hoists, Elevators, Helicopters, and Conveyors CS (2015-14*)
Part 16 Power Transmission and Distribution CS (2015-10) (2015-14*) (2015-18*)
Part 18 Fire protection and Prevention CS (2015-7)
Part 27 Blasting and Use of Explosive CS (2015-7)
Part 33 Personal Protective Equipment GI (2015-10)
Part 35. Confined Space in Construction CS (2015-14*)
Part 39 Design Safety Standards for Electrical Systems GI (2015-9)
Part 40 Safety Related Word Practices GI (2015-7)
Part 45 Die Casting GI (2015-10)

Part 45 Fall Protection CS (2015-7)
Part 50 Telecommunications GI (2015-8)
Part 55 Explosives and Blasting Agents GI (2015-8)
Part 56 Storage and Handling of Liquefied Petroleum Gases GI (2015-8)
Part 59 Helicopters GI (2015-7)
Part 62 Plastic Molding GI (2015-7)
Part 73 Fire Brigades GI (2015-10)
Part 74. Fire Fighting GI (2015-15*)
Part 78 Storage and Handling of Anhydrous Ammonia GI (2015-8)
Part 85 The Control of Hazardous Energy Sources- GI (2015-19*)
Part 86 Electric Power Generation, Transmission, and Distribution GI (2015-9)
Part 303 Methylenedianiline (MDA) OH (2015-7)
Part 304 Ethylene Oxide OH (2015-4)
Part 306 Formaldehyde OH (2015-8)
Part 307 Acrylonitrile OH (2015-4)
Part 310 Lead in General Industry OH (2015-4)
Part 474 Sanitation OH (2015-4)
Part 509 Illumination OH (2015-10)
Part 510 Illumination OH (2015-10)
Part 523 Abrasive Blasting- OH (2015-19*)
Part 529. Welding, Cutting, and Brazing OC (2015-14*)
Pharmacy – Controlled Substances (2015-11*)
Pharmacy Technicians (2015-11*) (2015-12*)
Practice and procedure Before the Commission (2015-1)
Physical Therapy – General Rules (2015-17)
Psychology – General Rules (2015-17)
Public School Retirement – General Hearing Rules (2015-1)
Real Estate Appraisers – General Rules (2015-5)
Relocation Assistance (2015-1)
Respiratory Care General Rules (2015-19*)
Sanitarians Registration (2015-19*)
Speech Language Pathology – General Rules (2015-11*)
State Employees Retirement Board (2015-1)
State Employees Retirement Board - General Rules (2015-1)
State Police Retirement – General Hearing Rules (2015-1)
Task Force on Physicians Assistants General Rules (2015-19*)
Teacher Certification Code (2015-1)
Unbundled Network Element and Local Interconnection Services (2015-16*)
Veterinary Technician Licensure (2015-11*)
Wage and Fringe Benefit Hearings (2015-1)
Workers' Compensation health Care Services (2015-17)

N

NATURAL RESOURCES, DEPARTMENT OF
Open and Prescribed Burning (2015-12)
Watercraft Rented to Public (2015-17)

S

STATE POLICE, DEPARTMENT OF
State Assistance to Counties and Municipalities (2015-9)

T

TREASURY, DEPARTMENT OF
Corrections
Audit Standards for Exams. Under the UUPA (2015-9)

ADMINISTRATIVE RULES
ENROLLED SENATE AND HOUSE BILLS
SIGNED INTO LAW OR VETOED
(2015 SESSION)

Mich. Const. Art. IV, §33 provides: "Every bill passed by the legislature shall be presented to the governor before it becomes law, and the governor shall have 14 days measured in hours and minutes from the time of presentation in which to consider it. If he approves, he shall within that time sign and file it with the secretary of state and it shall become law . . . If he does not approve, and the legislature has within that time finally adjourned the session at which the bill was passed, it shall not become law. If he disapproves . . . he shall return it within such 14-day period with his objections, to the house in which it originated."

Mich. Const. Art. IV, §27, further provides: "No act shall take effect until the expiration of 90 days from the end of the session at which it was passed, but the legislature may give immediate effect to acts by a two-thirds vote of the members elected to and serving in each house."

MCL 24.208 states in part:

"Sec. 8. (1) The Office of Regulatory Reform shall publish the Michigan register at least once each month. The Michigan register shall contain all of the following:

* * *

(b) On a cumulative basis, the numbers and subject matter of the enrolled senate and house bills signed into law by the governor during the calendar year and the corresponding public act numbers.

(c) On a cumulative basis, the numbers and subject matter of the enrolled senate and house bills vetoed by the governor during the calendar year."