Chapter Comm 34

AMUSEMENT RIDES AND ATTRACTIONS

Note: Chapter ILHR 34 as it existed on February 29, 1992 was repealed and a new chapter ILHR 34 was created effective March 1, 1992. **Chapter ILHR 34 was renumbered to be ch. Comm 34 under s. 13.93 (2m) (b) 1., Stats., and corrections made under s. 13.93 (2m) (b) 6. and 7., Stats., Register, October, 1996, No. 490, eff. 11−1−96.**

Subchapter I— Purpose and Scope

Comm 34.001 Purpose. The purpose of this chapter is to set forth minimum standards for design, construction, operation, repair, inspection, assembly, disassembly and use of amusement rides, amusement attractions and amusement structures at carnivals, fairs and other places of amusement for the safety of employes and frequenters.

History: Cr. Register, February, 1992, No. 434, eff. 3−1−92.

Comm 34.002 Scope. (1) APPLICATION. The provisions of this chapter apply to amusement rides, amusement attractions and amusement structures located at permanent sites or moved from site to site.

(2) EXCLUSIONS. The provisions of this chapter do not apply to nonmechanized playground equipment, such as swings, seesaws, stationary spring mounted animal features, rider propelled merry−go−rounds, climbers, slides, swinging gates and physical fitness devices.

History: Cr. Register, February, 1992, No. 434, eff. 3−1−92.

Comm 34.003 Retroactivity. Except as otherwise specified in this chapter, the provisions of this chapter shall apply to all amusement rides and attractions in existence on March 1, 1992 and to those amusement rides and attractions constructed on and after March 1, 1992.

History: Cr. Register, February, 1992, No. 434, eff. 3−1−92.

Subchapter II— Definitions

Comm 34.01 Definitions. In this chapter:

(1) "Amusement attraction" means any show or exhibition but does not include amusement rides.

(2) "Amusement structure" means any object used in conjunction with amusement rides or amusement attractions, including, but not limited to, bridges, food stands, enclosures for games of chance, support towers, power−generation and distribution systems, decorations, signs and speaker systems.

(3) "Amusement ride" means a device or animal that carries, transports or supports passengers in unusual, entertaining or

thrilling modes of motion and any vehicle providing entertainment or transportation in conjunction with an amusement ride or an amusement attraction, including, but not limited to, rider–powered and power–driven thrill rides, mild rides and ride–throughs, walk–throughs, air pillows, giant slides, and animal rides. Vehicles include parking lot trams, old fire engines, stage coaches and trains. "Amusement ride" does not include aircraft under the jurisdiction of the federal aviation administration, railroad trains under the jurisdiction of the federal railroad administration or boats used on navigable waters.

(4) "Approved" means approved by the department.

(5) "Authorized persons" are persons experienced and instructed in the work to be performed on an amusement ride or attraction and who have been given the responsibility to perform their duties by the owner or operator of an amusement ride or attraction.

(6) "Coin–operated ride" means an amusement ride which is activated by the insertion of a coin or token or by a push–button switch and timer.

(7) "Department" means the department of commerce.

(8) "Equivalent degree of safety" means an alternative to strict compliance with this chapter provided the alternative establishes an equivalency to the subject rule and the alternative has been approved by the department.

(9) "Frequenter" means every person, other than an employe, who may go in or be in a place of employment, public building, amusement attraction or amusement ride under circumstances which render such person other than a trespasser.

(10) "Modified ride" means an amusement ride whose structure, drive system, method of erection, or other items affecting the safety of the amusement ride have been changed, except changes recommended by the ride manufacturer.

(11) "Owner" means the person holding legal title to the amusement ride or attraction, or his or her designated representative, lessee or agent.

(12) "Passenger space" means the area, seat, tub, chair, car, cage or other device in which the customer sits, stands, walks or otherwise occupies while frequenting an amusement ride or attraction.

(13) "Professional engineer" means an engineer registered in the state of Wisconsin.

(14) "Properly maintained" means assembling, disassembling, transporting, operating, lubricating, greasing, oiling, testing and repairing amusement rides and attractions in accordance with recognized safe practice.

(15) "Recognized safe practice" means that the materials and methods used to assemble, disassemble, operate, transport, maintain, repair and modify amusement rides and attractions are:

(a) In accordance with the written specifications and procedures of the manufacturer, the owner's liability insurance carrier, nationally recognized standards, or the written standards of the department; or,

(b) In the absence of written specifications, procedures or standards, in accordance with the best practices of the skills and trades involved.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Subchapter III— Administration and Enforcement

Comm 34.02 Assignment of classification of amusement rides. (1) GENERAL. The department shall classify amusement rides into one of the 4 classifications as specified in s. ILHR 34.03 on the basis of known characteristics of the amusement ride and any modifications made to the ride.

(2) ADDITIONAL INFORMATION. (a) The department may require additional information sufficient to properly classify amusement rides.

(b) An amusement ride shall be assigned to class 3 when requested information for the amusement ride is not provided.

(3) NOTIFICATION. The department shall notify the owner to which class the amusement ride has been assigned and of required inspections and tests.

(4) RECLASSIFICATION. The department shall reclassify rides if the amusement rides fail to continue to meet the criteria for which they were classified.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.03 Amusement ride classifications. Amusement rides shall be classified as follows:

(1) CLASS 1. Class 1 shall consist of amusement rides that are properly designed, constructed and maintained to move passengers in a mild manner.

Note: Examples of class 1 amusement rides include but are not limited to:

Air Pillow (Moonwalk)	Giant Slide
Animal Rides (Live)	Go–Gator
Antique Cars (Hampton)	Helicopter
Astroliner	Jump Cycle (Hampton)
Berry–Go–Round	Jungle Gym
Bulgy Whale	Merry–Go–Round
Bumper Boats (Kiddie)	Midge–O–Racer
Bumper Cars (Kiddie)	Mini–Himalaya
Chair Swing (Kiddie)	Mini–Jet (Zamperla)
Claterpillar	Motorcycle (Hampton)
Coaster (Kiddie)	Raiders
Combination (Hampton)	Red Baron (Zamperla)
Convoy	Rocket Ride
Dark Ride	Sky Fighter
Dune Buggy (Hampton)	Snowmobiles (Hampton)
Ferris–Type Wheels (Kiddie)	Spin the Apple
Flying Saucer	Sunliner (Chance)
Four by Four	Trains (Kiddie)
Fun House	Walk–Throughs (Moving Parts)

(2) CLASS 2. Class 2 shall consist of thrill–type amusement rides which are designed, constructed and tested in accordance with an engineering analysis acceptable to the department.

Note: Examples of class 2 amusement rides include but are not limited to:

Bubble Bounce	Paratrooper
Bumper Boats	Pirate Ship
Bumper Cars	Railroads (Miniature)
Casino	Rock–O–Plane
Chair Swing	Rok–N–Roll
Cortina Bobs	Roller Coasters (Big)
Crazy Dance	Roll–O–Plane
Dodgem Cars	Roundup
Enterprise	Scooters
Falling Star	Scrambler
Ferris–Type Wheels	Sea Dragon
Flume Ride	Sizzler
Flying Bobs	Sky Diver
Flying Carpet	Sky Wheel
Force 10	Space Shuttle
Giant Wheel	Spider
Go–Karts	Super Loops
Gravitron	Swinger
Hang 10	Swiss Bobs
Himalaya	Tempest
Kamakazi	Thunderbolt
Love Machine	Tilt–A–Whirl
Matterhorn	Tip Top
Merry Mixer	Toboggan
Monster	Water Slide

Moonraker	Wipeout
Music Fest	Yo–Yo
Octopus	Zipper
Orbiter	Zyclon (Coaster)

(3) CLASS 3. Class 3 shall consist of those amusement rides which do not meet the requirements for the classes of amusement rides under sub. (1) or (2).

(4) MODIFIED AMUSEMENT RIDES. Amusement rides which have been changed, except for changes made by the manufacturer, shall be classified as modified rides.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.04 Registration of amusement rides. **(1)** GENERAL. All amusement rides shall be registered with the department annually. The fees as specified in ch. Comm 2 shall be paid and the amusement rides shall be registered prior to being opened to the public. All registrations, regardless of date of issuance, shall expire on December 31 of each year.

(2) INFORMATION REQUIRED. The following registration information shall be provided on forms available from the department:

(a) Name and address of owner, or operator or lessee if different from owner;

(b) Descriptive name, model and serial number of the amusement ride; and

(c) Route, including specific sites and dates on which the amusement ride will be operated in the state. If the route is incomplete or modified, the department shall be notified prior to operation on the adjusted route.

Note: See Appendix for a reprint of the amusement ride registration form. Forms SBD–5292 and SBD–7620 for amusement ride registration may be obtained by contacting:
Division of Safety and Buildings
Bureau of Safety Services
P.O. Box 7969
Madison, Wisconsin 53707
608/266–2780

(3) ADDITIONAL INFORMATION. (a) Additional registration information shall be provided if requested by the department.

(b) Maintenance, operating and safety manuals shall be made available to the department by the owner, provided the manuals are available from the manufacturer.

(c) The results of any required nondestructive testing shall be submitted to the department.

(4) MODIFIED AMUSEMENT RIDES. Amusement rides modified since the last registration shall not be operated until the department has been provided with information to determine the proper maintenance and class of the rides, and the owner or operator has obtained a new registration certificate.

(5) AMUSEMENT RIDE REGISTRATION REFUSAL. Amusement rides shall not be registered by the department for any of the following reasons:

(a) Unabated written safety–related orders issued by the department;

(b) Outstanding registration and inspection fees;

(c) Modifications, repairs or maintenance that are not in accordance with recognized safe practice; or

(d) Failure to provide nondestructive testing information when the testing is required by recognized safe practice.

(6) POSTING OF CERTIFICATE. The registration certificate shall be posted on the amusement ride so that the certificate is visible to the public.

(7) REGISTRATION PROCESSING TIME. (a) The department shall review the registration application and grant a registration or issue a denial within 15 business days of receiving the required information and fees.

(b) If the department requests information or fees in addition to those originally submitted, the 15–day processing time shall commence upon receipt of the requested items.

(c) The department reserves the right to negotiate an extension of time on registration applications when the applicant is in arrears on payment of fees or compliance with safety orders issued on amusement rides under the ownership or control of the applicant.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92; correction in (1) made under s. 13.93 (2m) (b) 7., Stats., Register, January, 1994, No. 457**; am. (2) (b), (c), r. (2) (d), Register, October, 1996, No. 490, eff. 11–1–96**.

Comm 34.05 Examination of plans. **(1)** GENERAL. Plans and specifications for all custom–built, site–specific amusement rides not used in a portable mode shall be submitted to the department for examination and approval before construction commences.

(2) PLANS AND SPECIFICATIONS. At least 3 sets of plans, which are clear, legible and permanent copies, and one copy of specifications shall be submitted for examination and approval before commencing construction. The plans and specifications shall contain the following information:

(a) *General.* All plans shall contain the name of the owner and the address of the amusement ride. The name and seal of the Wisconsin registered architect, Wisconsin professional engineer or the name of the person who prepared the plans shall appear on the title sheet;

(b) *Plot plan.* The plot plan shall indicate the location of the amusement ride with respect to property lines or adjoining streets, alleys, electrical transmission lines or other hazard which may interfere with safe operation, and any other buildings and amusement rides on the same lot or property;

(c) *Floor plans or layouts.* Floor plans or layouts shall be provided for each floor of the ride. The size and location of all rooms, doors, windows, structural features, exit passageways, exit lights, and other pertinent information shall be indicated. Schematic exit plans shall be provided for large buildings and amusement rides indicating normal paths of egress;

(d) *Elevations.* The elevations shall contain information on the exterior appearance of the amusement ride;

(e) *Sections and details.* Section views and detail drawings shall include information to clarify the design; and

(f) *Specifications.* The specifications shall be properly identified with the drawings and describe the quality of the materials and the workmanship.

(3) DATA REQUIRED. All plans submitted for approval shall be accompanied by data and information sufficient for the department to determine if the design of the amusement ride meets the requirements of this chapter. The following information shall be submitted:

(a) *Structural data.* Sample structural calculations, including assumed bearing value of soil, live loads and itemized dead loads, and unit stresses for structural materials; and

(b) *Additional data.* When requested, additional data pertaining to design, construction, materials and equipment shall be submitted to the department for approval.

(4) APPLICATION FOR APPROVAL. (a) *Form.* A plans approval application form shall be included with the plans submitted to the department for examination and approval.

Note: Application form SB–118 is available from the Safety and Buildings Division, P. O. Box 7969, Madison, Wisconsin 53707.

(b) *Conditional approval.* If the department determines that the plans and the specifications substantially conform to the provisions of this chapter, a conditional written approval shall be granted. All conditions not in compliance with this chapter, which are identified in the conditional approval, shall be corrected before or during construction of the amusement ride. Issuance of a conditional approval by the department does not constitute assumption by the department of any responsibility for the design or construction of the amusement ride.

(c) *Denial of approval.* If the department determines that the plans or the application do not substantially conform to the provi-

sions of this chapter, the application for conditional approval shall be denied in writing.

Note: A letter will be sent to the designer and the owner of record with a statement relating to the examination of the plans and citing the conditions of approval or denial. The plans will be dated and stamped "conditionally approved" or "not approved", whichever applies. The department will retain one copy of the plans for all projects. The remaining plans will be returned to the person designated on the plans approval application.

(5) PLAN REVIEW PROCESSING TIME. The department shall review plans, calculations and related information and grant an approval or issue a denial within 15 business days of receiving the requested information and fees. If the department requests information or fees in addition to those originally submitted, the 15–day processing time shall commence upon receipt of the requested items.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.06 Evidence of plan approval. The engineer, designer, manufacturer or owner shall keep at the site one set of plans bearing the stamp of conditional approval and a copy of the specifications. The plans shall be open to inspection by an authorized representative of the department. Plan approval by the department shall expire one year after the date indicated on the approved plans if construction has not commenced within that year.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.07 Revocation of approval. The department may revoke any approval or registration issued under the provisions of this chapter, for any false statements or misrepresentation of facts on which the approval or registration was based.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.08 Department inspections. (1) Inspections of amusement rides for which plans must be submitted under s. Comm 34.05 shall be conducted by the department or its authorized representative to ascertain whether the construction or installations conform to the conditionally approved plans, the conditional approval letter, and the provisions of this chapter.

(2) Every amusement ride and attraction shall be subjected to an inspection conducted by the department or its authorized representative.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.09 Fees. Fees for the registration of amusement rides, plan examination and approvals, inspections, petitions for variance and miscellaneous administrative functions shall be submitted as specified in ch. Comm 2. Fees shall be submitted at the time the application for registration or approval is submitted. No registration or determination will be made until the fees are received.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92; correction made under s. 13.93 (2m) (b) 7., Stats., Register, January, 1994, No. 457.

Comm 34.10 Appeals. (1) APPEAL OF LOCAL ORDER. Any person affected by any local order, as defined in s. 101.01 (1) (f), Stats., which may be in conflict with a rule of this chapter may petition the department for a hearing on the grounds that the local order is unreasonable and in conflict with the rule.

Note: Section 101.01 (1) (f), Stats., defines "local order" as any ordinance, order, rule or determination of any common council, board of alders, board of trustees or the village board, of any village or city, or the board of health of any municipality, or an order or direction of any official of such municipality, upon any matter over which the department has jurisdiction.

(2) APPEAL OF ADMINISTRATIVE RULE. Pursuant to ch. 227, Stats., any municipality, corporation or any 5 or more persons having an interest in an administrative rule may appeal to the department requesting the adoption, amendment or repeal of the rule.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92; correction in (1) made under s. 13.93 (2m) (b) 7., Stats., Register, January, 1994, No. 457.

Comm 34.11 Petition for variance. (1) PROCEDURE. The department shall consider and may grant a variance to any requirement in this chapter upon receipt of a fee and a completed petition for variance form from the owner provided an equivalency is established in the petition for variance which meets the intent of the rule being petitioned. The department may impose specific conditions in a petition for variance to promote the protection of the health, safety or welfare of the employes or the public. Violation of any condition under which the petition is granted shall constitute a violation of this chapter.

Note: See Appendix for an example of the petition for variance form (SBD–8).

Note: Section 101.02 (6), Stats., and ch. ILHR 3 outline the procedure for submitting petitions to the department and the department procedures for hearing petitions.

(2) PETITION PROCESSING TIME. Except for priority petitions, the department shall review and make a determination on a petition for variance within 30 business days of receipt of all calculations, documents and fees required to complete the review. The department shall process priority petitions within 10 business days.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.12 Penalties. Penalties for violation of any provision of this chapter shall be assessed in accordance with s. 101.02, Stats.

Note: Section 101.02 (13) (a), Stats., indicates penalties will be assessed against any employer, employe, owner or other person who fails or refuses to perform any duty lawfully enjoined, within the time prescribed by the department, for which no penalty has been specifically provided, or who fails, neglects or refuses to comply with any lawful order made by the department, or any judgment or decree made by any court in connection with ss. 101.01 to 101.25, Stats. For each such violation, failure or refusal, such employe, owner or other person must forfeit and pay into the state treasury a sum not less than $10 nor more than $100 for each violation.

Note: Section 101.02 (12), Stats., indicates that every day during which any person, persons, corporation or any officer, agent or employe thereof, fails to observe and comply with an order of the department will constitute a separate and distinct violation of such order.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Subchapter IV— Tests and Record Keeping

Comm 34.15 Periodic inspections and operational tests. (1) GENERAL. The owner shall arrange for all amusement rides to be subjected to periodic inspections and operational tests as specified in this section. Such inspections and tests shall be documented by written records and the records shall be kept as specified in s. Comm 34.18.

(2) INSPECTION AT ASSEMBLY. A visual inspection for defects of the amusement ride shall be made at assembly of the ride. Inspection of all fastening devices shall be made to assure that fasteners recommended by the manufacturer have been properly installed.

(3) DAILY INSPECTION AND OPERATIONAL TESTS. Amusement rides shall be inspected and their operation tested each day before use by frequenters. The inspection and operational test shall include the operation of all control devices, speed–limiting devices, brakes and other equipment provided for safety.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.16 Nondestructive tests. (1) SCOPE AND NATURE OF TESTS. A nondestructive test, such as but not limited to magnetic particle, x–ray, dye penetrant or ultrasonic, shall be performed on the ride in accordance with recognized safe practice.

Note: Manufacturers and other recognized authorities are encouraged to submit to the department a list of parts that require testing, the appropriate methods of testing and the time between tests.

(2) TEST PERIOD. (a) *Classes 1 and 2.* When required, nondestructive tests of all class 1 and class 2 amusement rides shall be performed every 3 years or 3,000 hours of operation, whichever comes first, or at testing intervals recommended by the manufacturer. The time interval shall be based upon the date of the previous test report.

(b) *Class 3 and modified.* An engineering analysis acceptable to the department shall be submitted before a class 3 ride or modified ride may be operated. If an engineering analysis cannot be obtained, then nondestructive tests of load–bearing parts and welds and load testing results shall be submitted. After the ride is

accepted under these requirements, the ride shall be classified as a class 1 or 2 ride.

(3) RECORD OF TESTS. The nondestructive test shall be performed by an individual who has achieved a rank of at least level II technician or by a professional engineer. The test method and results shall be documented by the testing authority. Test documentation shall be maintained and made available to the department as specified in s. Comm 34.18.

Note: A level II NDT technician is an individual capable of conducting the examination and having sufficient training and experience to evaluate the results. For further explanatory information, see the American Society for Nondestructive Testing recommended practice SNT–TC–1A for nondestructive testing personnel qualification and certification.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.17 Load testing. (1) GENERAL. If required under s. Comm 34.16, a class 3 ride or modified ride shall be load tested prior to initial operation. Immediately following the load test, all load–bearing parts and welds shall be subjected to nondestructive tests. The load test shall be performed as specified in sub. (2), and documented as specified in sub. (3).

(2) BALANCED LOAD TEST. (a) Except as provided in par. (b), the capability of the amusement ride to operate through a normal cycle with all passenger spaces loaded to $1^3/_4$ times the rated passenger weight shall be demonstrated through testing. The test weights shall have approximately the same center of gravity as the expected passenger.

(b) The capability of amusement rides which cannot operate with 13/4 times rated load shall be demonstrated through verified engineering analysis.

Note: A method of estimating passenger load is presented in the Appendix.

Note: Individuals conducting balanced load tests should exercise extreme caution and care in planning and conducting such tests in order to prevent accidental injury of viewers and bystanders.

(3) DOCUMENTATION. Class 3 and modified amusement rides shall not be opened to the public until documentation of successful completion of tests as specified in sub. (2) and s. Comm 34.16 have been accepted by the department.

(4) LOAD TEST PROCESSING TIME. The department will review load test documents and grant an approval or issue a denial to open the amusement ride to the public within 15 business days of receiving the required information and fees. When the department finds it necessary to request and receive information or fees in addition to that originally submitted, the 15–day processing time shall commence upon receipt of the requested items.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.18 Record keeping. (1) OWNER RESPONSIBILITY. Records related to amusement ride safety shall be kept and retained by the amusement ride owner and shall be made available to the department upon request.

(2) REQUIRED RECORDS. Records shall be kept of the following:

(a) Inspections at time of assembly as specified in s. Comm 34.15 (2);

(b) Daily inspections and operational tests as specified in s. Comm 34.15 (3);

(c) Nondestructive tests as specified in s. Comm 34.16;

(d) Load tests as specified in s. Comm 34.17; and

(e) The hours of operation since the last nondestructive test.

Note: The hours of operation should be recorded after each use to maintain a current running total from the last nondestructive test.

(3) ACCURACY OF RECORDS. An authorized person shall sign the records to attest to their accuracy.

(4) RETENTION OF RECORDS. (a) Records for at least the 30 previous days of operation as specified in sub. (2) (a) and (b) and the most recent nondestructive tests as specified in s. Comm 34.16 shall be kept with the amusement ride.

(b) All records shall be kept at least 7 years.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Subchapter V— Design and Construction

Comm 34.19 Design and construction. Amusement rides and attractions shall be so designed and constructed that the maximum loads do not stress any part beyond recognized safe practice.

Note: ASTM F1159 may be used as a guide in the design and manufacture of amusement rides.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.20 Emergency brakes and anti–rollback devices. (1) EMERGENCY BRAKES. (a) If cars or other components of an amusement ride may collide upon failure of normal controls, emergency brakes to prevent such collisions shall be provided.

(b) A braking mechanism shall be provided to bring the amusement ride to a controlled stop in the case of uncontrolled motion of the ride.

(2) ANTI–ROLLBACK DEVICES. On amusement rides which make use of inclines where there is danger of collision if the propelling mechanism fails, automatic anti–rollback devices shall be installed to prevent backward movement of the passenger–carrying devices in case of failure of the propelling mechanism.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.21 Speed–limiting devices. An amusement ride capable of exceeding its safe operating speed shall be provided with a speed–limiting device.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.22 Passenger–carrying devices. (1) GENERAL. All passenger–carrying devices shall be designed, assembled, operated and maintained in accordance with recognized safe practices.

(2) PROTECTION FROM LACERATIONS, ABRASIONS AND PUNCTURES. Interior and exterior parts of all passenger–carrying devices with which a passenger may come into contact shall be free of abrasives and splinters, sharp edges and corners, protruding studs, bolts, screws and other hazardous projections.

(3) PROTECTION FROM IMPACT INJURIES. Padding or other means to minimize injury due to passenger impact resulting from the action of the amusement ride shall be provided in accordance with recognized safe practice.

(4) LOADING AND UNLOADING. (a) Securely attached grab bars, steps and similar devices that facilitate safe entrance and exit shall be provided in accordance with recognized safe practice.

(b) 1. Except as provided in subd. 2., all passenger–carrying devices shall be stabilized by positive locks while passengers are loading and unloading.

2. Manual stabilization of the passenger–carrying device shall be relied upon only when recommended by the manufacturer.

(c) Entrances and exits shall be oriented to direct passengers to safe locations.

Note: For example, where a stirrup allows mounting on only one side of a merry–go–round figure, it should be located toward the center of the platform.

(5) RESTRAINT AND SUPPORT. (a) Securely attached restraining and support devices, such as but not limited to seat belts, lap bars, footrests and headrests, shall be provided in accordance with recognized safe practice.

(b) Seat belts, lap bars and similar means of restraint shall have connections or latches which cannot be readily or inadvertently released by the passenger.

(c) Chair swings shall be provided with crotch straps, or equivalent means of restraint for the passengers shall be provided in accordance with recognized safe practice.

(d) Restraining devices shall be replaced or repaired when worn or damaged to impair their function. Replacements for

restraining devices shall be of equal or greater dimension, strength and padding.

(e) The passenger–carrying devices of amusement rides, such as but not limited to dark rides and miniature train cars, shall be provided with means to prevent passengers from standing if the distance from the floor of the device to an overhead object, such as a doorway, is less than 6 feet 8 inches.

(6) MINIMUM HEIGHT. If passenger–carrying devices of amusement rides require passengers to be a minimum height, this minimum height shall be posted at the ride entrance.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.23 Foundations. (1) GENERAL. Amusement rides, attractions and structures shall be supported and restrained to maintain stability during operation and in emergencies.

(2) PERMANENT FOUNDATION. (a) Permanent foundations for amusement rides, attractions and structures shall comply with ch. ILHR 53.

(b) The foundations shall support the amusement ride, attractions and structure in accordance with recognized safe practice.

(c) Anchorage, restraint and vibration isolation devices shall be provided in accordance with recognized safe practice to prevent horizontal displacement, such as creeping or walking, during normal operation and emergency stops.

(3) TEMPORARY FOUNDATIONS. (a) Blocks and shims used as temporary foundations shall be of sound material capable of withstanding the loads applied during normal operation and in emergencies. Hollow concrete blocks shall not be used. Blocking in contact with supporting surfaces shall be of proper size to prevent settling.

(b) 1. Except as provided in subd. 2., the height of a system of blocks above any level shall not exceed the width of the base of that level, as illustrated in Figure 34.23.

2. The department may approve a system of blocks not higher than twice the width of its base provided the stability of the amusement ride is not adversely affected and the amusement ride does not impart a horizontal load to the system of blocking.

Note: This exception typically applies only to a small portion of the blocks which support a rigid structure (e.g., bumper–car enclosure), but not to thrill rides, rides with flexible structures, or tall structures or rides, such as slides and ferris wheels.

(c) Each piece of material used in a system of blocks shall be level and oriented so its height does not exceed the width of its base.

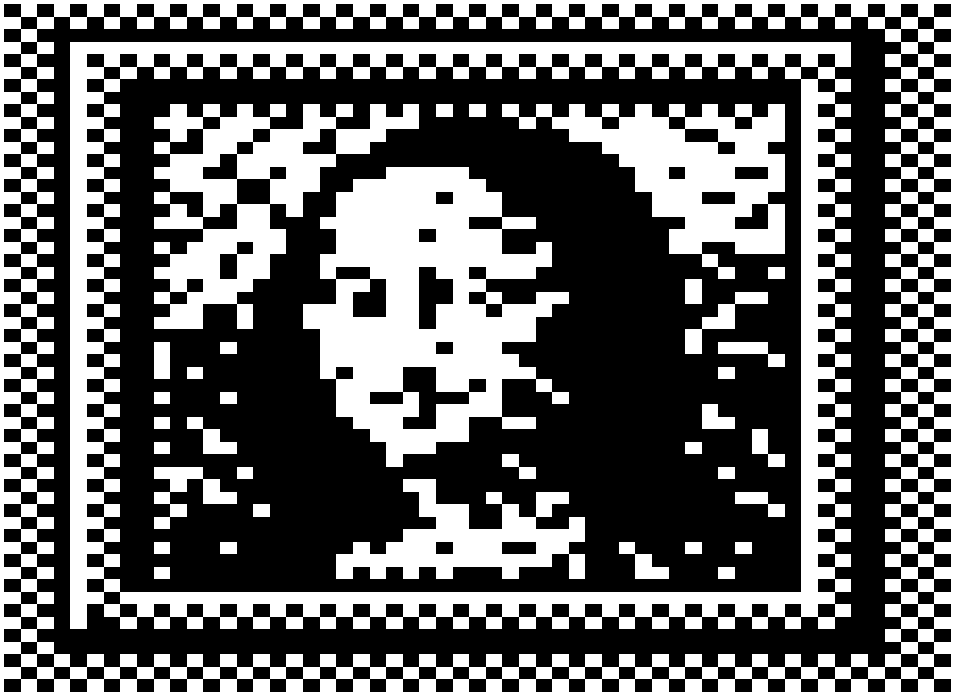

Figure 34.23
SYSTEMS OF BLOCKS

(d) All blocks shall be aligned, the angles between blocks used in a crib shall be approximately equal and the load shall be distributed to prevent tipping.

(e) Shims shall be limited to the minimum number required for leveling.

(f) Blocking shall be secured in accordance with recognized safe practice.

(4) RESTRAINT. Amusement rides, attractions and structures shall be staked, bolted, guyed, wind braced or otherwise restrained in accordance with recognized safe practice to prevent horizontal movement, such as rotating off blocking during an emergency stop or tipping over.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.24 Access, egress and passageways. (1) HAZARDS. Access to, egress from and passage through amusement rides, attractions and structures shall be free of hazards.

(2) DESIGN LOADS. All stairways, ramps, platforms and passageways shall be designed and maintained to safely support a superimposed load of at least 100 pounds per square foot.

(3) GUARDRAILS. (a) 1. Guardrails shall be provided at all open sides of platforms and passageways which are more than 24 inches above the ground or adjacent level.

2. Guardrails shall be provided between passenger–carrying devices and persons waiting on the platform or entranceway of a class 2 or 3 ride.

Note: This rule is intended to keep frequenters from standing on the platform of himalaya–type rides while the ride is in motion.

(b) 1. Except as provided in subd. 2., guardrails shall be at least 42 inches high.

2. If a guardrail is less than 42 inches high, the department may grant an exception if an equivalent degree of safety is provided.

(c) The top member of the guardrail shall be rigid and smooth and capable of withstanding a minimum load of 200 pounds applied downward or horizontally.

Note: Ropes, chains and similar devices may not be used as guardrails. See s. Comm 34.34 (2) (b).

(d) Guardrails shall be designed and constructed with a rigid intermediate barrier, or equivalent, capable of withstanding a minimum load of 100 pounds applied downward or horizontally.

Note: These are minimum standards for protecting average size adults. Guardrails should be constructed to discourage small children from climbing or swinging on, or passing through them.

(4) SURFACES FOR WALKING. (a) All stairways, ramps, platforms and passageways shall be well–drained and kept free of debris, obstructions, projections, tripping hazards and other hazards.

(b) All stair treads, ramps and platforms shall have an abrasive or other type of slip–resistant surface.

Note: A coefficient of friction of 0.5 or greater is considered to be slip–resistant.

(c) Tripping hazards which cannot be avoided due to the design of the device shall be provided with handrails, contrasting colors, illumination or signs.

Note: The low rail of a bumper–car enclosure, electrical distribution boxes or guy wires are examples of these types of tripping hazards.

(d) Gaps between adjacent sections of fixed surfaces for walking shall not exceed one inch in width.

(e) Gaps between a fixed and a movable surface for walking or between 2 movable surfaces for walking shall not exceed 3 inches. The gaps shall be minimized by extending one surface under or over the other provided the extensions do not adversely affect the operation of the amusement ride or attraction or create a greater tripping hazard.

(5) OVERHEAD CLEARANCE. (a) Except as provided in par. (b), overhead clearance shall be not less than 6 feet 8 inches.

Note: This rule is intended to apply to all areas of amusement rides and attractions where the frequenters walk or stand or are capable of standing during operation of the amusement ride or attraction.

(b) The department may accept lesser headroom clearances when the low overhead is part of the amusement ride or attraction; however, protection against head injuries shall be provided.

(6) STAIRS. (a) Tread width and riser height shall be of any combination that results in a stair angle between 30º and 40º to the horizontal. The riser height shall be at least 6 inches but not greater than 8 inches.

Note: The following table presents typical tread–riser combinations which satisfy this rule.

Angle to Horizontal	Rise (in inches)	Tread Run (in inches)
30° 35′	$6\frac{1}{2}$	11
32° 08	$6\frac{3}{4}$	$10\frac{3}{4}$
33° 41′	7	$10\frac{1}{2}$
35° 16′	$7\frac{1}{2}$	$10\frac{1}{4}$
36° 52′	$7\frac{1}{2}$	10
38° 29′	$7\frac{3}{4}$	$9\frac{3}{4}$
40° 00′	8	$9\frac{1}{2}$

(b) 1. Except as provided in subd. 2., the difference in width between treads and the difference in height between risers shall not exceed $\frac{3}{8}$–inch in any one flight of stairs.

2. To accommodate ground slopes, the riser distance from ground level to the lowest tread may be less than the rise of the other steps in the stairway.

(c) Stair treads shall be level in both directions except that a slight slope to improve drainage is acceptable.

(d) 1. Graspable handrails shall be provided on both sides of all flights of stairs that have 3 or more risers.

2. The handrails shall be located between 30 and 34 inches above the nose of the stair tread.

3. The handrail shall be rigid, smooth and capable of withstanding a minimum load of 200 pounds applied downward or horizontally.

Note: Ropes, chains and similar devices may not be used as handrails. See s. Comm 34.34 (2) (b).

4. Handrails shall be designed and constructed with a rigid intermediate barrier, or equivalent, capable of withstanding a minimum load of 100 pounds applied downward or horizontally.

Note: These are minimum standards for protecting average size adults. Handrails should be designed and constructed to discourage small children from climbing or swinging on, or passing through them.

(7) RAMPS. (a) Handrails shall be provided on both sides of all ramps with a slope of more than 1:12. The handrails shall be located between 30 and 34 inches above the ramp surface.

(b) 1. Except as provided in subd. 2., ramps with a slope of 1:4 shall not exceed 24 inches in width.

2. If the amusement ride or attraction has a ramp with a slope of 1:4 and a width greater than 24 inches, the department may grant an exception if an equivalent degree of safety is provided.

(c) 1. Except as provided in subd. 2., ramps shall not have a slope greater than 1:4.

2. If the amusement ride or attraction has a ramp slope steeper than 1:4, the department may grant an exception if an equivalent degree of safety is provided.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.25 Guarding. (1) GENERAL. All hazardous parts, such as but not limited to pinch points, shear points and in–going nips, of amusement rides and attractions shall be enclosed, barricaded or otherwise arranged to effectively prevent injury in accordance with recognized safe practice.

(2) GUARD REMOVAL. Guards removed for any purpose shall be replaced before normal operation is resumed.

(3) HAIR AND CLOTHING. Hair guards or cover guards shall be provided to prevent hair or clothing from being caught in operating equipment of ferris–type wheels.

(4) WHEELS AND LEVERS. Wheels and levers used by frequenters in the control of the action of the amusement ride or attraction shall be designed and maintained to prevent pinches, strains, abrasions and body actions that could result in injuries. Wheels and levers shall be padded. Wheels shall have a solid center in lieu of spokes.

(5) HOT SURFACES. Surfaces having a temperature in excess of 110ºF shall be guarded or located to prevent bodily contact.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.26 Special controls. (1) WHEN REQUIRED. When the operator of an amusement ride cannot clearly see all loading and unloading areas, special devices shall be provided or special procedures shall be followed.

(2) SPECIAL DEVICE. (a) Class 1 amusement rides that have loading or unloading areas which cannot be clearly seen by the operator shall be equipped with a bell or similar audible warning device. The warning device shall be sounded prior to each operation.

Note: An example of this type of ride is a merry–go–round.

(b) Class 2 and 3 amusement rides that have loading or unloading areas which cannot be clearly seen by the operator shall be equipped with mirrors or other devices which provide the operator with full visibility of all such areas, or shall be operated only when an authorized attendant is stationed so that all loading and unloading areas are visible to the attendant.

Note: Examples of this type of ride are himalaya–type rides and flying bobs.

(3) SPECIAL PROCEDURES. When an attendant is required, communication with the operator shall be made when it is safe to start the amusement ride or attraction. A control interlock, such as a kill switch, shall be provided for the attendant to stop the amusement ride or attraction in case of an emergency.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.27 Identification. (1) GENERAL. Unique identification of each amusement ride and attraction and each pas-

senger–carrying device, and operational information to facilitate the department's inspection, shall be provided to the department as required under this section.

(2) RIDE AND ATTRACTION IDENTIFICATION. (a) Information required in this section shall be clear, legible and permanent, such as die–stamped on the frame or included on a permanent plate securely attached to the amusement ride or attraction.

(b) Amusement rides and attractions shall be identified by their original name, model number and serial number. In the absence of such information, the owners shall provide unique identification of their own choice sufficient to properly identify the amusement ride or attraction.

(c) The maximum number of passengers and speed of operation, as specified by the manufacturer, shall be provided. When the manufacturer's specification is not known, the owner shall provide the values from an analysis or other means approved by the department. The department may accept capacity and speed proven by 7 years of acceptable field service of the amusement ride or attraction or similar amusement rides or attractions.

(d) When available, the manufacturer's name and address shall be provided.

(3) PASSENGER–CARRYING DEVICE IDENTIFICATION. Each passenger–carrying device on an amusement ride or attraction shall be identified by a permanent number or manufacturer's decal, at least one inch in height and located in a conspicuous place. Permanent ink markers are not acceptable.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.28 Design and construction of tents. The design and construction of tents shall comply with the requirements specified in ch. ILHR 62, subch. III.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.285 Chair lifts and sky rides. (1) SAFETY BAR OR BELT. Each carrier of a lift system used in conjunction with an amusement ride or attraction shall be equipped with a safety bar or belt that will not open under forward pressure.

(2) DESIGN, CONSTRUCTION AND OPERATION. Chairlifts, sky rides and gondola systems shall be designed, constructed and operated as specified in ch. ILHR 33 for the actual use condition including operating the system at full load condition while traveling in both directions.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Subchapter VI— Erection, Operation and Maintenance

Comm 34.29 Location. (1) STABILITY. Amusement rides, attractions and structures shall not be located or erected where water, unstable soil or similar conditions could cause movement or tip–over.

(2) ELECTRIC POWER LINES. Amusement rides, attractions and structures, and the machinery used to erect them shall be located to provide at least 10 feet of clearance from any uninsulated overhead electric power line energized to more than 50 volts, but less than or equal to 50,000 volts. For lines energized to more than 50,000 volts, the minimum clearance shall be increased 0.4 inch for each 1,000 volts over 50,000.

Note: See ch. Comm 16 for additional information.

(3) DISTANCE BETWEEN AMUSEMENT RIDES AND OTHER OBJECTS. (a) The minimum distance between amusement rides shall be such that the closest points on the passenger–carrying devices on adjacent amusement rides are at least 6 feet apart when both are in the position that brings them closest to each other.

(b) The minimum distance between amusement rides and fixed objects or fences shall be at least 4 feet.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.30 Assembly and disassembly. The assembly and disassembly of an amusement ride, attraction or structure shall be done by or under the supervision of an authorized person. Unauthorized persons shall not be permitted in the work area.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.31 Control of operation. (1) AUTHORIZED OPERATORS. (a) Operation of amusement rides, other than passenger–operated or passenger–controlled rides, shall be by authorized persons at least 18 years of age.

Note: See s. Ind 70.06 (1) for additional information.

(b) 1. Except as provided in subd. 2., amusement ride operators shall be in the immediate vicinity of the operating controls. They shall keep the controls under their direct supervision at all times during normal operation and shall watch to prevent dangerous actions by the passengers and to detect apparent mechanical failure.

2. Electrically–powered, coin–operated class 1 amusement rides having a maximum capacity of 6 passengers may be operated without an authorized operator.

(c) Amusement rides designed to carry children weighing 75 pounds or less shall be provided with a minimum of one operator per 2 amusement rides during the operating cycle of the amusement ride provided the following conditions are satisfied:

1. The number of passengers on both amusement rides does not exceed 25% of the total capacity of both amusement rides; and

2. The maximum distance between the controls of the 2 amusement rides does not exceed 15 feet.

(d) When the number of passengers of both amusement rides specified in par. (c) exceeds 25% of the total capacity of both amusement rides, one operator may supervise 2 or more amusement rides provided that only one ride per operator is operating at any one time.

(e) All control devices shall be guarded against accidental operation.

(f) A disconnect, capable of being locked out, shall be provided at the operator's station to render amusement rides inoperable during inspection, maintenance and repair.

(2) PASSENGER–CONTROLLED AMUSEMENT RIDES. (a) Passenger–operated or passenger–controlled amusement rides shall have the controls located where they are readily available for use whenever the amusement ride is in operation.

(b) Clear verbal or written instructions, or both, for controlling the amusement ride shall be given to all passengers.

(3) ACCIDENTAL OR MISCHIEVOUS OPERATION. (a) A means to minimize accidental or mischievous operation of amusement rides shall be provided.

(b) Unattended amusement ride controls shall be arranged to prevent accidental or mischievous operation.

(4) AUTOMATIC RESTART PROHIBITED. All amusement rides and attractions constructed after March 1, 1986, shall be equipped and maintained with devices to prevent automatic restart after power failure, including, but not limited to, magnetic starters, magnetic switches and pneumatic clutches.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.32 Electrical. (1) GENERAL. (a) The installation of electric and communication conductors and equipment in conjunction with amusement rides and attractions shall comply with the provisions of ch. Comm 16.

Note: The National Fire Protection Association Standard 70—National Electrical Code (NEC) is adopted by reference in ch. Comm 16.

(b) Live parts of electric equipment operating at 50 volts or more shall be guarded against accidental contact by enclosure or by locating the equipment as follows:

1. In a room or enclosure that is accessible only to authorized persons; or

2. Elevated 8 feet or more above the ground, floor or other level accessible to frequenters.

(c) All wiring located within 8 feet of the ground, floor or other level accessible to frequenters shall consist of conductors in conduit, type–SO power cables or the equivalent.

(d) Any equipment or wiring known to be defective so as to endanger life or property shall be promptly repaired, permanently disconnected or isolated until repairs can be made.

(e) Cables and conductors entering boxes or fittings shall be protected from abrasion. Openings through which cables or conductors enter shall be restricted to that size necessary for the cable or conductor size.

(f) The voltage of exposed dark ride tracks or electric train tracks shall not exceed 50 volts.

(2) OUTDOOR EQUIPMENT AND WIRING. (a) Open overhead conductors shall be installed with a minimum vertical clearance of 18 feet over spaces where vehicles may travel and 12 feet over spaces accessible to pedestrians only.

(b) In locations where vehicles and frequenters regularly travel, cables shall be protected with mats, planks or other approved devices.

Note: See s. Comm 34.29 (2) for additional information.

(3) WIRING IN TENTS. A vertical clearance of at least 8 feet shall be maintained between open conductors and the floor or other levels in a tent accessible to frequenters.

(4) GROUNDING. Noncurrent–carrying metal parts of equipment, raceways, and other enclosures shall be grounded by an equipment grounding conductor contained within the same raceway, cable, or cord or otherwise run with the circuit conductors.

Note: See NEC 250 for additional information.

(5) OVERCURRENT PROTECTION OF CONDUCTORS AND MOTORS. (a) Conductors shall be protected in accordance with their ampacities as specified in NEC 240.

(b) Motors shall be protected as specified in NEC 430.

(6) MASTER SWITCH. Each electrically operated amusement ride shall be provided with a disconnect switch or circuit breaker located within reach of the operator to permit disconnecting or shutting off the electrical power to the amusement ride.

(7) SPLICES. The repair of cables or conductors, No. 14 or larger, is permitted if the completed splice retains the insulation, other sheath properties and usage characteristics of the cable or conductor being spliced.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.33 Lighting of exits and passageways. Access to and exits from amusement rides, attractions and structures shall, while in operation or occupied, be provided with illumination by natural or artificial means of not less than 5 footcandles measured at all walking surface levels.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.34 Public protection. (1) GENERAL. Amusement rides and attractions shall be fenced, barricaded or otherwise arranged in accordance with recognized safe practice so that frequenters are effectively prevented from entering hazardous areas.

(2) LOADING AND UNLOADING. (a) Loading and unloading areas which are an integral part of the amusement rides and attractions shall be separated from moving parts by barriers or guardrails.

(b) A flexible barrier, such as a rope or chain, may be used to prevent access to the passenger–carrying devices provided the barrier is no longer than necessary and is controlled by an authorized attendant.

(3) SURFACES NOT INTENDED FOR WALKING. Ride centers with moving sweeps shall be guarded by a standard guardrail or a center cover designed and maintained to safely support a minimum load of 200 pounds.

(4) FLUORESCENT LIGHT TUBES. Fluorescent light tubes on moving parts of amusement rides shall be sleeved or secured, or both, to prevent breakage and contact with frequenters.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.35 Fire protection. (1) FIRE EXTINGUISHERS. Approved fire extinguishers having a minimum 10–B:C rating shall be provided at each amusement ride powered by an internal combustion engine.

(2) SMOKE DETECTORS. Smoke detectors shall be provided in all dark rides, funhouses and similar structures.

(3) EMERGENCY LIGHTING. Emergency lighting shall be provided to assure safe egress from all rides operated in enclosed areas.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.36 Flammable and combustible liquids and gases. Storage, dispensing and use of flammable and combustible liquids and liquefied petroleum gases shall comply with requirements of chs. Comm 10 and Comm 11.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.37 Cleanliness. (1) REFUSE CONTAINERS. Refuse containers shall be provided in and around all amusement rides, attractions and structures. Accumulations of trash or refuse shall be removed within 24 hours.

(2) SANITARY CONDITIONS. All parts of amusement rides, attractions and structures used by frequenters shall be maintained in a clean and sanitary condition.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.38 Maintenance, repair and modification. (1) GENERAL. (a) Amusement rides, attractions and structures shall be maintained, repaired and modified in accordance with recognized safe practice.

(b) Improperly maintained, repaired or modified amusement rides shall not be allowed to operate until tests as specified in ss. Comm 34.16 and 34.17 are conducted and the results accepted by the department.

(2) CORRECTION OF DEFECTS. (a) Defective, improper, worn or missing parts shall be replaced or repaired.

(b) Maintenance, repair and replacement parts shall be of a quality equal to or better than the original parts.

(c) All work shall be performed by a competent, qualified mechanic capable of understanding the function of the parts and the proper installation.

(d) Ungraded bolts, nails, fasteners and wire shall be used only for their intended purposes.

(e) Rotted, split and otherwise structurally unsound material shall be replaced.

(f) Wire rope shall be serviceable and free of sharp ends. Wire ropes shall be replaced under any of the following conditions:

1. The number of broken wires in the length of one lay exceed the values specified in Table 34.38;

TABLE 34.38

Rope Type	Maximum Allowable Number of Broken Wires
6 x 7	4
6 x 19	6
6 x 37	10

2. More than one valley break occurs in one rope lay;

3. More than $^1/_3$ of the original diameter of the outside wires is lost due to abrasion, scuffing or peening;

4. There is evidence of deterioration due to corrosion;

5. Burning, kinking, knotting, crushing or other damage which changes the structure of the rope occurs; or

6. Reduction in rope diameter occurs at any point on the rope to less than 94% of the original nominal diameter.

(g) Wire ropes shall be terminated using wire rope clips or other approved devices. Wire rope clips shall be installed as illustrated in Figure 34.38–1 or in an equivalent manner.

(h) All required safety pins and wedges shall be installed and they shall be secured with "R" keys, lynch pins, diaper pins or other devices in accordance with recognized safe practice.

Wire Rope Clip Requirements for U–Bolt Clips

Rope Diameter Inches	Minimum Clips Required	Minimum Required Clip Spacing Inches
1/8	2	3
3/16	2	3
1/4	2	3–1/4
5/16	2	3–1/4
3/8	2	4
7/16	3	4–1/2
1/2	3	5
9/16	3	5
5/8	3	5–3/4
3/4	4	6–3/4
7/8	4	8
1	4	8–3/4
1–1/8	5	—

Wire Rope Clip Requirements for Double Saddle Clips

Clip Size Inches	Minimum No. of Clips	Amount of Rope to Turn Back in Inches	Torque in Ft. Lbs.
3/16	2	4	30
1/4	2	4	30
5/16	2	5	30
3/8	2	5–1/4	45
7/16	2	6–1/2	65
1/2	3	11	65
9/16	3	12–3/4	130
5/8	3	13–1/2	130
3/4	3	16	225
7/8	4	26	225
1	5	37	225
1–1/8	5	41	360
1–1/4	6	55	360
1–3/8	6	62	500
1–12	7	78	500

Figure 34.38–1
WIRE ROPE CLIPS

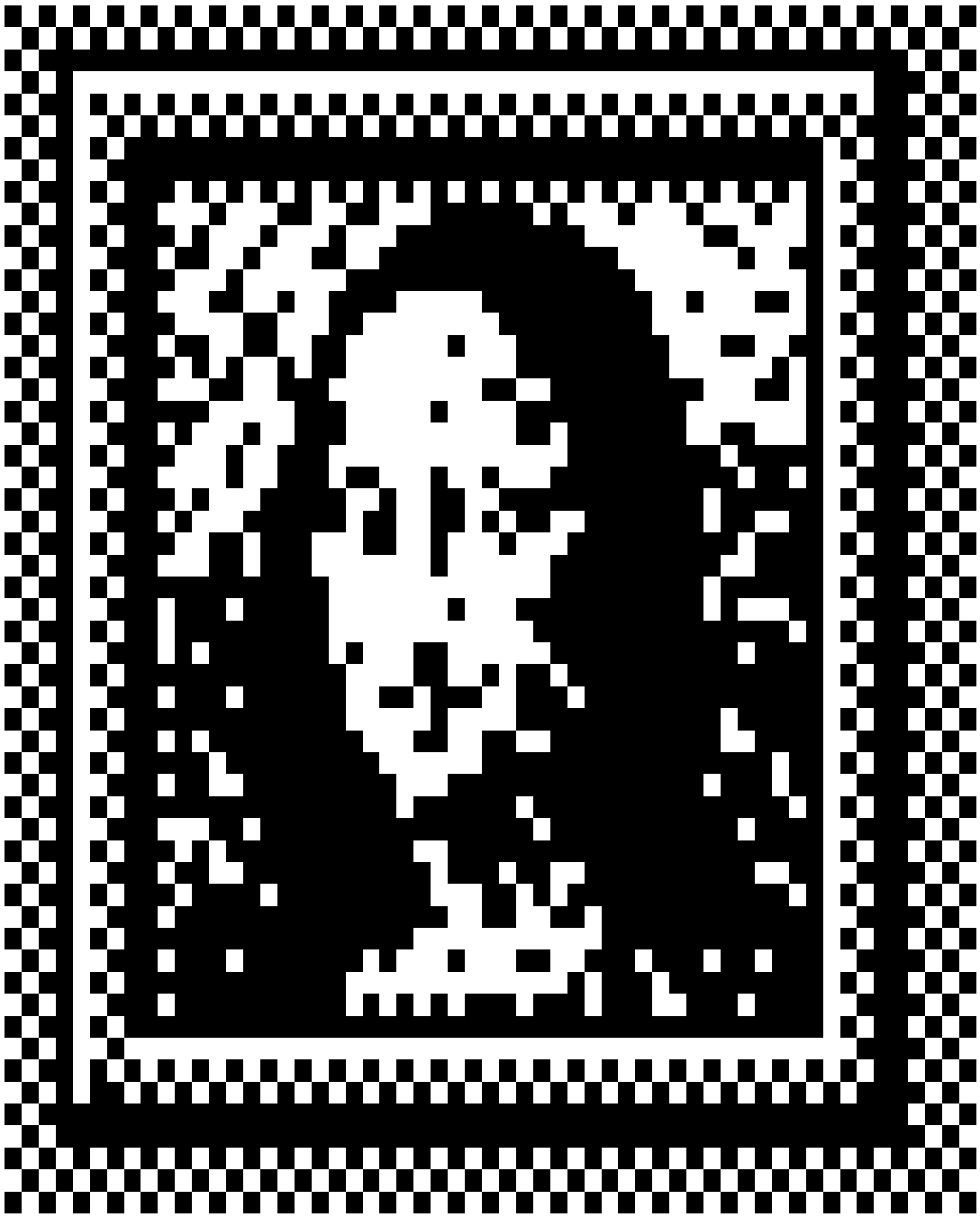

Figure 34.38–2
SAFETY CABLES

(i) Safety cables, or their equivalent, shall be provided in accordance with recognized safe practice to prevent injury resulting from the failure of hangers, door hinges and similar parts. Safety cables shall be secured in a manner to maintain their design strength. The clipping of wire rope safety cables shall be as illustrated in Figure 34.38–2 or in an equivalent manner.

(j) Terminating ends of hydraulic and pneumatic lines shall be provided with restraints to prevent whipping in accordance with recognized safe practice.

(3) MODIFICATION. Modifications required by the manufacturer to improve amusement ride and attraction safety shall be made.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.39 Welding. Welding of structural members and other critical parts of amusement rides and attractions shall comply with the requirements of s. ILHR 53.53.

Note: See Appendix for reprint of s. ILHR 53.53
History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.40 Air compressors and equipment. Air compressors, air compressor tanks and related equipment shall be constructed, tested, maintained and inspected as specified in chs. ILHR 41 and 42.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.41 Accident reporting. Injuries to frequenters caused by amusement rides or attractions that require more

than first aid treatment shall be reported by the owner to the department on form SBD–211 within 2 business days of the injury. A copy of the owner's report to the insurance carrier may be submitted in place of form SBD–211 if the report includes suggestions for prevention of similar accidents. Fatalities shall be reported within 24 hours of occurrence.

Note: See Appendix for a reprint of Form SBD–211—Amusement Ride Accident Report.

Note: The department can be contacted at 608/266–2780 during normal business hours. The State Division of Emergency Government can be contacted at 608/266–3232 during nonbusiness hours.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.42 Wind and storm hazards. An amusement ride which is exposed to wind or storms shall not be operated under dangerous weather conditions except to release or discharge occupants.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Comm 34.43 Responsibility of sponsors. Any person, group or business contracting or leasing for the installation and use of amusement rides or attractions shall carry a condition in a contract or agreement that the amusement ride or attraction owner meets the conditions of this chapter prior to the opening for use by frequenters.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Subchapter VII— Go–Karts, Dune Buggies and All–Terrain Vehicles

Comm 34.45 Go–karts, dune buggies and all–terrain vehicles. (1) APPLICABILITY. The provisions of this section shall apply to go–karts, dune buggies, all–terrain vehicles and similar rider–controlled vehicles which carry or convey passengers along, around or over a fixed or restricted route or course or within a defined area for use as an amusement ride. These provisions shall apply in addition to all other applicable requirements in this chapter.

(2) VEHICLE REQUIREMENTS. (a) All vehicles shall be equipped with passenger padding to minimize the risk of injury to the driver, such as steering wheel pad, headrest pad and steering wheel support post pad.

(b) All vehicles shall be guarded to prevent interlocking of wheels during operation, unless vehicle passing is not allowed.

(c) All vehicles equipped with seat belts shall be equipped with rollover protection in accordance with recognized safe practice.

(d) The maximum speed for a vehicle used by drivers under 52 inches in height shall be 8 mph. The speed of every vehicle shall be set at a limit not to exceed the maximum speed for which the track is designed and in accordance with recognized safe practice.

(e) Vehicles shall be equipped with a guarding system in compliance with recognized safe practice that covers or encloses all moving parts of the drive mechanism, except the wheels.

(f) Thermal protection shall be provided for the exhaust system.

(g) Vehicle fuel tanks shall be mounted or guarded in such a manner that provides protection to the driver during operation and if an accident should occur.

(h) The brake and speed controls shall be readily identified as to function and shall return automatically to a nonoperational position when released.

(i) The seat, back rest and leg area of every go–kart shall be so designed as to retain the driver on the go–kart in the event of a collision at the front, rear or sides of the go–kart.

(j) All vehicles shall be provided with impact absorbing bumpers or energy absorption body parts.

(3) TRACK AND COURSE REQUIREMENTS. (a) The surface of the track or course used by go–karts shall be smooth and of a solid and binding material, such as concrete or asphalt.

(b) The minimum width for go–kart tracks where vehicles travel more than 8 mph shall be 3 vehicle widths throughout the entire course or track.

(c) 1. A barrier system shall be installed around the inner and outer edges of the track or course used by go–karts, and it shall extend the entire length of the track or course. Openings in the barrier system for the entrance or exit of vehicles shall be protected in the direction of travel. The system shall consist of a guard rail, rubber tires, a runoff strip level with the track surface, or an embankment of friable earth or gravel or a combination thereof.

2. If rubber tires are used for a barrier system, the tires shall be free of the rims or wheels. The tires shall be installed to provide an effective barrier without allowing the go–karts to rise over them or penetrate underneath them.

3. If a metal, wood or fiberglass rail is used for a barrier system, the rail surface shall be kept free of sharp or protruding edges or seams, and it shall be maintained so that there is no loose or unsecured area.

4. A barrier system shall be installed to designate and protect the pit area or passenger loading area.

(d) A fence or railing system at least 42 inches high shall be installed at maintenance buildings, driveways, pit areas, and fuel storage pumping areas to keep frequenters from entering these track areas without the permission of, or direction by, the track personnel.

(e) No intersecting track or course configuration shall be permitted.

(f) Any pole, post or solid obstruction that may be accidentally struck shall be protected by a resilient, energy–absorbing system.

(g) Fire extinguishers with a minimum 10–B:C rating shall be conspicuously located within 50 feet of the pit area and fueling point.

(4) OPERATION REQUIREMENTS. (a) The attendants shall be able to clearly view the entire course.

(b) The refueling of vehicles shall not take place in any area where frequenters are present. All fuel storage and fueling operations shall be in accordance with ch. Comm 10.

(c) During nighttime operation, track lighting with a minimum lighting level of 5 footcandles at the track surface shall be provided.

(d) A means shall be provided to safely alert the drivers of the vehicles to a caution situation or to stop the vehicles in case of an emergency.

(e) Smoking shall not be permitted while operating a vehicle or in the pit area.

(5) SIGNS. (a) A conspicuous sign shall be posted at the ticket window or track entrance indicating at least the following information:

1. Minimum height of 52 inches for a driver of a standard go–kart.

2. To start and stop only at the attendant's signal.

3. To stay in the vehicle while on the track.

4. Loose clothing and hair longer than shoulder length must be secured.

5. To obey verbal instructions of the attendant.

(b) A conspicuous sign shall be posted at the boarding or starting area indicating at least the following information:

1. To keep hands and feet inside the vehicle.

2. To obey the attendant's signals.

3. Bumping, stopping or U–turns on the track are not allowed.

4. To stay on the track surface.

5. To stay in the vehicle in the parking area until released by the attendant.

6. No smoking in the pit area or while operating a vehicle.

(c) A conspicuous sign shall be posted at the unloading area indicating that the driver is to remain seated until released by the attendant.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Subchapter VIII—Waterslides

Comm 34.50 Waterslides. (1) GENERAL. The provisions of this section shall apply to all waterslides where water is pumped to the top of a flume and allowed to flow down the flume to a plunge pool. These provisions shall apply in addition to all other applicable requirements in this chapter.

Note: See chs. HSS 171 and 172 for further requirements for water recreation attractions.

(2) DESIGN. (a) All waterslides shall be designed and constructed in accordance with recognized safe practice.

(b) Waterslides shall be so designed that parts with external surfaces that may come into contact with a person using the waterslide are assembled, arranged and finished so that they are smooth and continuous and will not cut, pinch, puncture or cause an abrasion to any person.

(c) Waterslide channels shall be designed so as to keep each person using the waterslide safely inside the channel.

(d) All curves, turns and tunnels on the path of a flume shall be designed and constructed so as not to present a hazard to anyone using the slide.

(3) OPERATION. (a) At least one attendant at the top and one attendant at the bottom shall be provided at all waterslide operations.

(b) A means of 2–way communication between the attendants shall be established.

Note: See ch. HSS 172 for additional requirements relating to attendants and signs for waterslide operations.

History: Cr. Register, February, 1992, No. 434, eff. 3–1–92.

Subchapter IX—Bungee Jumping

Comm 34.55 Scope and application. (1) SCOPE. This subchapter applies to the site, equipment, personnel, operating procedures and emergency provisions for bungee jumping. This subchapter applies in addition to all other applicable requirements in this chapter.

(2) PROHIBITED JUMPING. Bungee jumping from cranes, bridges or hot air balloons is prohibited. Stunt jumping, sandbagging, tandem jumping and catapulting are also prohibited.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.56 Definitions. In this subchapter:

(1) "Air bag" means a device which cradles the body and which uses an air release breather system to dissipate the energy due to a fall, thereby allowing the person to land without an abrupt stop or bounce.

(2) "Binding" means the material used to hold the bungee cord threads in place.

(3) "Bungee cord" means the elastic rope to which the jumper is attached and which lengthens and shortens to produce the bouncing action.

(4) "Bungee jumping" means a procedure where a person free falls from a height and the descent is limited by attachment to a bungee cord.

(5) "Catapulting" means a procedure where the jumper is held on the ground while the bungee cord is stretched, and when the jumper is released, he or she is propelled upwards.

Note: Catapulting is also referred to as launching or reverse jumping.

(6) "Dynamic load" means the load placed on the rigging and attachments by the initial free fall of the jumper and the bouncing movements of the jumper.

(7) "Equipment" means power or manually operated devices used to raise, lower and hold loads.

(8) "Failure" means breakage, separation of components, or the point where the ultimate strength is exceeded.

(9) "Hoist" or "hoisting" means all functions such as lowering, lifting, swinging or suspending a platform.

(10) "Jump harness" means an assembly which is worn by a jumper and attached to a bungee cord.

(11) "Jump height" means the distance from the jump platform to the bottom of the jump zone.

(12) "Jump master" means a person who has responsibility for the bungee jumping operation and who prepares the jumper for the actual jump.

(13) "Jump operator" means a person who assists the jump master to prepare a jumper for jumping and operates the lowering system.

(14) "Jump zone" means the space bounded by the maximum designed movements of the jumper or any part of the jumper.

(15) "Jumper" means the person who falls or jumps from a height when attached to a bungee cord.

(16) "Landing area" means the surface area of a net, air bag or water where the jumper lands.

(17) "Lowering system" means any manual or mechanical equipment capable of lowering a jumper to the designated landing area.

(18) "Maximum intended load" means the total load of all persons, tools, materials and other loads reasonably anticipated to be applied to a platform or platform component at any one time.

(19) "Platform" means the area attached to a structure from which the jumper falls or jumps.

(20) "Rigging system" means the bungee cord plus any webbing or rope connected to the bungee cord.

(21) "Recovery area" means an area next to the landing area, where the jumper may recover from the jump before returning to the public area.

(22) "Safety harness" means an approved assembly to be worn by an operator and which is designed to be attached to a lanyard and prevent the jump site operator from falling.

(23) "Safety space" means a space extending beyond the jump zone as a safety factor.

(24) "Sandbagging" means the practice of a jumper holding onto any object, including another person, during the initial descent after jumping off of a platform, for the purpose of exerting more force on the bungee cord in order to stretch it further, and then releasing the object at the bottom of the jump causing the jumper to rebound with more force than could be created by the jumper's weight alone.

(25) "Site operating manual" means the document containing the procedures and forms for the operation of all bungee jumping activities and equipment.

(26) "Structure" means the apparatus supporting the platform.

(27) "Tandem jumping" means the practice of 2 people harnessed together while jumping simultaneously from the same jump platform.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.57 Site and operating approval. Plans, specifications and site operating manuals for all bungee jumping operations shall be submitted to the department before construction commences as specified in s. Comm 34.05.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.58 Safety space. (1) SIDE SAFETY SPACE. Each bungee jump site shall maintain a side safety space of 30 feet in all directions.

(2) JUMPS OVER WATER. Where jumps occur over water, the water shall be at least 9 feet deep. The vertical safety space shall be at least 60 inches above the water. However, if the depth of the water is greater than 9 feet, no vertical safety space is needed.

(3) JUMPS OVER LAND. Where jumps occur over land, an air bag or net shall be used. The vertical safety space shall be at least 5 feet or 5 percent of the jump height above the air bag or net, whichever is greater.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.59 Platforms. (1) PLATFORM LOADING. (a) The safe working load of the platform shall be determined by the maximum weight on the platform at any one time, with a safety factor of at least 5 times the rated load capacity of the platform.

(b) The platform shall not be loaded in excess of its rated load capacity.

(c) The number of persons occupying the platform shall not exceed the number required for the jump, plus one observer.

(d) Materials and tools shall be secured to prevent displacement, and they shall be evenly distributed within the confines of the platform when the platform is suspended.

(2) ATTACHMENT DEVICES. When the platform is not an integral part of the structure, the attachment devices and the part of the structure to which they are attached shall have a safety factor of at least 5 times the rated load capacity of the platform.

(3) SURFACE. The platform shall have a non–slip surface.

(4) ANCHOR POINTS. The platform shall have anchor points for safety harnesses, designed and placed to best suit the movements of anyone on the platform.

(5) FENCE. The platform shall be equipped with a permanent fence at least 42 inches high. The fence shall be enclosed at least from the toeboard to mid–rail with either solid construction or expanded metal having openings no greater than 1/2 inch.

(6) GATE. There shall be a gate across the point at which the jumper leaves the platform, and it shall remain closed when a jumper is not present. The gate shall be equipped with a restraining device to prevent accidental opening.

(7) GRAB RAIL. A grab rail shall be installed inside the entire perimeter of the platform.

(8) HEADROOM. Headroom shall be provided to allow persons to stand upright in the platform.

(9) IDENTIFICATION PLATE. The platform shall be conspicuously posted with a plate or other permanent marking to indicate the weight of the platform and its rated load capacity.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.60 Structures and towers. (1) ROPE. In a human–powered retrieval system or in a friction lowering system, an 11 mm or larger static or dynamic rock climbing rope shall be used.

(2) LOCKING MECHANISM. In a human–powered retrieval system, an approved locking mechanism, such as an ascender or jumar, shall be used to stop and hold the jumper in one place once the applied force on the retrieval rope is removed.

(3) CONSTANT PRESSURE SWITCH. In a friction lowering system, there shall be a constant pressure switch or locking mechanism that will stop the lowering action of the system if the person in charge of lowering the jumper becomes unable to perform the lowering duties safely.

(4) CORD ATTACHMENT. Bungee cords shall be attached at all times to the structure when the cords are in the connection area.

(5) LOWERING SYSTEM. The system for lowering the jumper to the landing pad shall be operated by either the jump operator or jump master.

(6) ALTERNATIVE LOWERING SYSTEM. There shall be an alternative method of jumper recovery if the main lowering system fails.

(7) ANNUAL INSPECTION. A thorough, annual inspection of the hoisting machinery and cables shall be made by an independent third party. The operator shall provide a record of the dates and results of inspections for each hoisting machine and piece of equipment.

(8) ENGINE EXHAUST. Whenever internal combustion engine powered equipment exhausts in enclosed spaces, tests shall be made and recorded to see that persons are not exposed to unsafe concentrations of toxic gases or oxygen deficient atmospheres.

(9) WINDOWS. All windows in cabs shall be of safety glass or its equivalent which introduces no visible distortion that interferes with the safe operation of the hoisting machine.

(10) FUEL TANK FILLER PIPE. The fuel tank filler pipe shall be located in such a position, or protected in such manner, as to not allow spill or overflow to run onto the engine, exhaust or electrical equipment of any machine being fueled.

(11) MODIFICATIONS. No modifications or additions which affect the capacity or safe operation of the equipment may be made by the employer without the manufacturer's written approval. If such modifications or changes are made, the capacity, operation and maintenance instruction plates, tags or decals shall be changed accordingly. In no case shall the original safety factor of the equipment be reduced.

(12) JIB STOPS. All jibs shall have positive stops to prevent their movement of more than 5 degrees above the straight line of the jib and boom.

(13) TOWER OPERATORS. Portable tower operators shall have a minimum of 80 documented hours operating the machine used for bungee jumping. Operators shall be familiar with inspection criteria and nomenclature, including wire rope inspection methods.

Note: Industry certification as an operating engineer is recommended.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.61 Hoisting of platforms. (1) APPLICATION. This section applies to movable platforms that are raised and lowered from the structure.

(2) OPERATIONAL CRITERIA. (a) Hoisting of the platform shall be performed in a slow, controlled, cautious manner with no sudden movements of the platform.

(b) Load and boom hoist drum brakes, swing brakes and locking devices such as pawls or dogs shall be engaged when the occupied platform is in a stationary working position.

(c) Portable towers shall be uniformly level within one percent of level grade and located on firm footing. Portable towers shall be equipped with outriggers. The outriggers shall be fully deployed following manufacturer's specifications when hoisting.

(d) The total weight of the loaded platform and related rigging shall not exceed 50 percent of the rated load capacity for the radius and configuration of the portable tower.

(e) The use of a machine having a boom in which lowering is controlled by a brake without aid from other devices which slow the lowering speed is prohibited.

Note: This type of prohibited boom is commonly called a live boom.

(3) INSTRUMENTS AND COMPONENTS. (a) Portable towers with variable angle booms shall be equipped with a boom angle indicator, readily visible to the operator.

(b) A positive–acting device, such as an anti–two–blocking device, shall be used to prevent contact between the load block or overhaul ball and the boom tip, or a system shall be used to deactivate the hoisting action before damage occurs in the event of a two–blocking situation.

(c) The load–line hoist drum shall have a controlled–load lowering system or device on the power train, other than the load hoist brake, which regulates the lowering rate of speed of the hoist mechanism. Free fall is prohibited.

(4) DESIGN CRITERIA. (a) The hoisting mechanism shall be equipped with a dual cable suspension system. The platform and

dual suspension system shall be designed by a qualified engineer or a qualified person competent in structural design.

(b) The dual cable suspension system shall be designed to minimize tipping of the platform due to movement of persons occupying the platform.

(5) RIGGING. (a) If a wire rope bridle is used to connect the platform to the load line, each bridle leg shall be connected to a master link or shackle to ensure that the load is evenly divided among the bridle legs.

(b) Hooks on overhaul ball assemblies, lower load blocks or other attachment assemblies shall be of a type that can be closed and locked, eliminating the hook throat opening, except that an alloy anchor type shackle with a bolt, nut and retaining pin may be used.

(c) Wire rope, shackles, rings, master links and other rigging hardware shall be capable of supporting at least 5 times the maximum intended load applied or transmitted to that component. Where rotation resistant rope is used, the rope and hardware shall be capable of supporting without failure at least 10 times the maximum intended load.

(d) All eyes in the wire rope slings shall be fabricated with thimbles.

(e) Bridles and associated rigging for attaching the platform to the hoist line shall be used only for that purpose.

(6) TRIAL LIFT, INSPECTION AND PROOF TESTING. (a) A trial lift with the unoccupied platform loaded at least to the anticipated lift-weight shall be made from ground level, or any other location where persons will enter the platform, to each location at which the platform is to be hoisted and positioned. The trial lift shall be performed immediately prior to placing personnel on the platform. The operator shall determine that all systems, controls and safety devices are activated and functioning properly, that no interferences exist, and that all configurations necessary to reach each location will allow the operator to remain under the 50 percent limit of the hoist's rated load capacity. A single trial lift may be performed at one time for all locations that are to be reached from a single set up position.

(b) The trial lift shall be repeated daily, or when the portable tower is moved and set up in a new location or returned to a previously used location.

(c) Persons shall not be hoisted unless:

1. Hoist ropes are free of kinks;
2. Multiple part lines are not twisted around each other; and
3. The primary attachment is centered over the platform.

(d) The hoisting system shall be inspected if the load rope is slack to ensure all ropes are properly seated on drums and in sheaves.

(e) A visual inspection of the portable tower, rigging, platform and the tower base support or ground shall be conducted by a person designated by the jump master immediately after the trial lift to determine whether the testing has exposed any defect or produced any adverse effect upon any component or structure.

(f) Any defects found during inspections which create a safety hazard shall be corrected before hoisting personnel.

(g) Documentation of the trial lift and daily pre−operational lift shall be made available to the department.

(7) JUMP PRACTICES. (a) Persons shall keep all parts of the body inside the platform during raising, lowering and positioning.

(b) Tag lines shall be used unless their use creates an unsafe condition.

(c) The portable tower operator shall remain at the controls at all times when the tower engine is running and the platform is occupied.

History: Cr. Register, January, 1994, No. 457, eff. 2−1−94.

Comm 34.62 Bungee cord requirements. (1) MAXIMUM G−FORCE. The maximum G−force allowable on a jumper using waist and chest harness shall be 4.5 G's. The maximum G−force allowable on a jumper using an ankle harness shall be 3.5 G's.

(2) FACTOR OF SAFETY. The minimum factor of safety for any bungee cord configuration attached to a jumper shall be no less than 5.

Note: A factor of safety of no less than 5 means that the maximum dynamic load possible for a jumper to exert on a bungee cord configuration is no greater than 20 percent of that cord configuration's minimum breaking strength.

(3) BUNGEE CORD DESIGN. The owners of bungee jumping facilities shall use bungee cords that meet the following specifications:

(a) In a single bungee cord system, the binding shall hold the cord threads in the designed positions. The binding shall have the same characteristics as the cord itself. In a multiple bungee cord system, the cord shall be bound together to prevent potential jumper entanglement. The bindings shall not damage or affect the performance of the bungee cords.

(b) All bungee cords shall be designed and tested to perform within the prescribed limits of the maximum G−force and factor of safety specified in subs. (1) and (2).

(c) Conclusive ultimate tensile strength testing shall be performed on a representative amount of all manufactured bungee cords. All tests shall be performed or supervised by an independent certified testing authority or an independent certified engineer. Test results shall be made available to purchasers of the bungee cords and the department upon request. The testing authority shall determine the ultimate tensile strength of each test specimen and use the lowest failure value recorded as the ultimate tensile strength value for the corresponding lot of bungee cords tested. The ultimate tensile strength is reached when the applied load reaches a maximum before failure.

(d) A load versus elongation curve resulting from the test specified in par. (c) shall be used to calculate the maximum G−force and factor of safety of the corresponding lot of bungee cords tested. The test results shall be made available to purchasers or users of the bungee cords and the department upon request.

(e) Owners shall follow the inspection and testing recommendations set forth by the bungee cord manufacturer or distributor. These tests shall be completed utilizing the maximum load the bungee cords are designated for.

(f) Owners shall obtain specifications on the maximum allowable usage of bungee cords expressed in number of jumps.

(4) CORD MATERIAL AND SHEATHING. The bungee cord material and sheathing to be used shall be clearly specified in the site operating manual.

(5) WHEN TO DESTROY CORD. The bungee cord owner shall destroy the bungee cord and its non−metallic connectors when one of the following conditions occur:

(a) Exposure to daylight exceeds 250 hours, unless the bungee cord cover of the sleeve fully protects all of the cord from visible and ultra−violet exposure;

(b) Six months has elapsed from the date of manufacture;

(c) Bungee cord threads exhibit wear, such as bunched threads or uneven tension between threads or thread bands;

(d) The number of broken threads exceeds 5%;

(e) A bungee cord has had contact with solvents, corrosives or abrasives;

(f) Other flaws in a bungee cord are found;

(g) When the dynamic load capacity becomes less than the maximum designed dynamic load;

Note: As the bungee cord stretches over the course of its jump life, the dynamic load required to extend the bungee to 4 times its unloaded length will reduce.

(h) After a bungee cord has been used a maximum of 500 jumps; or

(i) When the bungee cord or its connectors do not comply with the manufacturer's specifications.

(6) CORD RECORDS. Owners of bungee jumping facilities shall have a system for recording the number of jumps on each individual bungee cord in use.

(7) BUNGEE CORD DESTRUCTION. Bungee cords retired from use shall be destroyed by cutting the cord into 5–foot lengths.

(8) BUNGEE CORD END CONNECTIONS. Bungee cord end connections shall have a minimum safety factor of 5 times the maximum dynamic load for that cord configuration. All end connections shall be of a size and shape to allow easy attachment to the jump harness and to the rigging. On multiple bungee cord systems, each cord shall have its own independent end connection.

(9) CORD INSPECTION. Bungee cords shall be examined daily. Before starting the day's operations, the jump master shall visually inspect the entire length and circumference of the bungee cord for signs of wear. The inspection shall be repeated at least 4 times during daily operation and recorded in the site log.

Note: The performance criteria and system requirements contained in this section are for 2 types of bungee cords: Cotton or nylon sheathed cords and synthetic or natural rubber cords. Cotton or nylon sheathed bungee cords, called "preloaded" style cords, are rubber cords originally developed for military use. These cords are made in conformance with military specifications and are often referred to as "Mil. Spec." However, some nonmilitary specification cords currently in use meet the specifications contained in this section and are considered an approved variation. Synthetic or natural rubber bungee cords, called "New Zealand" style cords, are made with continuous loops of strands of natural or synthetic rubber.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.63 Jump harness. (1) GENERAL. A jump harness shall be either a full body harness, a sit harness with shoulder straps, or an ankle harness.

(2) JUMP HARNESSES. (a) All harnesses used in bungee jumping shall be:

1. Full–body–designed either as a full body harness or a waist harness worn in conjunction with a chest harness; or

2. Ankle–designed either as an ankle harness or an ankle strapping that is tied off to secure the jumper to the bungee cord end connection. The ankle harness or strapping shall provide evidence of redundancy. A link to a waist harness or "swami belt" shall be required. A harness shall not cause bruising.

(b) Harnesses shall be available to fit the range of jumper sizes accepted for jumping.

(c) The harness shall have a minimum breaking strength of 4000 pounds, be suitable for the type of jumping conducted and be manufactured by an organization approved to manufacture similar harnesses.

(3) HARNESS INSPECTION. All harnesses shall be inspected by the jump master prior to harnessing a jumper. Harnesses shall be removed from service when they exhibit signs of excessive wear, have been damaged, or when they have met the manufacturer's maximum usage allowance expressed in number of days or in number of jumps. A system shall be developed for recording the number of days or jumps.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.64 Ropes. All ropes for holding or lowering the jumper shall have a minimum breaking strength of at least 6,000 pounds.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.65 Hardware and equipment. (1) GENERAL. All hardware and equipment used for the purpose of bungee jumping shall be approved for that purpose by the original manufacturer.

(2) CARABINERS. Carabiners shall be the screw gate type, manufactured of hardened steel, with a minimum breaking strength of at least 6,000 pounds.

(3) PULLEYS AND SHACKLES. Pulleys and shackles shall be manufactured of hardened steel and shall have a minimum breaking strength of at least 6,000 pounds. All pulleys shall be compatible with the rope size.

(4) WEBBING. Webbing shall be flat or tubular mountaineering webbing or equivalent with a minimum breaking strength of at least 6,000 pounds. If military specification bungee cords are used, all webbing shall have redundant connections.

(5) ANCHORS. (a) There shall be 2 anchors that attach the bungee cord to the structure. Each shall have a minimum breaking strength of at least 8,000 pounds or shall be designed with a factor of safety of 5, whichever is greater. There shall be a carabiner that attaches each anchor to the bungee cord end. The 2 carabiners shall not be connected to each other.

(b) Where wire rope is used, it shall have swaged ends with a thimble eye or be continuous. Other connection systems are acceptable if they meet the strength specifications in par. (a). Wire clips are not acceptable.

(c) All materials used for anchoring systems shall be manufactured by an organization approved to manufacture similar devices.

(d) Daily inspections of the anchors shall be conducted by the jump master, and any equipment showing signs of excessive wear shall be removed from service immediately.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.66 Testing and inspection. (1) GENERAL. All jump rigging, harnesses, lowering system and safety gear shall be regularly inspected and tested as set forth in the operating manual. Inspections, findings and corrective action shall be recorded in the site log.

(2) HARDWARE. Hardware subject to abnormal loadings, impacts against hard surfaces or having surface damage shall be replaced immediately.

(3) ROPES AND WEBBING. All ropes, webbing and bindings shall be inspected visually and by feel for signs of wear, fraying, or damage by corrosive substances in accordance with the site operating manual.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.67 Replacement equipment. (1) AVAILABLE EQUIPMENT. Replacement equipment available at the site shall include bungee cords and binding, all ropes, rigging hardware, ankle strapping for jumpers, jump harnesses, safety harnesses, and life lines and clips.

(2) WHEN TO REPLACE. Items of equipment, rigging or personal protective equipment found to be defective shall be replaced immediately.

(3) CEASE JUMPING. Jumping shall cease immediately when a defective item cannot be replaced.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.68 Identification of rigging, bungee cords and safety equipment. (1) PERMANENT NUMBER. All rigging, bungee cords and safety equipment shall have a permanent identification number.

(2) FORM. The form of identification shall not affect the performance of the material.

(3) VISIBILITY. The identification shall be clearly visible to the operators during daily operations.

(4) RECORDING. The identification shall be recorded in the site operating manual.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.69 Landing and recovery areas. (1) JUMPS OVER LAND. The following requirements apply where the landing area is over land:

(a) A net or air bag shall be used. The net or air bag shall be designed to provide adequate coverage of the jump zone, and its specifications shall be included in the site operating manual. The

net or air bag shall be rated for the maximum free fall height possible from the platform during operation.

(b) The net or air bag shall be in position before jumper preparation commences on the platform.

(c) Air bags shall be equipped with an audible alarm in case of loss of air bag pressure.

(d) Upon completion of a jump, the jumper shall be lowered onto the net, air bag or landing pad.

(e) The landing area shall be free of spectators at all times.

(f) The landing area shall be free of any equipment or staff when a jumper is being prepared on the jump platform and until the bungee cord is at its static extended state.

(g) A place for the jumper to sit and recover shall be provided close to, but outside, the landing area.

(2) JUMPS OVER WATER. The following requirements apply where the landing area is over a body of water:

(a) A landing and recovery vessel shall be positioned to recover jumpers.

(b) The landing vessel shall have a landing pad which is at least 5 feet by 5 feet. The landing pad shall be placed within the vessel.

(c) One person may operate the landing vessel and assist the jumper to land if the vessel is docked or moored. If the vessel is not docked or moored, one person shall pilot the vessel while another person assists the jumper to land.

(d) The vessel shall be equipped with Coast Guard approved life jackets and rescue equipment.

(e) The landing area shall be free of other vessels, floating or submerged objects, the public, and any spectators. When the landing area is in open waters, it shall be marked by the deployment of buoys. A sign of appropriate size which reads "BUNGEE JUMPING—KEEP CLEAR" shall be attached to the 4 sides of the landing vessel.

(3) JUMPS OVER A POOL. The following requirements apply where the landing area is a pool specifically constructed for bungee jumping:

(a) The pool size shall be at least equal to the size of the safety space.

(b) Rescue equipment shall be available and the landing area shall be secured.

(c) Only the operators of the bungee jump shall be within the landing area.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.70 Site requirements. (1) STORAGE. Adequate storage shall be provided to protect equipment from physical, chemical and ultra–violet ray damage. The storage area shall be secured against unauthorized entry.

(2) COMMUNICATIONS. There shall be a public address system in operation during all hours of business. Voice, telephone, radio or other communications shall be maintained between all operations personnel involved with the actual jump.

(3) FENCE. The site shall be enclosed by a fence at least 42 inches in height. The fence shall be designed and constructed to prevent people, animals and objects from entering the site.

(4) STAFF IDENTIFICATION. All staff shall be identified so that they can be readily recognized by the public.

(5) STAFF BRIEFING. Staff shall be briefed for each day's operation, including the assignment of the designated jump master where more than one jump master is on site.

(6) EMERGENCY SERVICES. There shall be a means of communication to local emergency services within 200 feet of the operation.

(7) JUMP CONTROL. Owners of bungee jumping facilities shall allow jumps only under the direct control of a jump master.

(8) JUMPER WEIGHT. The weight of the jumper shall be checked by 2 independent scales at the jump site. Scales shall be calibrated at least 3 times each year, or when in doubt as to accuracy. Adjustments for the weight of each jumper shall be made by the jump master's selection of bungee cord and the length of webbing or rope attached to the bungee cord.

(9) JUMPER INSTRUCTIONS AND RESTRICTIONS. A clearly visible sign shall be posted at the site that lists instructions to jumpers and all medical, age and weight restrictions for jumpers.

(10) JUMPER REGISTRATION. Jumpers shall register with the registration clerk before jumping. Registration information shall include the jumper's name, address, city, county, state, zip code, telephone number, medical factors, age and weight.

(11) JUMPER PREPARATION. The area where the jumper is prepared for jumping shall be separate from the jump zone. Jumper preparation shall include information to the jumper on jumping, landing, lowering, and recovery procedures; completing harness or binding activities; final inspection by jump master; return of the jumper to the public area; and retrieval of the bungee cord to the platform or storage location.

(12) SAFE OPERATION. The jump master shall stop the jumping operation when the wind speed or other conditions affect safe operation of the jump platform or the recovery area.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.71 Safety and loss control management. (1) COORDINATOR. A jump master shall be designated safety, health and loss control coordinator.

(2) KNOWLEDGE OF REGULATIONS. The jump master shall be thoroughly familiar with the bungee jumping regulations in this subchapter.

(3) EMERGENCY PLAN. A comprehensive written emergency plan shall be developed, practiced, maintained and posted at the site entrance.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.72 Staff and duties. (1) MINIMUM AGE. The minimum age for employment at a bungee jumping site shall be 18 years.

(2) JUMP MASTER QUALIFICATIONS. (a) To qualify as a jump master for a bungee jumping site, a person shall have completed a minimum of 25 jumps and 30 hours of training, including 10 hours of site operating manual training, 10 hours of on–the–job experience and 4 hours of procedural review and additional education.

(b) A jump master shall have a knowledge of rescue procedures and ground operator procedures, as well as emergency procedures for an accident or illness, for unruly or hysterical jumpers, and for any failure before or after the bungee jump.

(3) STAFF ROLES. The staff of a bungee jumping operation shall include at least 4 persons, with the following roles:

(a) *Jump master.* The designated jump master shall have control over the operation and is responsible and accountable for the operation of the site. This person shall be in complete control when jumping occurs. A jump master shall be the only person who takes the jumper through the final stages of preparation to the jump takeoff. The jump master shall have a thorough knowledge of the site, equipment, procedures and staff. The jump master shall be responsible for checking selection of the bungee cord and adjusting the rigging at each jump platform. A jump master shall be located at each jump platform.

(b) *Jump operator.* The jump operator shall assist the jump master to prepare the jumper, assist the jumper into the jump harness, attach the jumper to the rigging, and operate the lowering system. The jump operator may carry out landing and recovery duties and assist in controlling the public.

(c) *Landing and recovery operator.* The landing and recovery operator shall assist the jumper to land on the landing pad or air

bag, assist the jumper to the recovery area, and assist in controlling the public.

(d) *Registration clerk.* The registration clerk shall register the jumper, weigh the jumper, control the movement of the jumper to the jump platform, and assist in controlling the public.

(e) *Vessel operator.* The landing vessel operator shall operate the landing or emergency vessel.

(4) STAFF TRAINING. Staff training shall be conducted by, or under the direct supervision of, a jump master.

(5) STAFF SUPERVISION. Staff who are in training shall be directly supervised at all times.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.73 Site operating manual. (1) CONTENTS OF MANUAL. The site operating manual shall describe the system of operation to be used and shall include, but not be limited to, a complete description of the following:

(a) A site plan containing a plan view of the site with all components in place, with fencing and the jump zone defined.

(b) A site plan containing a profile of the jump zone.

(c) All components in the rigging system which shall include a manufacturer's specification or laboratory test certificate of each component.

(d) All operator, jumper and passenger safety equipment.

(e) All rescue equipment.

(f) Jobs of all personnel employed on the site with the minimum qualifications of each person and complete detail of work periods required.

(g) Personnel selection criteria and the process for verifying the qualifications of job applicants.

(h) Rules concerning the health and safety of staff, patrons and the public.

(i) The owner's requirements regarding personnel use of drugs or alcohol and testing procedures which may be required.

(j) The training program of personnel.

(k) Standard operating procedures.

(L) Emergency procedures to be taken in all possible scenarios which may occur.

(m) The rescue training and qualifications required for all staff where the site includes moving water or swift water.

(n) The reporting to authorities of incidents resulting in injury.

(o) The reporting procedures for any incidents which do not result in injury but which were not in accord with normal operating procedures.

(p) Equipment inspection procedures and the logging of those inspections.

(q) Maintenance procedures.

(r) Redundancy criteria and procedures for all equipment.

(s) Purchasing procedures.

(t) The method of identifying or labeling all equipment.

(2) FOLLOWING MANUAL. The site shall follow the procedures described in the manual at all times.

(3) CHANGES IN PROCEDURES. Any requested change in procedures from the site operating manual shall be submitted in writing to the department. Approval shall be obtained from the department prior to implementation.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Comm 34.74 Emergency provisions and procedures. (1) EMERGENCY PLAN. Each site shall have an emergency plan.

(2) FIRST AID KIT. A first aid kit and blankets shall be maintained on site.

(3) FIRST AID CERTIFICATION. All jump masters shall have current first aid and CPR certification and complete an annual refresher course.

(4) LIFE SAVING CERTIFICATION. At sites where the jump or recovery is over water, the jump master and all landing and recovery staff shall be holders of a current life saving certificate and shall have passed the equivalent for in–water rescue of injured persons.

(5) EMERGENCY LIGHTING. Emergency lighting shall be provided at all jump sites that operate one–half hour prior to sunset until one–half hour after sunrise. The emergency lighting system shall illuminate the jump platform, the jump zone and the landing area. The emergency lighting system shall have its own power source.

History: Cr. Register, January, 1994, No. 457, eff. 2–1–94.

Chapter Comm 34

Appendix

AMUSEMENT RIDES AND ATTRACTIONS

The material contained in this Appendix is for clarification purposes only. The notes, illustrations, diagrams and similar material are numbered to correspond to the number of the rule as it appears in the text of the code.

A 34.04 (2) INFORMATION REQUIRED. The following forms (SBD–5292 and SBD–7620) are referred to in s. ILHR 34.04 (2) (d) Note. Copies of these forms are available from the Bureau of Safety Services, Division of Safety and Buildings, P.O. Box 7969, Madison, Wisconsin, 53707, telephone 608/266–2780.

A 34.11 PETITION FOR VARIANCE. The following form (SBD–8) is referred to in s. ILHR 34.11. Copies of this form are available from the Division of Safety and Buildings, P.O. Box 7969, Madison, Wisconsin 53707.

A 34.17 (1) BALANCED LOAD TEST. The anthropometric data presented in reference 1 indicates correlation between hip width and body weight. Assuming that the hip width determines the number of persons that can occupy an amusement ride passenger space, the total weight can be estimated from hip width vs. body weight data if the dimensions of the space are known.

Figure 1 represents a conservative estimate of hip width vs. body weight for the American public. This data should be used to determine the weight to be placed in each passenger space when an amusement ride is load tested in accordance with s. ILHR 34.17.

Example of the use of this data:

Rated capacity of space.....3 adults
Hip space.....46 inches
Hip space per person..... $\frac{46}{3} = 15.33$ inches
Corresponding body weight..... 187 pounds (see Figure 1)

Total load weight $= 3 \times 187 \times 1.75 = 981.75$

Reference 1: "Personnel Guardrails for the Prevention of Occupational Accidents, "Document No. NBSIR 76–1132, Center for Building Technology, Institute of Applied Technology, National Bureau of Standards, Washington, D.C. 20234, July 1976, Final Report.

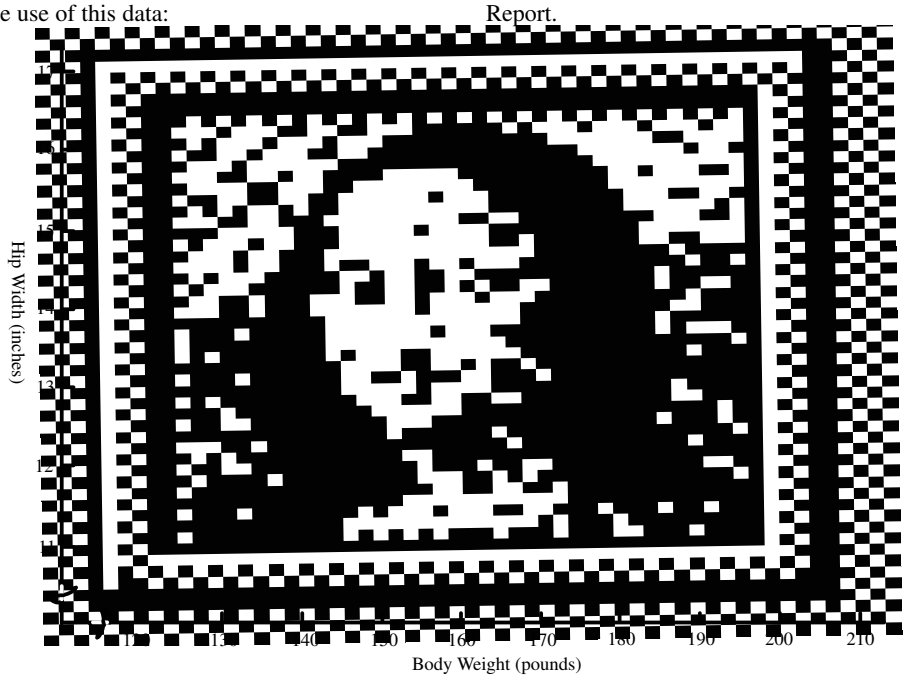

Figure 1

A 34.39 WELDING. The following is a reprint of s. ILHR 53.53 from the Wisconsin Administrative Building and Heating, Ventilating and Air Conditioning Code:

ILHR 53.53 Structural welding of steel. The requirements of this section shall apply to all welds on or between materials within the scope of ss. ILHR 53.50, 53.51 and 53.52.

(1) BASE METALS. Steels to be welded under this code are listed in AWS D 1.1, sections 8.2 and 10.2 or AWS D 1.3, section 1.2.1.

(2) FILLER METALS. Filler metal requirements that are acceptable under this code are listed in AWS D 1.1, section 4.1 or AWS D 1.3, section 5.

(3) WELDING PROCESSES. (a) Manual shielded metal arc, submerged arc, gas metal arc and flux cored arc welding processes conforming with the procedures established in AWS D 1.1, sections 2, 3 or 4 shall be considered as prequalified and are approved for use without performing procedure qualification tests.

(b) Electroslag and electrogas welding processes will not be considered as prequalified. They may be used provided a procedure is developed and provided it conforms to the applicable provisions of AWS D 1.1, sections 2, 3 or 4.

(4) WELDING PROCEDURES. (a) *Procedure specification.* All welding procedures shall be prepared as a written procedure specification. This written procedure specification shall be prepared by the manufacturer, fabricator or contractor and shall be made available to the department or its designated testing agent prior to commencing a weld test.

(b) *Procedure qualification.* All joint welding procedures shall be previously qualified by tests as prescribed in AWS D 1.1, section 5.6, except for the prequalified procedures exempted in sub. (3) (a). The test shall be conducted by the department or its designated testing agent. The test results of a test conducted by a designated testing agent shall be submitted by the agent to the department for approval.

(5) DESIGN OF WELDED CONNECTIONS AND JOINTS. The details of all joints shall comply with the requirements of AWS D 1.1, section 2 and section 10, parts C and D. All joint forms, except those specified in AWS D 1.1, section 2 and section 10, parts C and D, may not be used unless qualified to the satisfaction of the department.

(a) *Stud welding.* Stud welding shall be done by a procedure qualified in accordance with the requirements of AWS D 1.1, section 4, part F.

(6) OPERATOR QUALIFICATIONS. (a) Except as provided in (b), all structural welding work shall be performed by persons registered in accordance with s. Comm 5.34.certified.

(b) A person who holds a valid credential as a certified welder that was issued by the department prior to November 1, 1996, may continue to perform structural welding until the expiration of his or her current certification.

(8) WELD INDICATION. Each structurally significant member shall have its welding identified by a distinguishing mark stamped on the member by the registered welder or welders involved.

(9) CRITERION OF FINAL ACCEPTANCE. All structural welding is subject to examination by approved inspectors and such inspection shall be the final criterion for conformance and acceptability for the intended use.

A 34.41 ACCIDENT REPORTING. The following form (SBD–211) is referred to in s. ILHR 34.41 Note. Copies of this form are available from the Division of Safety and Buildings, Bureau of Safety Services, P.O. Box 7969, Madison, Wisconsin 53707, telephone 608/266–2780.