



Rules of
Department of Agriculture
Division 90—Weights, Measures and Consumer
Protection
Chapter 21—Weighing and Measuring Devices

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**Title 2—DEPARTMENT OF
AGRICULTURE
Division 90—Weights, Measures and
Consumer Protection
Chapter 21—Weighing and
Measuring Devices**

**2 CSR 90-21.010 Registration of Serviceper-
sons and Service Agencies**

*PURPOSE: This rule covers guidelines per-
taining to the registration of servicemen for
commercial weighing devices (formerly listed
as Regulation 8).*

*PUBLISHER'S NOTE: The secretary of state
has determined that the publication of the
entire text of the material which is incorpo-
rated by reference as a portion of this rule
would be unduly cumbersome or expensive.
This material as incorporated by reference in
this rule shall be maintained by the agency at
its headquarters and shall be made available
to the public for inspection and copying at no
more than the actual cost of reproduction.
This note applies only to the reference mate-
rial. The entire text of the rule is printed
here.*

(1) The rule for the Division of Weights,
Measures and Consumer Protection for Vol-
untary Registration of Servicepersons and
Service Agencies for Commercial Weighing
and Measuring Devices shall incorporate by
reference the section of the 2018 edition of
NIST Handbook 130, entitled "Uniform Reg-
ulation for the Voluntary Registration of Ser-
vicepersons and Service Agencies for Com-
mercial Weighing and Measuring Devices".

(2) Registration Fee. There is no registration
fee for Servicepersons and Registered Ser-
vice Agencies.

(3) Placed in Service Report. Within twenty-
four (24) hours after a device is restored to
service or placed in service, the original of
the properly executed Placed in Service
Report, together with any official rejection
tag removed from the device, shall be for-
warded to MDA – Weights, Measures and
Consumer Protection Division, PO Box 630,
Jefferson City, MO 65102-0630 or faxed to
573-751-0281.

(4) Certificate of Registration Exception. The
"Certificate of Registration" will expire
two (2) years from the date of issuance.

(5) *NIST Handbook 130*, 2018 Edition, is
published by the Superintendent of Docu-
ments, U.S. Government Printing Office, and

is available free of charge online at NIST.gov
or a hard copy may be purchased from the
National Conference on Weights and Mea-
sures at NCWM.net.

AUTHORITY: section 413.065, RSMo 2016.
Original rule filed Dec. 30, 1975, effective
Jan. 9, 1976. Amended: Filed Nov. 14, 1977,
effective April 13, 1978. Amended: Filed May
17, 1988, effective Aug. 11, 1988. Emergency
amendment filed July 27, 1995, effective Aug.
5, 1995, expired Dec. 2, 1995. Amended:
Filed July 27, 1995, effective Jan. 30, 1996.
Amended: Filed June 27, 2018, effective Jan.
30, 2019.*

**Original authority: 413.065, RSMo 1983, amended
1993, 1994, 1995, 2002.*

**2 CSR 90-21.020 Sale and Installation of
Scales**

(Rescinded April 11, 1985)

*AUTHORITY: section 413.335, RSMo 1978.
Original rule filed Dec. 30, 1975, effective
Jan. 9, 1976. Amended: Filed Nov. 14, 1977,
effective April 13, 1978. Rescinded: Filed
Jan. 15, 1985, effective April 11, 1985.*

**2 CSR 90-21.025 Intervals to Inspect and
Test Commercial Weighing and Measuring
Devices**

*PURPOSE: This rule sets intervals at which
commercial devices will be inspected and
tested.*

(1) Pursuant to subdivision 7 of section
413.065, RSMo, all commercial devices shall
be sealed by the director annually.

AUTHORITY: section 413.065, RSMo 1994.
Original rule filed Sept. 27, 1995, effective
April 30, 1996.*

**Original authority: 413.065, RSMo 1983, amended 1993,
1994, 1995.*

**2 CSR 90-21.030 Requirements for Pit
Type Scales**

*PURPOSE: This rule covers installation
requirements for pit type scales.*

(1) The minimum pit depth, measured from
the bottom of the weighbridge main beams to
the floor of the pit, shall be twenty-four in-
ches (24") for load cell or two (2) section lever-
type vehicle and axle-load scales, thirty-two

inches (32") for three (3) or more section
lever-type vehicle scales, and forty-eight
inches (48") for scales used for weighing
livestock.

(2) The pit floor shall be of concrete sloped
to a drain or sump, or both, located in close
proximity to the entrance of the pit.

(3) One (1) opening shall be provided in the
scale platform, pit neck covering or pit wall
to provide access to the pit, except that two
(2) openings shall be provided in the platform
for scales with platforms longer than forty
feet (40') for axle-load and vehicle scales.

(4) Openings in the scale platform or pit neck
cover shall be either a circle of not less than
twenty-four inches (24") in diameter or a
square with at least twenty-two inch (22")
sides.

(5) An entrance through a pit wall shall be a
minimum of three feet (3') wide. The top of
the opening shall not be lower than the bot-
tom of the main girders and the bottom of the
opening shall be approximately even with the
floor. The center line of any lever extending
through a pit wall opening shall be at least
twenty-seven inches (27") from one (1) side
of the opening.

(6) Main load bearing piers shall be of con-
crete poured to a depth lower than the local
frost line. They shall be of monolithic con-
struction with the walls or tied to the walls or
floor with reinforcing steel. Steel perimeter
coping shall be installed around the inside
edge of the top of the pit walls. Adequate pro-
visions shall be included in the pit wall to
prevent damage by platform restraint devices.

(7) Approaches to Pit Type Scales.

(A) Vehicle Scales. On the entrance and
exit ends of a vehicles scale there shall be a
straight approach a) the width at least the
width of the platform, b) the length at least
one-half (1/2) the length of the platform, but
not required to be more than forty feet (40')
and c) not less than ten feet (10') of any
approach adjacent to the platform shall be
constructed of concrete or similar durable
material to insure that this portion remains
smooth and level and in the same plane as the
platform. However, grating of sufficient
strength to withstand all loads equal to the
concentrated load capacity of the scale may
be installed in this portion. Any slope in the
remaining portion of the approach shall
ensure ease of vehicle access, ease for testing



purposes, and drainage away from the scale.

(B) Axle-Load Scales. At each end of an axle-load scale there shall be a straight paved approach in the same plane as the platform. The approaches shall be the same width as the platform and of sufficient length to insure the level positioning of vehicles during weight determinations.

(C) Livestock Scales. Approaches shall be of reinforced concrete. On at least one (1) entrance there shall be a ten-foot (10') approach at least as wide as the gate with a minimum gate width of four and one-half feet (4 1/2'), accessible for movement of test weights to the scale platform. This approach may be on an incline from the scale platform, but not such that would hamper the movement of test weights onto the scale platform.

1. Livestock scales installed prior to July 1, 1998, shall be exempt from the requirements of subsection (7)(C) of this rule.

(D) Railroad Track Scales. Approach rails must be installed in accordance with the requirements as outlined in the *AAR Scale Handbook*.

(8) All scale pit walls having traffic adjacent shall be reinforced to withstand traffic pressures.

(9) All scale pits shall have 110-volt alternating current (AC) outlets and permanent lights.

(10) Mechanical indicators shall be mounted on steel or concrete and made integral with the scale pit.

(11) If any provision of these rules is declared invalid, the validity of the remainder of these rules shall not be affected.

AUTHORITY: section 413.065, RSMo Supp. 1997. Original rule filed Dec. 30, 1975, effective Jan. 9, 1976. Amended: Filed Nov. 14, 1977, effective April 13, 1978. Amended: Filed April 22, 1981, effective Sept. 11, 1981. Amended: Filed Nov. 3, 1997, effective May 30, 1998.*

**Original authority: 413.065, RSMo 1983, amended 1993, 1994, 1995.*

2 CSR 90-21.040 Portable or Self-Contained Scale Requirements

PURPOSE: This rule covers the installation of portable or self-contained scales for use in semi-permanent locations for less than one

hundred eighty days.

(1) Portable or self-contained scales may be used commercially for weighing soil, lime, gravel, sand, cement, and other building material when installed in accordance with the original scale manufacturer's recommendations.

(2) Approaches to Portable or Self-Contained Scales.

(A) Approaches shall be at least the width of the platform, at least one-half (1/2) the length of the platform but not required to be more than forty feet (40') and not less than ten feet (10') of any approach adjacent to the platform shall be constructed to insure that this portion remains smooth and level and in the same plane as the platform. Any slope in the remaining portion of the approach shall ensure ease of vehicle access, ease for testing purposes, and drainage away from the scale.

(3) The indicating element shall be in a weatherproof housing and shall not be openly exposed to the elements. All mechanical indicators shall be mounted on a concrete pier or slab.

(4) Tolerances shall be as defined in the current edition of *NIST Handbook 44* for commercial weighing devices. All scales represented as complying with this rule shall meet all of the standards specified and all applicable specifications and performance requirements of the current edition *NIST Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*.

(5) Sides of the scale are not required to be enclosed unless the scale is located in an area where air currents will affect weighments.

(6) Requirements of section 413.175, RSMo must be met prior to the actual installation of devices covered in this rule. Following installation, any device covered in this rule must be calibrated and placed in service by a registered Missouri scale serviceman or officially examined by Missouri Weights and Measures Division before the device can be used in commercial service.

(7) If any provision of these rules is declared invalid, the validity of the remainder of these rules shall not be affected.

AUTHORITY: section 413.065, RSMo Supp. 1997. Original rule filed Dec. 30, 1975,*

effective Jan. 9, 1976. Rescinded: Filed Nov. 14, 1977, effective April 13, 1978. Readopted: Filed April 22, 1981, effective Sept. 11, 1981. Amended: Filed Jan. 15, 1985, effective April 11, 1985. Amended: Filed April 11, 1994, effective Sept. 30, 1994. Amended: Filed Nov. 3, 1997, effective May 30, 1998.

**Original authority: 413.065, RSMo 1983, amended 1993, 1994, 1995.*

2 CSR 90-21.050 Requirements for Pitless Scales

PURPOSE: This rule covers installation requirements for pitless scales.

(1) This rule shall apply to the installation of vehicle, axle-load and livestock scales of pitless full electronic or mechanical and self-contained electronic or mechanical design being installed in one (1) permanent location for more than one hundred eighty (180) days.

(A) A pitless scale may be installed in a pit; however, all pit requirements of 2 CSR 90-21.030 must be met.

(2) All scales represented as complying with this rule shall meet all of the standards specified and all applicable specifications and performance requirements of the current edition of *National Institute of Standards and Technology (NIST) Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*.

(3) Whenever the provisions of this rule call for the use of reinforced concrete, the concrete shall be of grade and reinforced in the manner consistent with the guidelines established by the American Concrete Institute.

(4) A suitable foundation must be provided for the scale to rest on. This foundation should meet the following minimum requirements:

(A) Adequate bearing area to match piers to existing soil bearing capabilities stabilized at the desired grade (elevation) to support at least three thousand (3000) pounds per square foot in pier locations;

(B) The scale foundations installer shall be responsible for determining whether or not soil characteristics meet the requirements of subsections (4)(A) for a particular design, by employing a penetrometer or plate-bearing test using proper American Society of Testing and Materials (ASTM) guidelines. If soil



conditions do not meet those requirements, the installer shall notify the owner; and the owner shall arrange for spread footing design modifications to suit the existing soil conditions;

(C) The scale may be installed above the ground; however, the installation should be such that surface water will drain away from the scale area; and

(D) Access to critical scale parts must be provided to permit proper inspection, servicing and cleaning.

(5) Piers.

(A) Piers shall be of reinforced concrete poured to the depth of the local frost line but not less than three feet (3').

(B) All piers must be interlocked by a solid reinforced concrete slab with a minimum thickness of six inches (6"). This slab may be below the top of the piers to promote access and cleanout; or by reinforced concrete sides with a minimum thickness of twelve inches (12") and the same depth as the piers in which case the horizontal area between the piers will be of concrete with a minimum thickness of three inches (3"), not necessarily tied to the piers or in the same plan, to promote cleanliness.

(C) Piers must support the combined loads applied by the weight of the scale, the weighbridge, plus the maximum anticipated load on the scale and must distribute these loads evenly over the underlying ground so that any settlement of the structure shall be as little as possible and that settlement shall be uniform throughout the structure.

(D) Reinforcing should extend the entire width of the piers and be of a minimum schedule consistent with the American Concrete Guidelines.

(E) Anchor bolts for check stands and load cell stands shall be of the embedded type or thunderstuds if installed in accordance with good engineering practice to assure that those working parts of the scale remain securely anchored during normal and reasonable use of the scale.

(6) On scales with a mechanical indicating element, the element shall be mounted on a firm foundation which is adequate to prevent deflection or vibration.

(7) Approaches to Pit Type Scales.

(A) Vehicle Scales. On the entrance and exit ends of a vehicle scale there shall be a straight approach a) the width at least the width of the platform, b) the length at least one-half (1/2) the length of the platform but

not required to be more than forty feet (40'), and c) not less than ten feet (10') of any approach adjacent to the platform shall be constructed of concrete or similar durable material to ensure that this portion remains smooth and level and in the same plane as the platform. However, grating of sufficient strength to withstand all loads equal to the concentrated load capacity of the scale may be installed in this portion. Any slope in the remaining portion of the approach shall ensure ease of vehicle access, ease for testing purposes, and drainage away from the scale.

(B) Axle-Load Scales. At each end of an axle-load scale there shall be a straight paved approach in the same plane as the platform. The approaches shall be the same width as the platform and of sufficient length to insure the level positioning of vehicles during weight determinations.

(C) Livestock Scales. Approaches shall be of reinforced concrete. On at least one (1) entrance there shall be a ten-foot (10') approach at least as wide as the gate with a minimum gate width of four and one-half feet (4 1/2'), accessible for movement of test weights to the scale platform. This approach may be on an incline from the scale platform, but not such that would hamper the movement of test weights onto the scale platform.

1. Livestock scales installed prior to July 1, 1998, shall be exempt from the requirements of subsection (7)(C) of this rule.

(D) Railroad Track Scales. Approach rails must be installed in accordance with requirements as outlined in the *AAR Scale Handbook*.

(8) The lever fulcrum stands or load cell stands shall be so designed, constructed and installed that under any practical conditions of loading, the resultant force through the bearings or load cell(s) will fall within the middle third of the length and width of the base.

(9) Means shall be provided to restrict motion of the weighbridge or platform, not to exceed one-quarter inch (1/4") in any horizontal direction unless the manufacturer proves this unnecessary for a particular design.

(10) Electronic, hydraulic and mechanical indicating elements, where used, shall be installed in a location and in a manner to assure continuous accurate performance under all ambient conditions.

(11) Load cells employed in vehicle scales shall meet the following minimum standards.

(A) The output characteristics of the load cells shall be such that they will not cause the systems performance to vary beyond allowable tolerances; and

(B) Each individual load cell shall be capable of withstanding loads equal to one hundred fifty percent (150%) of its rated capacity without change in span calibration. Each load cell support structure shall be capable of withstanding loads equal to three hundred percent (300%) of the rated capacity of the cell without physical failure of the structure.

(12) All cabling between load cells, junction boxes and electronic instrumentation shall be shielded and grounded as recommended by the original scale manufacturer. The ground shall be a copper clad rod which, whenever possible, shall be driven to a depth of the water table. Connection between the ground rod and the common ground points of the system shall be made with heavy copper wire of No. 10 gauge or larger. All cables shall be insulated with materials having good nonhygroscopic qualities and stable capacitance between conductors. All cable connections, as well as the cell itself, shall be properly protected against moisture penetration. Load cell cables physically shall be separated from power cables and never shall be run in the same conduit.

(13) The power source for the electronic instrumentation shall be free from harmonics and electrical noise transients.

(A) The power source shall be on a separate circuit back to the distribution transformer with no other loads connected, unless it can be demonstrated that the other live loads will not affect the accuracy of the instrumentation.

(B) One (1) side of the power source should be at ground potential.

(14) Individual requirements of sections (12) and (13) may be waived if the manufacturer or installer demonstrates other means of providing adequate protection against moisture, radio frequency interference (R.F.I.), lighting and power surges.

(15) Pitless scales installed prior to April 11, 1985, shall be exempted from the requirements of this rule.

(16) Requirements of section 413.175, RSMo must be met prior to the actual installation of devices covered in this rule. Following installation, any device covered in this rule must be calibrated and placed in service by a registered Missouri scale serviceman or officially



examined by Missouri Weights and Measures Division before the device can be used in commercial service.

(17) If any provision of these rules is declared invalid, the validity of the remainder of these rules shall not be affected.

AUTHORITY: section 413.065, RSMo Supp. 1997. Original rule filed Jan. 15, 1985, effective April 11, 1985. Amended: Filed April 14, 1994, effective Sept. 30, 1994. Amended: Filed Nov. 3, 1997, effective May 30, 1998.*

**Original authority: 413.065, RSMo 1983, amended 1993, 1994, 1995.*

2 CSR 90-21.060 National Type Evaluation Regulation

PURPOSE: This rule adopts uniform guidelines established by the National Conference on Weights and Measures pertaining to the type evaluation of weighing and measuring devices.

(1) The Division of Weights, Measures and Consumer Protection shall use the guidelines established by the National Conference on Weights and Measures (NCWM) for examining weighing and measuring devices for type evaluation.

(2) This rule shall apply to all classes of devices and/or equipment as covered in the current editions of *NIST Handbooks 44, 105-1-105-3*.

(3) For the purpose of this rule the following definitions shall apply:

(A) National Type Evaluation Program means a program of cooperation between the National Conference on Weights and Measures, National Institute of Standards and Technology, other federal agencies, the state and the private sector for determining uniform conformance of a type with the relevant provisions of *NIST Handbook 44, Specifications, Tolerances, and Other Technical Requirements for Weighing and Measuring Devices*, and *National Conference on Weights and Measures, Publication 14, National Type Evaluation Program, Administrative Procedures, Technical Policy, Checklists, and Test Procedures*;

(B) Type evaluation means the testing, examination, evaluation, or both, of a type by a participating laboratory under the National Type Evaluation Program;

(C) Type means a model(s) of a particular

measurement system, instrument, element or a field standard that positively identifies the design. A specific type may vary in its measurement ranges, size, performance and operating characteristics as specified in the certificate of conformance;

(D) Participating laboratory means any state measurement laboratory that has been certified by the NCWM, in accordance with its program for the certification of capability of state measurement laboratories, to conduct a type evaluation under the National Type Evaluation Program;

(E) Certificate of conformance means a document issued by the NCWM based on testing in participating laboratories and constituting evidence of conformance of a type with the requirements of *NIST Handbooks 44, 105-1, 105-2 or 105-3*; and

(F) Director means the director of the Department of Agriculture.

(4) The director may require any weight or measure or any weighing or measuring instrument or device to be issued a certificate of conformance prior to use for commercial or law enforcement purposes.

(5) The director is authorized to operate a participating laboratory as part of the National Type Evaluation Program and to charge and collect fees for type evaluation services.

AUTHORITY: section 413.065, RSMo 2000. Original rule filed March 29, 1989, effective June 11, 1989. Amended: Filed Dec. 11, 1991, effective April 9, 1992. Amended: Filed April 14, 1994, effective Sept. 30, 1994. Amended: Filed Oct. 24, 2000, effective May 30, 2001. Non-substantive change filed June 27, 2018, published Aug. 31, 2018.*

**Original authority: 413.065, RSMo 1983, amended 1993, 1994, 1995.*