

1301:7-9-06

**Design, construction, installation, modification and major repair
for UST systems.**

(A) Purpose and scope.

For the purpose of prescribing rules pursuant to section 3737.88 of the Revised Code, the fire marshal hereby adopts this rule to establish design, construction, installation, modification and major repair requirements for underground storage tanks containing petroleum or other regulated substances. This rule is adopted by the fire marshal in accordance with Chapter 119. of the Revised Code and shall not be considered a part of the "Ohio Fire Code." The following UST systems are exempted from this rule:

- (1) Wastewater treatment tank systems;
- (2) Any UST systems containing radioactive material that are regulated under the Atomic Energy Act of 1954 (42 U.S.C.A. 2014 and following);
- (3) Any UST system that is part of an emergency generator system at nuclear power generation facilities regulated by the United States nuclear regulatory commission;
- (4) Airport hydrant fuel distribution systems; and
- (5) UST systems with field constructed tanks.

(B) Design, construction, installation, modification and major repair requirements for new UST systems.

To prevent releases due to structural failure, corrosion, or spills and overfills for as long as the UST system is used to store regulated substances, all owners and operators of new UST systems shall comply the following requirements:

- (1) Each tank shall be properly designed and constructed in one of the following manners:
 - (a) The tank is constructed of fiberglass-reinforced plastic in compliance with "Underwriters Laboratories Standard 1316-94; Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products.
 - (b) The tank is constructed of metal in compliance with "Underwriters Laboratories Standard 58-96; Standard for Steel Underground Tanks for Flammable and Combustible Liquids", coated with a suitable dielectric material and cathodically protected using:

- (i) Field-installed cathodic protection systems that are designed by a corrosion expert; or
 - (ii) The tank and cathodic protection system comply with the requirements of one of the following:
 - (a) "Underwriters Laboratories Standard 1746-93; External Corrosion Protection Systems for Steel Underground Storage Tanks";
 - (b) "National Association of Corrosion Engineers Standard RP-0285-02; Corrosion Control of Underground Storage Tank Systems by Cathodic Protection"; or
 - (c) "Steel Tank Institute Specification for STI-P3 System of External Corrosion Protection of Underground Steel Storage Tanks" and related Steel Tank Institute specifications.
 - (c) The tank is constructed of a steel-fiberglass-reinforced-plastic composite in compliance with "Underwriters Laboratories Standard 1746-93; Corrosion Protection Systems for Underground Storage Tanks" or "Steel Tank Institute STI-F894; Specification for External Corrosion Protection of FRP Composite Steel Underground Storage Tanks" and related Steel Tank Institute specifications.
- (2) New piping shall be properly designed and constructed and shall comply with all the following requirements:
- (a) Underground piping that routinely contains regulated substances shall be equipped with secondary containment that consists of either trench liners, jacketing of single-walled pipe, or double-walled pipe. Secondary containment of piping shall:
 - (i) Completely contain regulated substances released from the UST system within the containment system until they are detected and removed; and
 - (ii) Prevent the release of regulated substances into the environment at any time during the operational life of the piping containment.
 - (b) All piping that routinely contains regulated substances and is in contact with the ground shall be properly designed, constructed, and protected from corrosion in one of the following manners:
 - (i) The piping is constructed of fiberglass-reinforced plastic or flexible plastic technology piping in compliance with "Underwriters Laboratories Standard 971-95; Nonmetallic Underground Piping for

Flammable Liquids" and "Underwriters Laboratories Standard 567-03; Pipe Connectors for Petroleum Products and LP Gas".

- (ii) The piping is constructed of metal in compliance with "National Fire Protection Association Standard 30-03; Flammable and Combustible Liquids Code" and "American National Standards Institute B31.3-02; American National Standard Code for Pressure Piping", coated with a suitable dielectric material and cathodically protected using:
 - (a) Field-installed cathodic protection systems that are designed by a corrosion expert; or
 - (b) The piping and cathodic protection systems meet the requirements of "American Petroleum Institute Publication 1632-02; Cathodic Protection of Underground Petroleum Storage Tanks and Piping Systems", "National Association of Corrosion Engineers Standard RP-0169-02; Control of External Corrosion on Underground or Submerged Metallic Piping Systems", or "Steel Tank Institute R892; Recommended Practice for Corrosion Protection of Underground Piping Networks Associated with Liquid Storage and Dispensing Systems" and related Steel Tank Institute specifications.
- (c) Piping that routinely contains regulated substances shall be installed with an isolation valve to allow for the separation of the piping from the UST.
- (d) Foot check valves in suction piping shall be installed with an extractor fitting to allow for the testing and maintenance of the UST system.
- (3) Containment systems on new UST systems shall be properly designed and constructed and shall meet all of the following requirements:
 - (a) A water resistant containment shall be installed on all USTs to allow access and provide containment in the area where the product piping exits the UST;
 - (b) A water resistant containment system shall be installed in all areas where product piping transitions from underground to above ground or vice versa;
 - (c) A water resistant containment system shall be installed in all areas where a transition sump is required to maintain the proper slope of product piping; and
 - (d) Containment systems shall be designed in accordance with all of the following:

- (i) Each containment system shall be large enough to allow for the visible inspection of and access of all components within the containment system;
- (ii) Each penetration through the containment system shall be water tight while allowing for any forces that may act on the penetration; and
- (iii) The cover of each containment system shall be designed or managed to allow access to the containment system within four hours of a request by the fire marshal or local fire official.

(4) Spill and overflow prevention equipment on new UST systems

- (a) To prevent spilling and overflowing associated with regulated substance transfer to the UST system, owners and operators shall install all of the following spill and overflow prevention equipment:

- (i) Spill prevention equipment that will prevent the release of product into the environment when the transfer hose is detached from the fill pipe; and

- (ii) Overflow prevention equipment that will:

- (a) Automatically shut off flow into the tank when the tank is no more than ninety-five per cent full;

- (b) Alert the transfer operator when the tank is no more than ninety per cent full by restricting the flow into the tank or triggering a high-level alarm; or

- (c) Restrict flow thirty minutes prior to overflowing, alert the operator with a high level alarm one minute before overflowing, or automatically shut off flow into the tank so that none of the fittings located on top of the tank are exposed to product due to overflowing.

- (iii) Float vent valves for overflow prevention, when used, shall be installed with an extractor fitting to allow for the testing and maintenance of the UST system. Float vent valves for overflow prevention shall not be allowed on any type of suction system.

(C) Construction requirements for new UST systems containing hazardous substances and new UST systems located in sensitive areas containing petroleum.

- (1) In addition to meeting the requirements described in (B) to (B)(4)(a)(iii) of this rule, all new UST systems containing hazardous substances and new UST

systems located in sensitive areas containing petroleum shall comply with paragraphs (C)(2) to (C)(2)(c)(iii) of this rule.

(2) New UST systems containing hazardous substances and new UST systems located in sensitive areas containing petroleum shall provide secondary containment for the UST system and shall comply with the following requirements:

(a) Secondary containment systems, including double-walled tanks, external liners and vaults, shall be designed, constructed and installed to:

(i) Completely contain regulated substances released from the UST system until they are detected and removed; and

(ii) Prevent the release of regulated substances into the environment at any time during the operational life of the UST system.

(b) Double-walled tanks shall be designed, constructed and installed to:

(i) Completely contain a release from any portion of the inner tank within the outer wall; and

(ii) Detect a failure of the inner or outer wall.

(c) External liners and vaults shall be designed, constructed and installed to:

(i) Contain one hundred per cent of the capacity of the largest tank within its boundary;

(ii) Prevent the interference of precipitation and ground-water intrusion and have the ability to contain or detect a release of regulated substances; and

(iii) Surround the tank completely such that it is capable of preventing lateral as well as vertical migration of regulated substances.

(D) Performance standards for existing UST systems.

(1) The addition of internal lining to existing UST systems to meet cathodic protection requirements is prohibited unless owners and operators obtain written approval from the fire marshal prior to the application of internal lining. Owners and operators shall comply with any conditions imposed by the fire marshal on the use of internal lining. UST systems internally lined to meet cathodic protection requirements prior to the effective date of this rule shall be maintained in accordance with paragraph (C)(5) of rule 1301:7-9-08 of the Administrative Code.

- (2) Owners and operators shall maintain, in compliance with this chapter, records of each installation, modification or major repair to the UST system for the remaining operating life of the UST system that demonstrate compliance with the requirements of this rule.
- (3) Owners and operators of an existing UST system that failed to meet installation, upgrade or major repair requirements that applied to the UST system prior to the effective date of this rule shall take out of service, permanently remove or close in place the UST system or components not in compliance with this chapter in accordance with rule 1301:7-9-12 of the Administrative Code.
- (4) Existing UST systems located in newly designated sensitive areas, as described in paragraph (E) of rule 1301:7-9-09 of the Administrative Code, shall undergo modification within one year of the designation of the sensitive area to comply with paragraph (C)(1)(c) of rule 1301:7-9-07 of the Administrative Code.

(E) General performance standards, permits, certified UST installers and inspectors

- (1) All UST systems shall be properly installed, modified and repaired in accordance with the manufacturer's instructions, Petroleum Equipment Institute Publication RP100-2000; "Recommended Practices for Installation of Underground Liquid Storage Systems", American Petroleum Institute Publication 1615-01; "Installation of Underground Petroleum Storage Systems", National Fire Protection Association Publication NFPA 30-03 "Flammable and Combustible Liquids Code", National Fire Protection Association Publication NFPA 30A-03 "Motor Fuel Dispensing Facilities and Repair Garages", National Fire Protection Association Publication NFPA 407-01 "Standard for Aircraft Fuel Servicing", and applicable Steel Tank Institute installation instructions. Where there is a conflict between requirements the more protective requirement shall prevail.
- (2) Performing work pursuant to this rule does not relieve a person engaged in underground storage tank activity from the obligation of complying with any other applicable federal, state, or local laws and regulations, including but not limited to, the Ohio Fire Code or the Ohio Building Code, etc.
- (3) Any person performing work in accordance with this rule shall obtain a permit as required in paragraph (C) of rule 1301:7-9-10 of the Administrative Code prior to performing the work. All work performed in accordance with this rule shall be overseen by a certified UST installer and a certified UST inspector as required in paragraph (D) of rule 1301:7-9-10 of the Administrative Code.
- (4) A tightness test shall be performed on any new or existing UST system component that undergoes work requiring an installation, modification or major repair permit under paragraph (E)(3) of this rule prior to placing the UST system

into operation. No UST system shall be placed into operation until a passing tightness test result is obtained for the UST system component undergoing work.

- (5) Other design, construction, installation, modification and major repair methods may be used in place of any requirements or methods described in this rule if an owner and operator demonstrates that the alternative method is no less protective of human health and the environment than the method or requirement specified in this rule, and the fire marshal approves the alternative method in writing prior to the use of the method. If the alternative method is approved, the owner and operator shall comply with any terms and conditions imposed on its use by the fire marshal.

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