502 CMR 5.00: PERMIT AND INSPECTION REQUIREMENTS OF ABOVEGROUND STORAGE TANKS OF MORE THAN TEN THOUSAND GALLONS CAPACITY

Section

5.01: Scope and Purpose

502 CMR 5.00 is adopted by the State Fire Marshal pursuant to M.G.L. c. 148, § 37 to provide uniform requirements and procedures for the construction, maintenance and use of aboveground storage tanks and related permit, inspection and record keeping requirements.

5.02: Applicability

(1) 502 CMR 5.00 shall apply to certain aboveground storage tanks with a gross capacity of more than 10,000 gallons used for the storage of any fluid other than water.

(2) 502 CMR 5.00 shall not apply to:
(a) Open tanks such as clarifiers;
(b) Open tanks used for plating, dipping and quenching; and
(c) Oil/water separators.

5.03: Definitions

For the purpose of 502 CMR 5.00, the following terms shall have the meanings respectively assigned to them. In the event there are any terms not defined in 502 CMR 5.03, default to 527 CMR: *Board of Fire Prevention Regulations* for additional definitions:

Abandoned. A tank out-of-service for a continuous period in excess of 60 months which has been deemed unsafe and a threat to public safety by the Head of the Fire Department and the Marshal.

Aboveground Storage Tank. A horizontal or vertical tank that is listed and intended for fixed installation, without backfill, above or below grade and is used within the scope of its approval or listing, including to the first appurtenance (valve or fitting) either on the shell, or immediately after the shell. Mounded tanks shall be considered aboveground storage tanks. Abbreviated as "AST".

API. The American Petroleum Institute.

API 653 Inspector. A tank inspector in good standing and currently certified by API.

API Standard 510. *The American Petroleum Institute Standard 510*, Ninth Edition, June 2014, incorporated by reference.

API Standard 650. *The American Petroleum Institute Standard 650, Welded Tanks for Oil Storage Tanks*, Twelfth Edition.

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API Standard 653. *The American Petroleum Institute Standard 653*, Fourth Edition, April 2009, including addendums 1 through 3, incorporated by reference.

Approved Standard. A technical standard that has been proposed by the tank owner and approved by the Marshal, which establishes the ongoing inspection, maintenance and record keeping practices required to be followed for the life of the tank. Such standard is based upon the type, design and usage of the particular aboveground storage tank regulated by 502 CMR 5.00 and is usually a standard that has been adopted by a nationally recognized standardization body.

ASME. The American Society of Mechanical Engineers.

ASME Pressure Vessel Inspector. A tank inspector in good standing and currently certified by the National Board of Boiler and Pressure Vessel Inspectors.

ASME RTP-1. Reinforced Thermoset Plastic Corrosion Resistant Equipment.

ASTM D 3299-88. *Standard Specification for Filament-wound Glass-fiber-reinforced Thermoset Resin Corrosion-resistant Tanks* (1988 edition).

ASTM D 4097-88. *Standard Specification for Contact-molded Glass-fiber-reinforced Thermoset Resin Corrosion-Resistant Tanks* (1988 edition).

Decommissioned Tank. A tank that is being taken out-of-service with no use or activity with the intention of placing such tank back in service at a future date.

Engineer. A Massachusetts Registered Professional Engineer.

Fluid. A substance, either as a liquid or gas, that is capable of flowing and which changes shape at a steady rate when acted upon by a force which changes its shape.

FRPI. Fiberglass Reinforced Plastics Institute.

FRPI SP9000. Standard Practice for Laminating Process ("Manufacturer") Certification.

FRPI SP9000 Inspector. A tank inspector in good standing and currently certified by FRPI.

FRPI SP9100. Standard Practice for Laminate ("Equipment") Certification.

Grade. The finished ground level adjoining the building, structure, or tank, at the exterior. Where a tank is located within a vault, grade shall mean the bottom of the vault.

Head of the Fire Department. The head of the Fire Department or designee as defined in M.G.L. c. 148, § 1.

Local Fire Department. The fire department having jurisdiction where the tank will be constructed or is located.

Maintenance. The installation, removal, replacement or penetration of any shell plate, annular plate ring material, tank bottom, roof or weld joint which involves the repair, replacement or installation of any material with a dimension of greater than 12 inches or the jacking or movement of any existing tank. Maintenance shall not include the routine painting or cleaning or the removal of superficial oxidation incidental to such painting or cleaning or the dismantling of a tank pursuant to a valid permit issued by the head of the fire department. Cutting a hole in a tank to limit the amount of available storage is not considered maintenance.

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Marshal. The State Fire Marshal or designee as defined in M.G.L. c. 148, § 1.

Mounded Tank. An ASME tank designed for underground service installed above the minimum depth required for underground service and covered with earth, sand, or other material, or an ASME tank designed for aboveground service, installed above grade and covered with earth, sand, or other material.

Owner. A person, firm or corporation having legal ownership, control or operation of the aboveground storage tank.

Permit. An authorization by the Marshal to either construct, maintain or use an aboveground storage tank in accordance with 502 CMR 5.00 and MGL c. 148, § 37. Such permit shall be required prior to conducting any of the following activities:

(a) Construction. To build or install a new aboveground storage tank.
(b) Maintenance. To modify or perform maintenance on an aboveground storage tank that holds a valid Use Permit.
(c) Use. To use an aboveground storage tank for its permitted purpose.
(d) Decommission. The process of identifying and removing a tank from service such that it cannot be filled or used for storage of any fluid other than water without a new permit application.

Qualified Tank Inspector. An individual who has acquired one of the following qualifications and performs inspections only within the scope of such qualification:

(a) Massachusetts Registered Professional Engineer.
(b) An API 653 Inspector.
(c) An SP001 AST Certified Tank Inspector.
(d) An ASME Pressure Vessel Inspector.
(e) An FRPI SP9000 and SP9100 Inspector.
(f) Alternative Qualified Inspector: a person who has not acquired the qualifications stated in 502 CMR 5.03: Qualified Inspector(a), (b), (c), (d) or (e), but has met the minimum qualifications established and approved by the Marshal.

SP001 AST Certified Tank Inspector. A tank inspector in good standing and currently certified by STI/SPFA.

SP9000 Inspector. A tank inspector in good standing and currently certified by FRPI.

SP9100 Inspector. A tank inspector in good standing and currently certified by FRPI.

STI. Steel Tank Institute.

STI SP001. *Standard for the Inspection of Aboveground Storage Tanks*, 5th Edition.

Suitability Assessment. A written evaluation conducted by an Engineer, certifying that the tank has been reviewed and determined to be in sound condition and acceptable to safely store the intended product. Any findings, conditions, or recommendations associated with the tank's use shall be included in the report.

Surveyor. A Massachusetts Professional Land Surveyor.

Tank. A vessel designed for the storage of a fluid (gas or liquid).

Temporary. The use of an aboveground storage tank for use less than six months from the date of installation.

Vaulted Tank. An enclosure consisting of four walls, a floor, and a top for the purpose of containing a liquid storage tank and not intended to be occupied by personnel other than for inspection, repair, or maintenance of the vault, the storage tank, or related equipment.

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Water. A colorless, transparent, odorless, tasteless liquid that forms the seas, lakes, rivers, and rain and is the basis of the fluid of living organisms and the disposal of which will not result in the degradation of ground or surface water resources.

5.04: Permit Requirements

(1) General Provisions. Pursuant to M.G.L. c. 148, § 37, no person shall construct, maintain, or use any aboveground storage tank of more than 10,000 gallons capacity, for the storage of any fluid other than water, without first securing a permit therefore from the Marshal. A permit to construct or perform maintenance on a tank may be issued by the Marshal only after a completed application and supporting documents have been submitted, reviewed and approved in accordance with 502 CMR 5.04. The permit may be issued with certain conditions or contingencies.

(2) Application for a Permit to Construct a Tank. The applicant shall complete and submit to the Marshal, at least 30 days in advance of the construction of such tank, the prescribed construction permit application form, permit fee and the following documents, in triplicate:

(a) A plot plan certified by an Engineer or Surveyor. Said plot plan must clearly indicate the following:

1. The existence of any nearby bodies of water, water courses, or public water supplies within and adjacent to the property;
2. Proximity to any and all utility lines, cables or pipes within and adjacent to the property, whether above or below ground level and whether active or inactive;
3. The existence of any public or private ways immediately adjacent to the property;
4. Existence of any nearby building(s) and/or AST(s);
5. All property boundaries;
6. The distance of the tank(s) to the property boundaries; and
7. Distance of tanks to potentially incompatible materials.

(b) A foundation/footing plan, which includes:

1. Construction details;
2. The dimensional details of the foundation;
3. The conclusions of the geotechnical investigation; and
4. Statement that the soil is capable to support the proposed foundation/footings.

(c) A dike plan (which may be included in the foundation plan) including:

1. Calculations showing volume of area;
2. Slope and height;
3. Top width (if applicable);
4. Floor and drainage;
5. Distance from other tanks both within the dike and within adjacent diked areas including those of abutters;
6. The total combined gallon capacity;
7. The existence of intermediate diking; and
8. Any penetration of the dike wall.

(d) Mechanical drawings of the proposed tank indicating:

1. Whether the tank is field erected and/or shop fabricated;
2. The tank's construction standard;
3. The dimensional details of the tank;
4. All openings in the tank;
5. The locations and description of all appurtenances on the tank;
6. Material of construction;
7. Tank orientation;
8. Tank support description; and
9. Pending construction certifications.

(e) For tanks containing a flammable gas, a fire safety analysis. The fire safety analysis shall be conducted by means of an engineering evaluation and application of sound fire protection and process engineering principles. The fire safety analysis shall include, but not be limited to, the following:

1. Analysis of the fire and explosion hazards;

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2. Analysis of emergency relief from the tank(s), taking into consideration the properties of the materials used and the fire protection and control measures taken;
3. Analysis of local conditions, such as exposure to and from adjacent properties;
4. Analysis of the emergency response capabilities of the local fire department or responding agency; and
5. Analysis of applicable requirements under reference flammable gas codes and standards.

(f) A fire safety analysis may be required for any proposed tank containing any fluid where the Marshal deems such an analysis is necessary for protection of life and property.

(g) If the proposed tank to be installed has been previously used, a detailed inspection, investigation, and suitability assessment shall be conducted by an Engineer, concluding that the proposed tank is fit to be re-used and such report shall state any conditions associated with its reuse.

(h) The fire safety analysis, the suitability assessment and all foundation, mechanical and dike plans shall be reviewed and sealed by an Engineer.

(i) A copy of the Manufacturer's Data Report for Pressure Vessels, if applicable.

(j) A copy of the land license (M.G.L. c. 148, § 13) issued by the city or town, if storing flammable or combustible products.

(k) A copy of the current Registration (M.G.L. c. 148, § 13) for the property, if storing flammable or combustible products.

(l) The identification and declaration of the Approved Standard that will be used for the installation and inspection of the tank for the remaining life of the tank.

(m) If pre-manufactured, the designer or installer of the tank shall provide to the owner, a detailed list of inspection requirements under the applicable inspection standard and 502 CMR 5.00.

(3) Application for a Maintenance Permit.

(a) The applicant shall complete and submit to the Marshal, at least 30 days in advance of the maintenance of such tank, the prescribed maintenance permit application form, permit fee, and the following documents in triplicate:

1. A copy of the current use permit issued by the Marshal and permit issued by the head of the fire department, if applicable;
2. Mechanical drawings of the existing tank;
3. Inspection report identifying failure mechanism, cause, and corrective action required to assure safe reliable service;
4. Description of repair and, if applicable, procedures and mechanical drawings of the proposed maintenance work to be conducted;
5. Name and address of the qualified person conducting the maintenance; and
6. Where applicable, evidence of the ASME code repair stamp.

(b) Emergency Repairs. Repairs made on an emergency basis as a result of an unexpected tank or component failure may be conducted prior to the issuance of a permit if necessary to avoid harm to persons, property or the environment. In such an emergency, the Marshal shall be notified in writing as soon as reasonably possible of such emergency repairs. An application for a maintenance permit shall be submitted to the Marshal in accordance with 502 CMR 5.00 within two business days after such an emergency.

(c) Application for a Permit for Maintenance Involving the Decommissioning of a Tank. If the owner intends to take the tank out-of-service with the intention of placing such tank back into service at a future date, the owner shall notify the Marshal and comply with the following:

1. Notify the Marshal and declare the tank inactive and decommissioned;
2. Disconnect all associated piping from the tank, and cap all openings;
3. Secure the tank by bolting and locking all manways and valves;
4. Cap or plug all fill lines, gauge openings, or pump lines;
5. Completely remove all sludge, solids and residuals inside the tank;
6. Dispose of tank bottom sludge in accordance with state and federal regulations;
7. Rid the tank of vapors so an explosive atmosphere cannot exist; and
8. Atmospheric and emergency vents shall be left in proper working order.

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(4) Application for a Permit to Change Use of a Tank. A permit to change the use of a tank may be issued by the Marshal only after the prescribed application and any other supporting documents have been submitted, reviewed, and approved by the Marshal.

Where a flammable or combustible liquid is stored, a permit is required for a change of use between classes of liquids as defined in 527 CMR 1.00: *Massachusetts Comprehensive Fire Safety Code*.

(5) Temporary Permit. If a tank will be in service for less than six months from the date of installation, a permit for such temporary service, may be issued by the Marshal only after the prescribed application and any other supporting documents have been submitted, reviewed and approved by the Marshal.

(6) Final Review Testing and Issuance of the Use Permit. Upon completion of construction or maintenance that is structural in nature, as the case may be, the tank shall be hydrostatically tested in accordance with the Approved Standard filed with the Marshal. Where the Approved Standard does not contain a test protocol, then the test shall be in accordance with the requirements in 502 CMR 5.04. If water is not appropriate, a request must be filed with the application to the Marshal identifying why the tank cannot be hydrostatically tested using water. The request shall identify the nationally accepted standard and method proposed to test the tank. A visual inspection is not an accepted method of testing. Tanks containing fluids of a cryogenic nature or fluids that are lighter than water and have foundations designed for less than a water test may be tested by an alternative means acceptable to the Marshal. Upon final satisfactory review, inspection and test results, the Marshal may issue a use permit. Unless otherwise specified, the use permit shall expire five years from the date of issuance.

(a) Special Requirements for the Testing of LP-gas Tanks. Testing of LP-gas tanks shall comply with the provisions of 527 CMR 1.00: *Massachusetts Comprehensive Fire Safety Code* and the following:

1. Upon completion of the tank, the tank shall be hydrostatically tested in accordance with 502 CMR 5.04.
2. Within 48 hours of filling the tank with LP-gas, the tank shall be tested and comply with 527 CMR 1.00: *Massachusetts Comprehensive Fire Safety Code*.
3. The tank shall be tested per 527 CMR 1.00: *Massachusetts Comprehensive Fire Safety Code* for a second time within 30 days of the initial LP-gas filled tank test.
4. If any test fails, the Marshal shall be notified and may set further testing requirements.

(b) Application for a Use Permit for Tanks Installed Without a Permit. If the tank was found to be installed without a permit from the Marshal prior to the issuance of a use permit: a detailed inspection, investigation and suitability assessment shall be conducted by an Engineer, concluding that the proposed tank is fit to be used, and such report shall state any conditions associated with its use. Such suitability assessment shall be provided to the Marshal.

1. If the tank was installed before January 1, 2000, the suitability assessment and an affidavit from an Engineer confirming compliance with the applicable code at the time of installation shall be provided to the Marshal.
2. If the tank was installed on or after January 1, 2000, an application to install, and associated documentation, in accordance with 502 CMR 5.00 shall be submitted to the Marshal.

(7) Administrative Provisions for Permits.

(a) Incomplete Applications for Permit. Incomplete permit applications will be rejected without review. Subsequent applications may be subject to additional application fees. Subsequent applications shall be submitted to the Marshal at least 30 days in advance of the installation.

(b) The Marshal may waive the production of a requested document or may require the production of supplemental documentation as a condition to issuing a permit.

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(c) Permit Expiration. The subject tank work shall commence within six months from the date the permit was issued and must be completed within one year of commencement. If the work has not started or is not completed during the stated time periods, a permit shall be deemed expired and a new permit shall be required, unless a written extension is granted by the Marshal. Such an extension may be granted only if the applicant can demonstrate that such a delay was not deliberate and that such delay will not cause potential harm to the general public or the environment.

(d) Notification and Approval of Changes or Alterations. Prior to completion, the Marshal shall be given written notification of any modifications to any details contained in the original application submission. Any modifications shall be approved by the Marshal in writing.

(e) Conference and Communications with the Marshal. An applicant may request a conference with the Marshal prior to the application, commencement of any construction or maintenance of any aboveground storage tank. In large projects, specific work phases indicating stopping points and possible inspection may be discussed at the conference to facilitate the process. If inspections are required during the construction, no work shall continue on the next phase unless the Marshal has approved the previously completed phase.

(f) Additional Requirements. The Marshal may order the owner of any tank, in writing, to meet additional requirements for that tank:

1. Where unusual conditions exist; or
2. When it is necessary for the protection of life and property.

5.05: Self-inspection and Use Permit Requirements

(1) General. Pursuant to M.G.L. c. 148, § 37 and as a condition to maintaining or renewing the use permit issued by the Marshal, every aboveground storage tank subject to the requirements of 502 CMR 5.00, shall be inspected in accordance with an Approved Standard by a Qualified Tank Inspector. Inspections shall be made of the premises, tanks, dikes, and related equipment. The Approved Standard associated with such inspection shall be approved by the Marshal.

(2) Use Permit Tank Inspection Requirements.

(a) As of January 1, 2015, any applicant for a use permit during calendar year 2015 shall comply with the following:

1. Complete the inspection, notice and reporting requirements contained in 502 CMR 5.05(4). Said annual inspection shall be conducted in accordance with the standard that has been used for the subject tank, as of January 1, 2014;
2. The owner shall propose, on a form prescribed by the Marshal, an Approved Standard for each tank. Once approved by the Marshal, said Approved Standard shall establish the inspection and maintenance requirements for the remaining life of the tank for the purposes of compliance with 502 CMR 5.00.

(b) As of January 1, 2016, the Marshal will issue Use Permits every five years. The Use Permits are issued contingent upon compliance with 502 CMR 5.05(4) and continued adherence to the inspection and maintenance practices established in the Approved Standard.

(3) Upon review of the standard proposed under 502 CMR 5.05(2)(a)2., the Marshal reserves the right to increase such frequency of inspections, as necessary, to protect the public safety. If the owner chooses to alter an Approved Standard, an application must first be made to the Marshal for the approval. The application shall include a comparison between the current Approved Standard and the standard proposes for approval together with such other information required by the Marshal.

(4) As a condition to the issuance or renewal of a Use Permit, the tank owner shall comply with the following:

(a) A Qualified Tank Inspector must certify, on a form prescribed by the Marshal, that the Qualified Tank Inspector has verified the inspections required under the Approved Standard have been completed, such as, but not limited to; visual, internal inspections, ultrasonic thickness inspections, and certified integrity inspections.

(b) A Qualified Tank Inspector shall conduct a thorough inspection of the aboveground storage tank for compliance with 502 CMR 5.00 and certify that the tank can be used safely.

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(c) At least 14 days prior to the date of the intended inspection for the Use Permit, the Marshal shall be notified, in writing or by electronic means acceptable to the Marshal. The notification shall include: the location, date and time of the inspection and the inspector's name and contact information. The Marshal shall be given the opportunity to observe or participate in the inspection process.

(d) Upon inspection, the owner of a tank shall submit an AST inspection report on a form provided or approved by the Marshal. The report shall contain an affirmation by the recognized tank inspector that the facility was duly inspected, date of said inspection and a statement that the premises, tanks, related equipment and dikes are in compliance with all applicable regulations. The report shall be received no later than 14 days after the date of the inspection.

(e) The Marshal may rely on the affirmations in the inspection report and, when satisfied as to accuracy of the report and safety of the subject tank, may issue the use permit. Said permit shall expire five years from the date of issuance, unless the terms and conditions are modified by the Marshal.

1. The owner or operator of a tank shall schedule remediation arrangements to promptly address any deficiencies on the inspection report within 30 days, unless an extension is granted by the Marshal.

Such proposed schedule shall be submitted to, and approved by, the Marshal. Updates on the scheduled remediation of the deficiencies shall be submitted to the Marshal in accordance with the proposed schedule.

2. If any of the deficiencies on the inspection report are deemed a serious threat to public health, safety or welfare or to the environment, the Marshal shall be notified forthwith by the qualified tank inspector. The Marshal may require that the tank owner or operator submit for approval a schedule of when the deficiencies will be remedied or when it will be decommissioned.

(5) Inspections conducted by the qualified tank inspector under 502 CMR 5.05 shall not waive the authority of the Marshal to conduct an independent inspection for the purpose of determining tank safety or compliance with 502 CMR 5.00.

(6) Written Records. An accurate record for each tank shall be maintained in such form at least equivalent to or greater than the inspection standards established in the Approved Standard. Such record shall contain a history of all inspections, including the condition of all parts inspected, and a record of all examinations and tests. Such record shall also include all data accumulated on each tank, including a history of any repairs, alterations, replacements and service. The person principally in charge of the tank facility shall sign each inspection record. The records shall be kept at the storage facility or at another location readily available for inspection by the Marshal. Such records shall be maintained for a period of five years beyond the demolition of the tank. The records shall be subject to the inspection of the Marshal during regular business hours. An electronic record keeping method is acceptable, as long as it meets the requirements of this section for review and oversight.

5.06: Immediate Notification of the Marshal

The Marshal shall be immediately notified in writing upon the discovery of any leak or hazardous condition (defect, injury) involving the tank, diking and/or appurtenance that could create a serious threat to life safety or significant environmental damage.

5.07: Entry upon the Premises

Any applicant for, or holder of, any permit issued under the provisions of 502 CMR 5.00 shall be deemed to have consented to the entry of the Marshal upon the premises during regular hours of operation for the purposes of determining whether the permit applicant, or holder, is complying with the provisions of M.G.L. c. 148, 502 CMR 5.00, 527 CMR 1.00: *Massachusetts Comprehensive Fire Safety Code* or any other related law or regulation, including inspection of all required records.

5.08: Compliance with Law and Regulation

Compliance with all federal and state laws and associated regulations, including but not limited to, the provisions of M.G.L. c. 148, §§ 9, 13, 37; 502 CMR 5.00 and 527 CMR 1.00: *Massachusetts Comprehensive Fire Safety Code*, regarding the design, construction, use and maintenance of all aboveground storage tanks subject to 502 CMR 5.00, is a condition to the issuance and continued effect of any permit or certification issued pursuant to 502 CMR 5.00.

5.09: Revocation, Suspension or Denial of a Permit or Qualified Tank Inspector

(1) The Marshal may suspend, revoke, or in the case of a new applicant, deny any permit issued under 502 CMR 5.00 for any violation of or non-compliance with 502 CMR 5.00; 527 CMR 1.00: *Massachusetts Comprehensive Fire Safety Code* or any other related law, regulation, written term, condition or policy related thereto and applicable to the permit holder. Any holder of, or applicant for a permit, which has been denied, suspended, or revoked hereunder, may request a hearing. Such request shall be made in writing to the Marshal within 14 days of receipt of notice of denial, suspension, or revocation.

(2) If the Marshal reasonably believes that a tank or facility constitutes an immediate threat to public health, safety or welfare, or to the environment, the Marshal may immediately, without a prior hearing, order such action necessary to reduce said threat, including the immediate suspension of the right to use a tank or facility. The owner or operator suspended under this section may request a hearing by the Marshal in writing, but must do so within 14 days of receipt of the notice of suspension.

5.10: Tank Removal

The tank owner/operator must notify the Marshal within seven days of the tank's removal, dismantling or demolition on a form as prescribed by the Marshal.

5.11: Violations of M.G.L. c. 148, § 37 and 502 CMR 5.00

Violations of M.G.L. c. 148, § 37 and 502 CMR 5.00, including, but not limited to, the installation of a tank without a permit are subject to criminal and/or non-criminal fines and penalties as provided by law.

REGULATORY AUTHORITY

502 CMR 5.00: M.G.L. c. 148, § 37.

NON-TEXT PAGE