

Huntington Beach Fire Department

Installation and Maintenance of Aboveground Storage Tanks (ASTs) for Fuel Dispensing Stations, Lubricating Oils and Waste Oils

Aboveground Storage Tanks for Motor Vehicle Fuel Dispensing Stations – Installation of Aboveground Storage Tanks (ASTs) for storing Class I, Class II and Class IIIA liquids are allowed at locations classified by the Huntington Beach Zoning and Subdivision Ordinance as “General Industrial” areas (Zone I-G). The intent is to allow installation of ASTs at locations where motor fuels will be used by the property owner or business owner, and not for resale to the general public. Typical installations include rental yards, construction sites, fleet yards, golf courses, and for emergency equipment and emergency preparedness functions.

Aboveground Storage Tanks for Lubricating Oils and Waste Oils – This City Specification shall apply to the storage of waste oils and fresh lube oils (also known as refined petroleum hydrocarbons, medium and heavy mixed grades) in aboveground storage tanks located at facilities where the waste oil is generated or fresh lube oils will be used. Typical facilities affected by this City Specification are private or retail automotive service facilities, machine shops, mechanical shops, and other similar facilities that use petroleum-based oils and oil-containing fluids, typically classified as Class IIIB liquids.

Other Applications:

- For tanks located in vaults, see Huntington Beach Fire Code (*HBFC*) Chapter 34 Section 3404.2.8 *Vaults*.
- For underground tank installations, see *HBFC* Chapter 34 Section 3404.2.11 *Underground Tanks* and *City Specification #410, Installation of Underground Storage Tanks (USTs)*.
- This City Specification does not cover crude oil production facilities; requirements for crude oil production can be found in the Huntington Beach Oil Code (*Huntington Beach Municipal Code [HBMC] Title 15*).
- This City Specification does not cover aboveground storage tanks at oil distribution facilities, bulk transfer facilities, or bulk plants; requirements for these operations can be found in *HBFC* Section 3406 *Special Operations*.
- The Fire Code Official may require facilities using and/or storing non-petroleum based oils (synthetic or vegetable oils) to meet the requirements of this City Specification.

Installation and Maintenance of Aboveground Storage Tanks (ASTs) for Fuel Dispensing Stations, Lubricating Oils and Waste Oils

1. LIMITATION ON TANK SIZE & LOCATION ON PROPERTY

- 1.1 ASTs are limited in size to 2,200 gallons aggregate capacity for the primary tank or tank assembly, and for multiple tanks. Larger tank sizes are subject to review and approval by the Fire Code Official.
- 1.2 AST separation distance from property lines, building surfaces, and other tanks or structures shall conform to *HBFC Table 2206.2.3 Minimum Separation Requirements for Aboveground Storage Tanks*.
EXCEPTION: Canopies constructed in accordance with the California Building Code (CBC).
- 1.3 Separation between LPG storage tanks and ASTs shall conform to *HBFC Table 3804.3 Location of LP-Gas Containers*.
- 1.4 Tank cars and tank vehicles are not allowed to be used as storage tanks (*HBFC 3404.2.2 Use of Tank Vehicles and Tank Cars as Storage Tanks*).

2. PLANS & BUILDING PERMITS

- 2.1 Submit three (3) sets of plans to the City of Huntington Beach Building and Safety Department, which includes the location of the AST(s), its relation to existing structures and property lines, and all electrical, structural, and mechanical modifications to the property involving the installation. Plans shall include details of the following (catalog cuts may be included for standardized, prefabricated parts and equipment):
 - Tank specifications
 - Tank appurtenances: piping, valves, delivery and dispensing equipment
 - Secondary containment system
 - Electrical systems
 - Overfill prevention
 - Vapor recovery systems (if applicable)
 - Emergency controls and monitoring systems
 - Venting systems
 - Fire control systems
 - Required signs and labels, including their general location
 - Safety equipment

Installation and Maintenance of Aboveground Storage Tanks (ASTs) for Fuel Dispensing Stations, Lubricating Oils and Waste Oils

- 2.2 Applicant shall provide Underwriters Laboratories (UL) approval listing, or equivalent approval such as APi, ASTM or ASME certification, for all ASTs on the plans submitted for approval. If none are available at the time of plan submittal, they must be provided to the Fire Department prior to site inspection.
- 2.3 Building permits will be issued with the approved plans, and will include the required inspections and approvals. Inspections can be arranged by calling the City's Building and Safety Department or the Fire Department, as appropriate.

3. OTHER PERMITS

- 3.1 The following Fire Department permits are required for operation of an AST used for fueling operations. These can be obtained by contacting the Fire Department Administration Office at (714) 536-5411.
- Fire Department Permit for Flammable and Combustible materials storage.
 - Hazardous Materials Disclosure/Business Plan for any facility storing/using over 55 gallons of a hazardous liquid, 200 ft³ of a gas or 500 lbs. of a hazardous solid.
- 3.2 The following agencies may require permits and impose their own operating standards for ASTs and fuel dispensing operations:
- Orange County Health Care Agency – Aboveground Storage Tank/Spill Prevention and Control Countermeasure plans for onsite storage exceeding 1,320 gallons of refined petroleum products and Hazardous Waste Generator Identification for waste oils.
 - South Coast Air Quality Management District – Air Pollution Control Permit.

4. BASIC TANK DESIGN REQUIREMENTS

- 4.1 Tanks shall be constructed of material compatible with their contents. All tanks shall meet the design requirements of either UL (UL-142 or UL-2085) or another nationally recognized standards agency (ASTM, ASME, API or equivalent). The Fire Code Official can require testing of an AST to verify that the tank conforms to performance specifications and/or compatibility with its intended contents.
- 4.2 Tanks shall have a permanently affixed label or nameplate that designates its design standards, serial number, manufacturer and date of manufacture.
- 4.3 Secondary containment shall be provided. Containment can be integral to the tank (double walled steel or approved impact-resistant concrete construction) or provided by diking and/or berms sized to contain the entire contents of the tank.

Installation and Maintenance of Aboveground Storage Tanks (ASTs) for Fuel Dispensing Stations, Lubricating Oils and Waste Oils

- 4.4 Secondary containment systems shall be equipped with leak detection and monitoring system. Monitoring can be either visual, through inspection ports in double walled tanks, or by monitoring systems. Installation of an electrically operated monitoring system shall be in accordance with the electrical code.
- 4.5 Tank linings are prohibited.
- 4.6 For double walled tanks, the tanks shall be provided with port(s) to allow for inspection of the interstitial space between the primary and secondary tanks, and for removal of any material that collects within the space. Port(s) are in addition to those provided for normal filling, dispensing and venting apparatus.
- 4.7 Tanks shall be equipped with a method of determining the amount of material within the tank. Methods can include float gauges, dipstick-type gauging devices, or other approved methods (*HBFC 3404.2.9.6.6.2 Determination of Available Tank Capacity*).
- 4.8 Overfill protection shall be provided that prevents filling of the tank in excess of 95 percent capacity (*HBFC 3404.2.9.6.6 Overfill Prevention*).
- 4.9 Venting devices shall be required and be approved for use with the type of material contained within the tank, and properly sized to prevent the build-up of excessive pressures. Manifolding may be included in vent lines when required for vapor management and air pollution control purposes, provided it does not inhibit proper tank pressure control (*HBFC 3404.2.7.3 Tank Vents for Normal Venting*).
- 4.10 Vents shall be equipped with flame arresters (*HBFC 3404.2.9.6.3 Flame Arresters*).
- 4.11 Indoor ASTs used for Class IIIB liquid storage may be installed within buildings approved for such storage in accordance with the CBC. Indoor ASTs are subject to all requirements of outside locations and may require:
- Venting to the building's exterior may be required for some Class IIIB materials when it is determined the material's characteristics could create a fire or life safety hazard within the building's environment
 - All must meet secondary containment requirements.
 - Dispensing and filling device connections may be installed inside the building. The Fire Code Official may require filling and dispensing connections to be located outside the building if the material is determined to create an unnecessary fire or life safety hazard.
- 4.12 Openings on an AST shall be on the **top** of the tank (*HBFC 3404.2.9.6.9 Tank Openings, HBFC 2206.6.2.1 Tank Openings*).

**Installation and Maintenance of Aboveground Storage Tanks (ASTs)
for Fuel Dispensing Stations, Lubricating Oils and Waste Oils**

- 4.13 All openings to tanks shall be equipped with 2-hour fire resisting devices (caps, connectors, valves, etc.), including the base areas of emergency venting piping. Protection can be integral to the tank or may be within piping systems used with the tank, provided the piping system and its attachment points are rated for 2-hour fire resistance.
- 4.14 With the exception of emergency vents, all openings of a tank shall be equipped with heat activated, fusible linked valves that will close upon activation, preventing the escape and ignition of fumes.
- 4.15 ASTs used for storage of Class I or Class II liquids, and with NFPA flammability rating of 3 or 4, shall be equipped with grounding devices to prevent the accumulation of a static electric potential. Grounding can be by direct connection of the tank to a grounding rod embedded in soil, or through intrinsically safe grounding methods approved by the tank's manufacturer (*NFPA 30*).
- 4.16 Internal portions of fill pipes and discharge lines shall terminate within 6 inches of the bottom of the tank and installed in a manner that minimizes vibration (*HBFC 3404.2.7.5.5 Fill Pipes and Discharge Lines*).
- 4.17 ASTs used for storage of Class III liquids are not required to be grounded, unless electrical equipment that is part of the tank's or tank assembly's operational specifications require electrical connections. Grounding can be by direct connection of the tank to a grounding rod embedded in soil, or through intrinsically safe grounding methods approved by the tank's manufacturer (*NFPA 30*).

5. TANK SUPPORTS & FOUNDATIONS

- 5.1 Tanks shall rest on foundations made of concrete, masonry, pilings, or steel that is designed to minimize the possibility of uneven settling of the tank, and to minimize corrosion in any part of the tank that will rest on the foundation. Foundations are subject to Building and Safety Department review.
- 5.2 Tank supports shall be designed to meet UL-1709 or an equivalent standard.
- 5.3 Tanks supports and foundations shall be designed to resist normal seismic loads.
- 5.4 A tank located in flood-prone areas shall be secured to prevent the tank, either full or empty, from floating during a rise in water level up to the established maximum flood level.
- 5.5 Tanks shall be mounted so that all exterior surfaces are visible for inspection, including surfaces directly beneath the tank.
- 5.6 The filling area adjacent to the tank shall be provided with a non-absorbing surface.

Installation and Maintenance of Aboveground Storage Tanks (ASTs) for Fuel Dispensing Stations, Lubricating Oils and Waste Oils

6. PIPING SYSTEMS FOR FILLING & DISPENSING

- 6.1 Electrical wiring and equipment used in an AST installation, including dispensers, hoses, nozzles, pump systems, and monitoring systems, shall be listed and approved for use with the classification of liquid to be stored, and according to the National Electrical Code (*HBFC 2206.7 Fuel-Dispensing Systems for Flammable or Combustible Liquids, HBFC 3403.1 Electrical*).
- 6.2 Antisiphon devices shall be installed in each external pipe connected to the tank when the pipe extends into the tank (*HBFC 3404.2.9.6.10 Antisiphon Devices*).
- 6.3 If the tank's fill pipe connection is above that of the delivery vehicle or any other exterior connection, a check valve shall be installed within 12 inches of the fill hose connection (*HBFC 3404.2.9.6.7 Fill Pipe Connections*).
- 6.4 Emergency spill control shall be provided for AST filling/emptying operations.
- Mobile spill control devices are acceptable (booms, absorbent socks, loose absorbent, etc.).
 - Spill control can be achieved through installing spill containers of at least 5-gallon capacity at each connection. The container at the tank shall be fixed to the tank and have a manual drain valve which drains into the primary tank. Mobile/portable containers are allowed for tank vehicle connections (*HBFC 3404.2.9.6.8 Spill Containers*).
- 6.5 Product delivery hoses from dispensing devices shall be equipped with an emergency breakaway device approved for the location and material. The device shall be designed to retain liquid on both sides of the breakaway point.
- 6.6 Secondary containment shall be provided for permanently installed piping systems used to transfer liquids to and from the tank, and between the tank and dispensing devices.

7. DISPENSING SYSTEMS

- 7.1 Emergency shut-off valves shall be installed at the base of each dispenser, and shall be designed to close in the event of a fire or impact. Dispensers containing vapor recovery return lines shall also be equipped with emergency disconnect valves or shear sections (*HBFC 2206.7.4 Dispenser Emergency Valve*).
- 7.2 Dispensing systems that contain vapor recovery systems shall be equipped with an acceptable method to close off either the fuel dispensing line, or the vapor recovery line, if either system is not functioning (*HBFC 2206.7.9.1 Vapor-Balance Systems*).

Installation and Maintenance of Aboveground Storage Tanks (ASTs) for Fuel Dispensing Stations, Lubricating Oils and Waste Oils

- 7.3 Dispenser hoses shall be equipped with breakaway devices designed to contain liquids on both sides of the break point. Hoses shall be a maximum 18 feet in length and must be protected from damage when not in use (reeled, racked, etc.) (*HBFC 2206.7.5 Dispenser Hose*).
- 7.4 Dispenser hose fill nozzles must be equipped with an automatic shut-off device that operates when a latch is released, when hose pressure drops, when the nozzle is removed from a fill pipe (interlock device), when a fill valve is released, or upon impact of the nozzle with the surface of the filling area (*HBFC 2206.7.6 Fuel Delivery Nozzles*).
- 7.5 An emergency shut-off switch shall be provided to stop the flow of fuel in the event of a fuel spill or other emergency. The switch shall be located between 20 feet and 100 feet of the fuel dispensing devices, and must be conspicuously marked **EMERGENCY FUEL SHUT-OFF** (*HBFC 2203.2 Emergency Disconnect Switches*).

8. IMPACT PROTECTION

- 8.1 Guard posts, bollards, or other approved barrier/protective devices shall be provided for each AST, dispensing devices, and for all associated piping and appurtenances subject to vehicle impact. Guard posts/bollards are not required where the AST is located in an area sufficiently removed from the possibility of vehicle impact (*HBFC 2206.4 Physical Protection*).
- 8.2 Guard posts/bollards protecting ASTs shall be made of 4 inch diameter steel tubing that is at least 6 feet long. The posts shall extend a minimum 3 feet above grade, be placed 36 inches apart on center, and filled with concrete.
- 8.3 Dispensing devices not mounted on top of protected ASTs shall be protected by either of two methods (both methods may be used together):
- Securely mounting the dispensing device on a concrete island at least 6 inches above the surrounding surface, or
 - Protected by installing guard posts/bollards that are constructed of concrete-filled steel tubing at least 4 inches in diameter, 6 feet in length and minimum 3 feet above ground, and spaced a maximum 4 feet apart (*HBFC 2206.7.3 Mounting of Dispensers*).
- 8.4 Guard posts/bollards shall be a minimum 3 feet from the AST or the dispensing device.

9. LABELING & SIGNS

- 9.1 Labels and signs are required for ASTs and the area around ASTs (*HBFC 3404.2.3 Labeling and Signs*).

Installation and Maintenance of Aboveground Storage Tanks (ASTs) for Fuel Dispensing Stations, Lubricating Oils and Waste Oils

9.2 Other signs and labels may be required by the Fire Code Official:

- **No Smoking or Open Flames** – Signs shall be posted prohibiting smoking or open flames within, or visible from, a distance of 25 feet of the ASTs and dispensing devices. High temperature heating devices shall also be prohibited when the material in an AST, or its vapors, can be ignited by such a device (*HBFC 2703.7.1 Smoking, 3404.2.3.1 Smoking and Open Flame*).
- **Operating Instructions** – Dispenser operating instructions shall be conspicuously posted on every dispenser and shall include the location of the emergency controls. Operating instructions shall also state that the operator must: shut off motor; discharge static electricity; place portable containers on the ground before filling; state the location of the emergency shut-off switch; indicate the phone number to report the emergency; and the facility address (*HBFC 2204.3.4 Operating Instructions*).
- **Placards** – ASTs shall bear both a label and a placard identifying the material they contain. Labels shall be of a color that contrasts with the tank color, and placards shall comply with NFPA 704 standard (*HBFC 3404.2.3.2 Label or Placard*).

10. CHANGE IN TANK CONTENTS

10.1 ASTs whose contents are being changed shall be subject to the following:

- Verification that the tank's construction material and methods are compatible with the new material. See NFPA 30 for tank construction requirements.
- Verification that the tank is designed for the pressures it may be subjected to if the new material is used or stored under differing pressure or vacuum conditions.
- The AST's venting is proper for the new material.
- The Fire Code Official can require an AST to be tested before contents are changed (*HBFC 3404.2.1 Change of Tank Contents, 3404.2.7 Design, Construction and General Installation Requirements for Tanks*).

11. OUT OF SERVICE

11.1 ASTs that are taken out of service shall comply with the following requirements:

- **Temporarily Out of Service (less than 90 days)** – ASTs temporarily out of service shall have all connecting lines isolated or locked out, and shall be secured against tampering.

**Installation and Maintenance of Aboveground Storage Tanks (ASTs)
for Fuel Dispensing Stations, Lubricating Oils and Waste Oils**

- **Out of Service for 90 Days to 1 year** – Tanks that are temporarily out of service for more than 90 days shall be secured from tampering and have all connecting lines isolated.

EXCEPTIONS: Tanks used as part of a back-up heating or emergency preparedness system.

- **Out of Service for More Than 1 year** – Tanks that are out of service for more than one year shall be removed and properly disposed (*HBFC 3404.2.13.2.1. Temporarily Out of Service*).

11.2 Fire control systems for ASTs that are temporarily out of service do not have to be disconnected.

12. SECURITY & SAFETY

- 12.1 ASTs shall be safeguarded from public access or unauthorized entry in an approved manner. Fencing shall be the minimum required security and can be constructed of wire mesh, metal sheathing or masonry. ASTs located on property that is already enclosed by security fencing shall not require any other fencing (*HBFC 2206.3 Security*).
- 12.2 Approved portable fire extinguishers shall be provided in accordance with *City Specification #424, Minimum Requirements for Portable Fire Extinguishers (HBFC 3404.3.3.1 Portable Fire Extinguishers)*.
- 12.3 Fenced and dike areas around ASTs shall be kept free of vegetation, debris, and other materials not necessary for the proper operation of the tank or associated piping, appurtenances, and dispensing devices for a distance of not less than 10 feet (*HBFC 2205.7 Control of Brush and Debris*).

APPROVED: _____
Duane S. Olson, Fire Chief

DATE: _____