**Chapter 30 Motor Fuel Dispensing Facilities and Repair Garages**

30.1 Motor Fuel Dispensing Facilities

30.1.1 Application

30.1.1.1

Motor fuel dispensing facilities, marine/motor fuel dispensing facilities, motor fuel dispensing facilities located inside buildings, and fleet vehicle motor fuel dispensing facilities shall comply with Sections 30.1 and 30.4 and NFPA 30A. Hydrogen fueling facilities shall comply with NFPA 2.

30.1.1.2

This chapter shall not apply to refueling operations. (For refueling operations, see Chapter 42.)

30.1.1.3 Permits

Permits, where required, shall comply with Section 1.12.

30.1.2 Occupancy Classification

The occupancy classification of a motor fuel dispensing facility that is located inside a building or structure shall be a special purpose industrial occupancy as defined in NFPA 101 or as determined in accordance with the adopted building code. [30A:7.3.1]

30.1.3 Means of Egress

In a motor fuel dispensing facility that is located inside a building or structure, the required number, location, and construction of means of egress shall meet all applicable requirements for special purpose industrial occupancies, as set forth in NFPA 101 or as determined in accordance with the adopted building code. [30A:7.3.3]

30.1.4 Drainage

Where Class I or Class II liquids are dispensed, provisions shall be made to prevent spilled liquids from flowing into the interior of buildings. Such provisions shall be made by grading driveways, raising door sills, or other equally effective means. [30A:7.3.4]

30.1.5 Fixed Fire Protection

30.1.5.1\*

For an unattended, self-serve, motor fuel dispensing facility, additional fire protection shall be provided where required by the AHJ. [30A:7.3.5.1]

30.1.5.2

Where required, an automatic fire suppression system shall be installed in accordance with the appropriate NFPA standard, manufacturers' instructions, and the listing requirements of the systems. [30A:7.3.5.2]

30.1.6 Fuel Dispensing Areas Inside Buildings

30.1.6.1

The fuel dispensing area shall be separated from all other portions of the building by walls, partitions, floors, and floor-ceiling assemblies having a fire resistance rating of not less than 2 hours. [30A:7.3.6.1]

30.1.6.2

Interior finish shall be of noncombustible materials or of approved limited-combustible materials, as defined in this Code and NFPA 220. [30A:7.3.6.2]

30.1.6.3

Door and window openings in fire-rated interior walls shall be provided with listed fire doors having a fire protection rating of not less than 11/2 hours. Doors shall be self-closing. They shall be permitted to remain open during normal operations if they are designed to close automatically in a fire emergency by means of listed closure devices. Fire doors shall be installed in accordance with NFPA 80. They shall be kept unobstructed at all times. [30A:7.3.6.3]

30.1.6.4

Openings for ducts in fire-rated interior partitions and walls shall be protected by listed fire dampers. Openings for ducts in fire-rated floor or floor-ceiling assemblies shall be protected with enclosed shafts. Enclosure of shafts shall be with wall or partition assemblies having a fire resistance rating of not less than 2 hours. Openings for ducts into enclosed shafts shall be protected with listed fire dampers. [30A:7.3.6.4]

30.1.6.5

The fuel dispensing area shall be located at street level, with no dispenser located more than 50 ft (15 m) from the vehicle exit to, or entrance from, the outside of the building. [30A:7.3.6.5]

30.1.6.6 Number of Vehicles Simultaneously Served

30.1.6.6.1

The fuel dispensing area shall be limited to that required to serve not more than four vehicles at one time. [30A:7.3.6.6.1]

30.1.6.6.2

Where only Class II and Class III liquids are dispensed at fleet vehicle motor fuel dispensing facilities, the number of vehicles serviced at any one time shall be permitted to be increased to 12. [30A:7.3.6.6.2]

30.1.6.7\* Mechanical Exhaust System

30.1.6.7.1

A mechanical exhaust system that serves only the fuel dispensing area shall be provided when two or more sides of the dispensing area are not open to the building exterior. [30A:7.3.6.7.1]

30.1.6.7.2

This system shall meet all of the following requirements:

The system shall be interlocked with the dispensing system so that airflow is established before any dispensing device can operate. Failure of airflow shall automatically shut down the dispensing system.

The exhaust system shall be designed to provide air movement across all portions of the floor of the fuel dispensing area and to prevent the flowing of ignitible vapors beyond the dispensing area.

Exhaust inlet ducts shall not be less than 3 in. (76 mm) or more than 12 in. (305 mm) above the floor. Exhaust ducts shall not be located in floors or penetrate the floor of the dispensing area. Exhaust ducts shall discharge to a safe location outside the building.

The exhaust system shall provide ventilation at a rate of not less than 1 ft3/min/ft2 (0.3 m3/min/m2) of floor area, based on the fuel dispensing area.

The exhaust system shall meet all applicable requirements of NFPA 91.

[30A:7.3.6.7.2]

30.1.6.8

The floor of the dispensing area shall be liquidtight. Where Class I liquids are dispensed, provisions shall be made to prevent spilled liquids from flowing out of the fuel dispensing area and into other areas of the building by means of curbs, scuppers, special drainage systems, or other means acceptable to the AHJ. [30A:7.3.6.8]

30.1.6.9\*

Oil drainage systems shall be equipped with approved oil/water traps or separators if they connect to public sewers or discharge into public waterways. [30A:7.3.6.9]

30.2 Repair Garages for Vehicles Powered by Flammable and Combustible Liquids

30.2.1 Application

The construction and protection of, as well as the control of hazards in, garages used for major repair and maintenance of motorized vehicles and any sales and servicing facilities associated therewith shall comply with Sections 30.2 and 30.4 and NFPA 30A.

30.2.1.1 Permits

Permits, where required, shall comply with Section 1.12.

30.2.2 Occupancy Classification

The occupancy classification of a repair garage shall be a special purpose industrial occupancy as defined in NFPA 101, or as determined in accordance with the adopted building code. [30A:7.4.1]

30.2.3 Means of Egress

In a repair garage, the required number, location, and construction of means of egress shall meet all applicable requirements for special purpose industrial occupancies, as set forth in NFPA 101, or as determined in accordance with the adopted building code. [30A:7.4.2]

30.2.4 Drainage

In areas of repair garages used for repair or servicing of vehicles, floor assemblies shall be constructed of noncombustible materials or, if combustible materials are used in the assembly, they shall be surfaced with approved, nonabsorbent, noncombustible material, except as indicated in 30.2.4.1. [30A:7.4.3]

30.2.4.1

Slip-resistant, nonabsorbent, interior floor finishes having a critical radiant flux not more than 9.87 Btu/in.2 (0.45 W/cm2), as determined by NFPA 253, shall be permitted. [30A:7.4.3.1]

30.2.4.2

Floors shall be liquidtight to prevent the leakage or seepage of liquids and shall be sloped to facilitate the movement of water, fuel, or other liquids to floor drains. [30A:7.4.3.2]

30.2.4.3

In areas of repair garages where vehicles are serviced, any floor drains shall be properly trapped and shall discharge through an oil/water separator to the sewer or to an outside vented sump. [30A:7.4.3.3]

30.2.5 Fixed Fire Protection

Automatic sprinkler protection installed in accordance with the requirements of Section 13.3 shall be provided throughout all buildings containing major repair garages, as herein defined, when any one of the following conditions exist:

The building housing the major repair garage is two or more stories, including basements, and the aggregate area of the major repair garage exceeds 10,000 ft2 (930 m2).

The major repair garage is one story and exceeds 12,000 ft2 (1115 m2).

The major repair garage is servicing vehicles parked in the basement of the building.

[30A:7.4.5]

30.2.6 Gas Detection System

Repair garages used for repair of vehicle engine fuel systems fueled by nonodorized gases shall be provided with an approved flammable gas detection system. Gas detection systems in repair garages for hydrogen vehicles shall be in accordance with NFPA 2. [30A:7.4.6]

30.2.6.1 System Design

30.2.6.1.1

The flammable gas detection system shall be calibrated to the types of fuels or gases used by the vehicles to be repaired. [30A:7.4.6.1.1]

30.2.6.1.2

The gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the lower flammable limit (LFL). [30A:7.4.6.1.2]

30.2.6.2 Operation

Activation of the gas detection system shall result in all of the following:

Initiation of distinct audible and visual alarm signals in the repair garage

Deactivation of all heating systems located in the repair garage

Activation of the mechanical ventilation system, when the system is interlocked with gas detection

[30A:7.4.6.2]

30.2.6.3 Failure of the Gas Detection System

Failure of the gas detection system shall result in the deactivation of the heating system and activation of the mechanical ventilation system and, where the ventilation system is interlocked with gas detection, shall cause a trouble signal to sound in an approved location. [30A:7.4.6.3]

30.2.6.4 System Integrity

The circuits of the detection system required by 30.2.6 shall be monitored for integrity in accordance with NFPA 72. [30A:7.4.6.4]

30.2.7\* Heating, Ventilating, and Air-Conditioning

30.2.7.1\*

Forced air heating, air-conditioning, and ventilating systems serving a fuel dispensing area inside a building or a repair garage shall not be interconnected with any such systems serving other occupancies in the building. Such systems shall be installed in accordance with NFPA 90A. [30A:7.5.1]

30.2.7.2

Return air openings in areas of repair garages used for the repair or servicing of vehicles or in a fuel dispensing area shall be not less than 18 in. (455 mm) above floor level measured to the bottom of the openings. [30A:7.5.2]

30.2.7.3

Combined ventilation and heating systems shall not recirculate air from areas that are below grade level. [30A:7.5.3]

30.2.7.4\*

Exhaust duct openings shall be located so that they effectively remove vapor accumulations at floor level from all parts of the floor area. Where lighter-than-air gaseous fuel vehicles are repaired, exhaust duct openings shall be located so that they effectively remove vapor accumulations at the ceiling level. [30A:7.5.4]

30.2.8 Heat-Producing Appliances

30.2.8.1

Heat-producing appliances shall be installed in accordance with the requirements of 30.2.8. They shall be permitted to be installed in the conventional manner except as provided in 30.2.8. [30A:7.6.1]

30.2.8.2 Listing and Restricted Locations

30.2.8.2.1

Heat-producing appliances shall be listed for use in classified areas. [30A:7.6.2.1]

30.2.8.2.2

Solid fuel stoves, improvised furnaces, salamanders, and space heaters shall not be permitted in areas of repair garages used for repairing or servicing of vehicles or in a fuel dispensing area. [30A:7.6.2.2]

30.2.8.2.3

Heat-producing equipment in any lubrication room or service room where there is no dispensing or transferring of Class I or Class II liquids or LP-Gas, when installed in accordance with Chapter 7 of NFPA 30A, shall be listed. [30A:7.6.2.3]

30.2.8.3

Heat-producing appliances shall be permitted to be installed in a special room that is separated from areas that are classified as Division 1 or Division 2, in accordance with Chapter 8 of NFPA 30A, by walls that are constructed to prevent the transmission of vapors, that have a fire resistance rating of at least 1 hour, and that have no openings in the walls that lead to a classified area within 8 ft (2.4 m) of the floor. Specific small openings through the wall, such as for piping and electrical conduit, shall be permitted, provided the gaps and voids are filled with a fire-resistant material to resist transmission of vapors. All air for combustion purposes shall be taken from outside the building. This room shall not be used for storage of combustible materials, except for fuel storage as permitted by the standards referenced in 30.2.8.9. [30A:7.6.3]

30.2.8.4

Heat-producing appliances using gas or oil fuel shall be permitted to be installed in a lubrication or service room where there is no dispensing or transferring of Class I liquids, including the open draining of automotive gasoline tanks, provided the bottom of the combustion chamber is at least 18 in. (455 mm) above the floor and the appliances are protected from physical damage. [30A:7.6.4]

30.2.8.5

Heat-producing appliances using gas or oil fuel listed for use in garages shall be permitted to be installed in lubrication rooms, service rooms, or fuel dispensing areas where Class I liquids are dispensed or transferred, provided the equipment is installed at least 8 ft (2.4 m) above the floor. [30A: 7.6.5]

30.2.8.6\*

Where major repairs are conducted on lighter-than-air-fueled vehicles, open flame heaters or heating equipment with exposed surfaces having a temperature in excess of 750°F (399°C) shall not be permitted in areas subject to ignitible concentrations of gas. [30A:7.6.6]

30.2.8.7

Electrical heat-producing appliances shall meet the requirements of Chapter 8 of NFPA 30A. [30A:7.6.7]

30.2.8.8

Fuels used shall be of the type and quality specified by the manufacturer of the heating appliance. Crankcase drainings shall not be used in oil-fired appliances, unless the appliances are specifically approved for such use. [30A:7.6.8]

30.2.8.9

Heat-producing appliances shall be installed to meet the requirements of NFPA 31, NFPA 54, NFPA 82, NFPA 90A, and NFPA 211, as applicable, except as hereinafter specifically provided. [30A:7.6.9]

30.3 Repair Garages for Vehicles Powered by Alternate Fuels

30.3.1 Hydrogen

30.3.1.1

Repair garages servicing self-propelled vehicles powered by GH2 or LH2 shall comply with NFPA 2.

30.3.1.2 Means of Egress

In a repair garage, the required number, location, and construction of means of egress shall meet all applicable requirements for special purpose industrial occupancies, as set forth in NFPA 101 or as determined in accordance with the adopted building code. [30A:7.4.2]

30.3.2 LP-Gas-Fueled Vehicles

30.3.2.1 General Construction Requirements

In repair garages, where CNG-fueled vehicles, LNG-fueled vehicles, or LP-Gas-fueled vehicles are repaired, all applicable requirements of NFPA 52 or NFPA 58, whichever is applicable, shall be met.

30.3.2.2 Means of Egress

In a repair garage, the required number, location, and construction of means of egress shall meet all applicable requirements for special purpose industrial occupancies, as set forth in NFPA 101, or as determined in accordance with the adopted building code. [30A:7.4.2]

30.3.2.3 Drainage

In areas of repair garages used for repair or servicing of vehicles, floor assemblies shall be constructed of noncombustible materials or, if combustible materials are used in the assembly, they shall be surfaced with approved, nonabsorbent, noncombustible material, except as indicated in 30.3.2.3.1. [30A:7.4.3]

30.3.2.3.1

Slip-resistant, nonabsorbent, interior floor finishes having a critical radiant flux not less than 9.87 Btu/in.2-hr (0.45 W/cm2), as determined by NFPA 253, shall be required. [30A:7.4.3.1]

30.3.2.3.2

Floors shall be liquidtight to prevent the leakage or seepage of liquids and shall be sloped to facilitate the movement of water, fuel, or other liquids to floor drains. [30A:7.4.3.2]

30.3.2.3.3

In areas of repair garages where vehicles are serviced, any floor drains shall be properly trapped and shall discharge through an oil/water separator to the sewer or to an outside vented sump. [30A:7.4.3.3]

30.3.2.4 Pits, Belowgrade Work Areas, and Subfloor Work Areas for LP-Gas Powered Vehicles

30.3.2.4.1

Pits, belowgrade work areas, and subfloor work areas used for lubrication, inspection, and minor automotive maintenance work shall comply with the provisions of this chapter, in addition to other applicable requirements of NFPA 30A. [30A:7.4.4.1]

30.3.2.4.2

Walls, floors, and structural supports shall be constructed of masonry, concrete, steel, or other approved noncombustible materials. [30A:7.4.4.2]

30.3.2.4.3

In pits, belowgrade work areas, and subfloor work areas, the required number, location, and construction of means of egress shall meet the requirements for special purpose industrial occupancies in Chapter 40 of NFPA 101 or as determined in accordance with the adopted building code. [30A:7.4.4.3]

30.3.2.4.4

Pits, belowgrade work areas, and subfloor work areas shall be provided with exhaust ventilation at a rate of not less than 1 ft3/min/ft2 (0.3 m3/min/m2) of floor area at all times that the building is occupied or when vehicles are parked in or over these areas. Exhaust air shall be taken from a point within 12 in. (0.3 m) of the floor. [30A:7.4.4.4]

30.3.2.5 Fixed Fire Protection

Automatic sprinkler protection installed in accordance with the requirements of Section 13.3 shall be provided throughout all buildings containing repair garages, as herein defined, where any one of the following conditions exist:

The building housing the repair garage is two or more stories, including basements, and the aggregate area of the repair garage exceeds 10,000 ft2 (930 m2).

The repair garage is one story and exceeds 12,000 ft2 (1115 m2).

The repair garage is servicing vehicles parked in the basement of the building.

30.3.2.6 Gas Detection System

Repair garages used for repair of vehicle engine fuel systems fueled by nonodorized gases shall be provided with an approved flammable gas detection system. Gas detection systems in repair garages for hydrogen vehicles shall be in accordance with NFPA 2. [30A:7.4.6]

30.3.2.6.1 System Design

30.3.2.6.1.1

The flammable gas detection system shall be calibrated to the types of fuels or gases used by vehicles to be repaired. [30A:7.4.6.1.1]

30.3.2.6.1.2

The gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the lower flammable limit (LFL). [30A:7.4.6.1.2]

30.3.2.6.2 Operation

Activation of the gas detection system shall result in all of the following:

Initiation of distinct audible and visual alarm signals in the repair garage

Deactivation of all heating systems located in the repair garage

Activation of the mechanical ventilation system, when the system is interlocked with gas detection

[30A:7.4.6.2]

30.3.2.6.3 Failure of the Gas Detection System

Failure of the gas detection system shall result in the deactivation of the heating system and activation of the mechanical ventilation system and, where the ventilation system is interlocked with gas detection, shall cause a trouble signal to sound in an approved location. [30A:7.4.6.3]

30.3.2.6.4 System Integrity

The circuits of the detection system required by 30.3.2.6 shall be monitored for integrity in accordance with NFPA 72. [30A:7.4.6.4]

30.3.2.7 Heating, Ventilating, and Air-Conditioning

30.3.2.7.1

Forced air heating, air-conditioning, and ventilating systems serving a fuel dispensing area inside a building or a repair garage shall not be interconnected with any such systems serving other occupancies in the building. Such systems shall be installed in accordance with NFPA 90A. [30A:7.5.1]

30.3.2.7.2

Return air openings in areas of repair garages for vehicles powered by LP-Gas used for the repair or servicing of vehicles or in a fuel dispensing area shall be not less than 18 in. (455 mm) above floor level measured to the bottom of the openings.

30.3.2.7.3

Combined ventilation and heating systems shall not recirculate air from areas that are below grade level for repair garages for vehicles powered by LP-Gas.

30.3.2.7.4

For repair garages for vehicles powered by LP-Gas, exhaust duct openings shall be located so that they effectively remove vapor accumulations at floor level from all parts of the floor area. Where lighter-than-air gaseous fuel vehicles are repaired, exhaust duct openings shall be located so that they effectively remove vapor accumulations at the ceiling level.

30.3.2.8 Heat-Producing Appliances

30.3.2.8.1

Heat-producing appliances shall be installed in accordance with the requirements of 30.3.2.8. They shall be permitted to be installed in the conventional manner except as provided in 30.3.2.8. [30A:7.6.1]

30.3.2.8.2 Listing and Restricted Locations

30.3.2.8.2.1

Heat-producing appliances shall be listed for use in classified areas. [30A:7.6.2.1]

30.3.2.8.2.2

Solid fuel stoves, improvised furnaces, salamanders, and space heaters shall not be permitted in areas of repair garages used and repairing or servicing of vehicles or in a fuel dispensing area. [30A:7.6.2.2]

30.3.2.8.2.3

Heat-producing equipment in any lubrication room or service room where there is no dispensing or transferring of Class I or Class II liquids or LP-Gas, when installed in accordance with Chapter 7 of NFPA 30A shall be listed. [30A:7.6.2.3]

30.3.2.8.3

Heat-producing appliances shall be permitted to be installed in a special room that is separated from areas that are classified as Division 1 or Division 2, in accordance with Chapter 8 of NFPA 30A, by walls that are constructed to prevent the transmission of vapors, that have a fire resistance rating of at least 1 hour, and that have no openings in the walls that lead to a classified area within 8 ft (2.4 m) of the floor. Specific small openings through the wall, such as for piping and electrical conduit, shall be permitted, provided the gaps and voids are filled with a fire-resistant material to resist transmission of vapors. All air for combustion purposes shall be taken from outside the building. This room shall not be used for storage of combustible materials, except for fuel storage as permitted by the standards referenced in 30.2.8.9. [30A:7.6.3]

30.3.2.8.4

Heat-producing appliances using gas or oil fuel shall be permitted to be installed in a lubrication or service room where there is no dispensing or transferring of Class I liquids, including the open draining of automotive gasoline tanks, provided the bottom of the combustion chamber is at least 18 in. (455 mm) above the floor and the appliances are protected from physical damage. [30A:7.6.4]

30.3.2.8.5

Heat-producing appliances using gas or oil fuel listed for use in garages shall be permitted to be installed in lubrication rooms, service rooms, or fuel dispensing areas where Class I liquids are dispensed or transferred, provided the equipment is installed at least 8 ft (2.4 m) above the floor. [30A:7.6.5]

30.3.2.8.6

Where repairs are conducted on lighter-than-air-fueled vehicles, open flame heaters or heating equipment with exposed surfaces having a temperature in excess of 750°F (399°C) shall not be permitted in areas subject to ignitible concentrations of gas. [30A:7.6.6]

30.3.2.8.7

Electrical heat-producing appliances shall meet the requirements of Chapter 8 of NFPA 30A. [30A:7.6.7]

30.3.2.8.8

Fuels used shall be of the type and quality specified by the manufacturer of the heating appliance. Crankcase drainings shall not be used in oil-fired appliances, unless the appliances are specifically approved for such use. [30A:7.6.8]

30.3.2.8.9

Heat-producing appliances shall be installed to meet the requirements of NFPA 31, NFPA 54, NFPA 82, NFPA 90A, and NFPA 211, as applicable, except as hereinafter specifically provided. [30A:7.6.9]

30.3.3 CNG Fueled Vehicles and LNG Fueled Vehicles

30.3.3.1 Applicability

30.3.3.1.1

Paragraph 30.3.3 shall apply to the construction of new buildings, existing buildings, and portions of buildings serving as repair garages and repair areas for CNG and LNG vehicles. [30A:7.8.1.1]

30.3.3.1.2

Major and minor repair areas, as defined in 30.3.3.4 for CNG and LNG vehicle repair, shall meet the requirements of 30.3.3. [30A:7.8.1.2]

30.3.3.2 Occupancy Classification

The occupancy classification of a repair garage shall be a special purpose industrial occupancy as defined in NFPA 101 or as determined in accordance with the adopted building code. [30A:7.8.2]

30.3.3.3 Means of Egress

In a repair garage, the required number, location, and construction of means of egress shall meet all applicable requirements for special purpose industrial occupancies as set forth in NFPA 101 or as determined in accordance with the adopted building code. [30A:7.8.3]

30.3.3.4 Definition and Classification of Repair Areas Serving CNG and LNG Vehicle Repair

30.3.3.4.1 Applicability

This paragraph shall classify repair areas for CNG and LNG vehicles based on vehicle fuel system pressure status and permissible repair activities. [30A:7.8.4.1]

30.3.3.4.2 CNG Repair Area Classification

CNG vehicle repair areas shall be classified according to Table 30.3.3.4.2. [30A:7.8.4.2]

Table 30.3.3.4.2 Repair Area Classification Assignment for CNG Vehicles

Vehicle Status — Fuel

System Pressure (psig)

(Not to Exceed 3600 psig)

Type of Repair

Minimum Repair Area

Classification

≤500

Minor ongoing repair work or

unattended vehicle storage while

undergoing minor repair

Minor repair area

≤500

Major ongoing repair work or

unattended vehicle storage while

undergoing major repair

Major repair area

>500

Ongoing major or minor repair work or

unattended vehicle storage while

undergoing major or minor repair

Major repair area

[30A:Table 7.8.4.2]

30.3.3.4.3 LNG Repair Area Classification

LNG vehicle repair areas shall be classified according to Table 30.3.3.4.3. [30A:7.8.4.3]

Table 30.3.3.4.3 Repair Area Classification Assignment for LNG Vehicles

Vehicle Status

Type of Vehicle Repair

Minimum Repair Area

Classification

Vehicle Fuel

System Pressure

Status (psig)

Vehicle Fuel

System Liquid

Content Status

(Onboard Fuel)

<65% of tank

MAWP\*

Any liquid

volume

Minor ongoing repair work

or unattended vehicle

storage while undergoing

minor repair

Minor (ongoing repair work)

or major repair area

(unattended vehicle storage)

Major ongoing repair work

or unattended vehicle

storage while undergoing

major repair

Major repair

\*See 30.3.3.4.3.1 and 30.3.3.4.3.2.

[30A:Table 7.8.4.3]

30.3.3.4.3.1

All vehicles upon first entering the facility shall have a tank pressure less than 65 percent of the tank maximum allowable working pressure (MAWP) as per the ASME Boiler Pressure Vessel Code. [30A:7.8.4.3.1]

30.3.3.4.3.2

High-pressure fuel systems shall be depressurized in accordance with the original equipment manufacturers' recommended maintenance procedures. [30A:7.8.4.3.2]

30.3.3.5 Drainage

In areas of repair garages used for repair or servicing of vehicles, floor assemblies shall be constructed of noncombustible materials or combustible materials. [30A:7.8.5]

30.3.3.5.1

If combustible materials are used in the floor assembly, they shall meet the provisions of 30.3.3.5.2. [30A:7.8.5.1]

30.3.3.5.2

Combustible materials used in the floor assembly shall be surfaced with approved, nonabsorbent, noncombustible material, except as indicated in 30.3.3.5.3. [30A:7.8.5.2]

30.3.3.5.3

Major repair garages and major repair areas serving LNG-fueled vehicles shall comply with the following:

Floor drains shall be designed with consideration for spilled LNG entering the drain.

Drains shall be designed to prevent excessive pressure buildup.

Drains shall not allow the migration of gas or liquid to adjacent areas of the facility.

[30A:7.8.5.3]

30.3.3.5.4

Where installed, slip-resistant, nonabsorbent interior floor finishes shall have a critical radiant flux of not less than 9.87 Btu/in.2-hr (0.45 W/cm2), as determined by NFPA 253. [30A:7.8.5.4]

30.3.3.5.5

Floors shall be liquidtight to prevent the leakage or seepage of liquids and be sloped to facilitate the movement of water, fuel, or other liquids to floor drains. [30A:7.8.5.5]

30.3.3.5.6

In areas of repair garages where vehicles are serviced, floor drains shall be properly trapped and discharge through an oil/water separator either to the sewer or to an outside vented sump. [30A:7.8.5.6]

30.3.3.6 Construction Requirements of CNG and LNG Repair Areas

In repair garages or areas where CNG or LNG vehicles are repaired, all the applicable requirements of NFPA 52 shall be met. [30A:7.8.6]

30.3.3.7 Roofs and Ceilings — Major and Minor Repair Areas

30.3.3.7.1

Roof and ceiling structures — and their accessories or attachments — shall be constructed to not impede the free movement of gas toward ventilation fans and gas sensor locations. [30A:7.8.7.1]

30.3.3.7.2\*

Where gas movement in roof and ceiling structures is impeded, provisions to mitigate gas holdup shall be made. [30A:7.8.7.2]

30.3.3.8 Walls and Partitions — Major and Minor Repair Areas

30.3.3.8.1\*

Walls and partitions separating major repair areas from other repair spaces, including mechanical equipment rooms, shall be constructed to minimize the migration of natural gas to the other repair spaces. [30A:7.8.8.1]

30.3.3.8.2

Walls and partitions separating major repair areas from occupied spaces other than repair areas shall be gastight. [30A:7.8.8.2]

30.3.3.8.3

Walls and partitions shall have a fire resistance rating of not less than 1 hour as defined in NFPA 101 or as determined in accordance with the adopted building code. [30A:7.8.8.3]

30.3.3.8.4

Penetrations of gastight walls for ducts, pipes, conduits, and structural members shall be sealed to prevent migration of natural gas. [30A:7.8.8.4]

30.3.3.8.5

Hinged doors separating major repair areas from all other interior areas shall be in accordance with the following:

Be self-closing and equipped with seals

Not be equipped with baffles, louvres, or other penetrations

[30A:7.8.8.5]

30.3.3.8.6

Rollup doors separating major repair areas from all other interior areas shall remain closed when not in use. [30A:7.8.8.6]

30.3.3.8.7

Windows located in walls or partitions separating major repair areas from other spaces shall be self-closing or non-opening. [30A:7.8.8.7]

30.3.3.9 Pits, Belowgrade Work Areas, and Subfloor Work Areas

30.3.3.9.1

Pits, belowgrade work areas, and subfloor work areas in CNG and LNG vehicle repair areas shall meet the requirements of 30.3.2.4. [30A:7.8.9.1]

30.3.3.9.2

Pits used in major repair garages for CNG and LNG vehicles shall have a continuous ventilation system as per Table 8.3.3 of NFPA 30A or a ventilation system that is initiated automatically upon the detection of a gas concentration of 25 percent of the lower flammable limit (LFL). [30A:7.8.9.2]

30.3.3.9.3

Pit ventilation systems shall have provisions for manual activation inside and outside of the pit. [30A:7.8.9.3]

30.3.3.9.4

Manual activation shall not defeat the automatic activation stipulated in 30.3.3.9.2. [30A:7.8.9.4]

30.3.3.10 Fixed Fire Protection

CNG and LNG vehicle repair areas shall meet the requirements of 30.2.5. [30A:7.8.10]

30.3.3.11 Gas Detection System

Repair areas and overnight vehicle storage areas in garages servicing CNG and LNG vehicles shall be provided with an approved flammable gas detection system. [30A:7.8.11]

30.3.3.11.1 System Design

The flammable gas detection system shall be calibrated to the types of fuels or gases used by the vehicles to be repaired. [30A:7.8.11.1]

30.3.3.11.1.1

The gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the LFL. [30A:7.8.11.1.1]

30.3.3.11.1.2

Gas detection shall also be provided in lubrication or chassis repair pits in buildings serving LNG vehicles. [30A:7.8.11.1.2]

30.3.3.11.2\* Operation

Activation of the gas detection system shall result in all of the following automatic actions:

Initiation of distinct audible and visual alarm signals in the repair garage

Deactivation of all heating systems located in the repair garage

De-energization of all spark-producing electrical systems and components and motors within 455 mm (18 in.) of the ceiling

Activation of the purge ventilation system as specified in 30.3.3.12.4

[30A:7.8.11.2]

30.3.3.11.3 Failure of the Gas Detection System

30.3.3.11.3.1

Failure of the gas detection system shall result in the deactivation of the heating system and the activation of the mechanical ventilation system. [30A:7.8.11.3.1]

30.3.3.11.3.2

Where the ventilation system is interlocked with gas detection, failure of the gas detection system shall cause a trouble signal to sound in an approved location. [30A:7.8.11.3.2]

30.3.3.11.4 System Integrity

The circuits of the detection system required by 30.3.3.9 shall be monitored for integrity. [30A:7.8.11.4]

30.3.3.12 Heating, Ventilating, and Air Conditioning

30.3.3.12.1

Heating, ventilating, and air conditioning of repair garages and repair areas for servicing CNG and LNG vehicles shall meet the requirements of 30.2.7.1, 30.2.7.2, and 30.2.7.3. [30A:7.8.12.1]

30.3.3.12.2

Exhaust duct openings shall be located so that they effectively remove vapor accumulation at floor level from all parts of the floor area. [30A:7.8.12.2]

30.3.3.12.3

Exhaust duct openings shall be located so that they effectively remove vapor accumulations at the ceiling level within 455 mm (18 in.) of the ceiling. [30A:7.8.12.3]

30.3.3.12.4

Where required, purge ventilation shall comply with 30.3.3.12.4.1, 30.3.3.12.4.2, and 30.3.3.12.4.3. [30A: 7.8.12.4]

30.3.3.12.4.1 Capacity

The purge ventilation capacity required for major repair areas shall be determined in accordance with the maintenance room volume as per Table 30.3.3.12.4.1. [30A:7.8.12.4.1]

Table 30.3.3.12.4.1 Minimum Purge Ventilation Requirements for Major Repair Areas

Minimum Air Changes per

Hour (ACH) Major Repair Area Volume, V

(m3)

10.0 V < 400

8.5 400 ≤ V < 800

7.0 800 ≤ V < 1600

6.0 1600 ≤ V < 3200

5.0 3200 ≤ V < 6400

4.5 6400 ≤ V < 12800

4.0 V ≥ 12800

Source: Canadian Standards Association B401, Vehicle Maintenance Facilities Code, Table 4, 2018.

[30A:Table 7.8.12.4.1]

30.3.3.12.4.2\* Minor Repair Areas

For minor repair areas, a minimum purge ventilation rate of two air changes per hour (ACH) shall be provided. [30A:7.8.12.4.2]

30.3.3.12.4.3 Minimum Ventilation

30.3.3.12.4.3.1

Ventilation shall meet the requirements of applicable mechanical standards, building codes, or local regulations. [30A:7.8.12.4.3.1]

30.3.3.12.4.3.2

In no case shall ventilation be less than 0.5 ACH. [30A:7.8.12.4.3.2]

30.3.3.12.4.3.3

Natural or mechanical ventilation shall extract air from within 0.5 m (20 in.) of the ceiling. [30A:7.8.12.4.3.3]

30.3.3.13 Heat-Producing Appliances and Other Sources of Ignition

30.3.3.13.1

Heat-producing appliances shall be listed and installed in accordance with the manufacturer's instructions, governing codes, and the requirements of this section. [30A:7.8.13.1]

30.3.3.13.2

Solid fuel stoves, improvised furnaces, salamanders, and portable space heaters shall not be permitted. [30A:7.8.13.2]

30.3.3.13.3

The following shall be considered potential sources of ignition and prohibited from locations as specified elsewhere in this Code for CNG and LNG vehicle repair areas:

Open flame heaters

Heating systems and other equipment either not employing sealed combustion or with exposed surface temperatures exceeding 399°C (750°F)

Unit heaters

Water heaters not employing sealed combustion

Fired pressure washers

Arcing and sparking tools or equipment

Gas-fired cutting torches

[30A:7.8.13.3]

30.3.3.13.4 Fired Heating Equipment

30.3.3.13.4.1

Fired heating equipment installed in minor repair areas for CNG and LNG vehicles shall meet the following requirements:

Fired heating equipment shall be located with flame and combustion air inlet elevation a minimum of 0.61 m (24 in.) above the floor level and a minimum of 1.1 m (42 in.) below the ceiling.

Fired heating equipment and its combustion air intake shall not be located directly above where a vehicle is normally parked for servicing.

Fired heating equipment shall be located a minimum horizontal distance of 1 m from all parts of the vehicle.

[30A:7.8.13.4.1]

30.3.3.13.4.2

Where permitted by the manufacturer's installation instructions, 30.3.3.13.4.1 shall not apply to radiant heaters with surface temperatures not exceeding 399°C (750°F). [30A:7.8.13.4.2]

30.3.3.14 CNG and LNG Defueling Equipment

30.3.3.14.1 General

30.3.3.14.1.1

Installation of equipment for defueling CNG and LNG vehicles for repair and other purposes shall be in accordance with the following requirements:

Defueling equipment and installations shall be designed in accordance with applicable codes and standards.

Defueling equipment and installations shall be approved by the authority having jurisdiction.

Defueling and captive vent systems and equipment shall be designed to recover, store, flare, or vent gas in a safe manner.

Where gas is vented, the vent outlet shall comply with the following:

Be a minimum of 4.5 m (15 ft) away from building ventilation and heating and air-conditioning exhaust and intake locations

Be at a minimum elevation of 3 m (10 ft) above surrounding buildings or equipment within 15 m (50 ft) of the vent location

Be directed in a vertically upward direction

Have an electrical area classification in accordance with Table 8.3.3 of NFPA 30A

[30A:7.8.14.1.1]

30.3.3.14.2

Defueling equipment and captive vent piping systems shall be designed in accordance with CSA B51, Boiler, Pressure Vessel, and Pressure Piping Code, or ASME B31.3, Process Piping, where applicable. [30A:7.8.14.2]

30.3.3.14.3

The location of defueling equipment shall consider the safe movement and parking of the defueling vehicle, as well as other vehicular traffic. [30A:7.8.14.3]

30.3.3.14.4

Defueling equipment shall be protected from vehicle impact. [30A:7.8.14.4]

30.3.3.14.5

The flexible hoses of the defueling equipment shall be designed to minimize the potential for hose contact with the ground, accidental hose damage, and tripping hazards. [30A:7.8.14.5]

30.3.3.14.6 Bonding and Grounding

30.3.3.14.6.1

All defueling equipment, hoses, and piping systems shall be bonded to a common ground. [30A:7.8.14.6.1]

30.3.3.14.6.2

Convenient bonding of vehicle fuel containers to decanting equipment shall be provided. [30A:7.8.14.6.2]

30.3.3.14.6.3

T h e defueling hose shall be electrically conductive. [30A:7.8.14.6.3]

30.3.3.14.7 Captive Vent Systems

30.3.3.14.7.1

Major and minor repair areas that have LNG vehicles parked for extended periods of time shall have provisions for a captive vent system to safely vent boil-off gas from the vehicle fuel container to a safe outdoor location. [30A:7.8.14.7.1]

30.3.3.14.7.2

The captive vent system shall be designed with engineering supervision. [30A:7.8.14.7.2]

30.3.3.14.7.3

The LNG captive vent system shall meet the following requirements:

The captive vent system shall be designed for cryogenic temperatures and have a design pressure rating in accordance with the highest potential vent flow pressure.

The captive vent piping system shall be without any inline valves.

A single captive vent shall not serve more than one vehicle fuel container.

The captive vent systems using cryogenic flexible hoses shall be designed to minimize the potential for hose contact with the floor, accidental hose damage, and tripping hazards.

The captive vent system hoses and piping systems shall be electrically conductive and grounded.

Convenient bonding of the vehicle fuel container to the captive vent system shall be provided.

[30A:7.8.14.7.3]

30.3.4 Battery-Powered Electric Vehicles

30.3.4.1 Occupancy Classification

The occupancy classification of a repair garage shall be a special purpose industrial occupancy as defined in NFPA 101, or as determined in accordance with the adopted building code.

30.3.4.2 Means of Egress

In a repair garage, the required number, location, and construction of means of egress shall meet all applicable requirements for special purpose industrial occupancies, as set forth in NFPA 101, or as determined in accordance with the adopted building code.

Walls, floors, and structural supports shall be constructed of masonry, concrete, steel, or other approved noncombustible materials.

30.3.4.4 Fixed Fire Protection

30.3.4.4.1

Automatic sprinkler protection installed in accordance with the requirements of Section 13.3 shall be provided throughout the fire area containing the repair garage.

30.3.4.4.2

An automatic smoke detection system shall be installed throughout the fire area containing the repair garage in accordance with NFPA 70, NFPA 72, and Section 13.7 of this Code.

30.3.4.4.3

Emergency forces notification shall be in accordance with 13.7.1.10.

30.3.4.5

Charging equipment shall be installed in accordance with NFPA 70.

30.3.4.6 Used Electric Batteries. (Reserved)

30.4 Operational Requirements

Operations conducted in motor fuel dispensing facilities and repair garages shall comply with Section 42.7.