280. VEHICLE OPERATIONS

01. Scope

a. Vehicle operations shall conform to all other applicable requirements of this standard, as well as the following provisions. Nothing in this standard shall be construed to prohibit better or otherwise safer conditions than specified herein. (7-1-97)

02. Definitions

a. Accessory is a secondary part or assembly of parts which contributes to the overall function and usefulness of a machine. (7-1-97)

b. Charts are the United States Department of Transportation, National Highway Traffic Safety Administration, (NHTSA) publications entitled Safety Precautions for Mounting and Demounting Tube type Truck/Bus Tires and Multi-Piece Rim/Wheel Matching Chart, or any other publications containing, at a minimum, the same instructions, safety precautions and other information contained on those charts that are applicable to the types of multi-piece rim wheels being serviced. (7-1-97)

c. Demounting means the opposite of mounting. (7-1-97)
d. Installing a Wheel is the transfer and attachment of an assembled wheel onto a vehicle axle hub. (7-1-97)

e. Mounting a Tire is the assembly or putting together of rim components, tube, liner (flap) and tire to form a wheel including inflation. (7-1-97)

f. Multi-piece Rim is a vehicle wheel rim consisting of two (2) or more parts, one of which is a side or locking ring designed to hold the tire on the rim by interlocking components when the tube is inflated, regardless of the sizes of the component parts. (7-1-97)

g. Removing is the opposite of installing. (7-1-97)

h. Restraining Device is a mechanical apparatus such as safety cage, rack, or safety bar arrangement or other machinery or equipment specifically designed for this purpose, that will constrain all multi-piece rim wheel components following their release during an explosive separation of the wheel components. (7-1-97)

i. Rim Manual is a publication containing instructions from the manufacturer or other qualified organization for correct mounting, demounting, maintenance and safety precautions peculiar to the multi-piece rim being serviced. (7-1-97)

j. Service or Servicing is the mounting and demounting of multi-piece rim wheels, and related activity such as inflating, deflating, installing, removing, maintaining, handling or storing of multi-piece rim wheels, including inflating and deflating of wheels installed on vehicles. (7-1-97)

k. Service Area is that part of an employer's premises for the servicing of multi-piece rim wheels, or any other place where an employee services multi-piece rim wheels. (7-1-97)

l. Trajectory is any potential path or route that a lock ring, side ring, rim base and/or time may travel during an explosive rim separation, and includes paths which may deviate from that perpendicular to the assembled position of the components on the rim base at the time of separation. (See Figure 280.02-A) (7-1-97)

FIGURE 280.02-A
m. Wheel is an assemblage of tire, tube, and multi-piece rim components. (7-1-97)

n. Wheelbase is the distance between centers of front and rear axles. For a multiple axle assembly the axle center for wheelbase measurement is taken as the mid-point of the assembly. (7-1-97)

03. General Requirements: (7-1-97)

a. Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for aisles, at leading docks, through doorways and wherever turns of passageways shall be kept clear and in good repair, with no obstruction across or in aisles that could create a hazard. Permanent aisles and passageways shall be appropriately marked. (7-1-97)

b. Storage of material shall not create a hazard. Bags, containers, bundles, etc., stored in tiers shall be stacked, blocked, interlocked and limited in height so that they are stable and secure against sliding or collapse. (7-1-97)

c. Storage areas shall be kept free from accumulation of materials that constitute hazards from tripping, fire, explosion, or pest harborage. Vegetation control will be exercised when necessary. (7-1-97)
d. Proper drainage shall be provided. (7-1-97)

e. Clearance signs to warn of clearance limits shall be provided. (7-1-97)

f. Fire aisles, access to stairways, and fire equipment shall be kept clear. (7-1-97)

04. Conveyors: (7-1-97)

a. Conveyors shall be constructed, operated, and maintained in accordance with the provisions of ANSI B20.1. (7-1-97)

b. When the return strand of a conveyor operates within seven (7) feet of the floor there shall be a trough provided of sufficient strength to carry the weight resulting from a broken chain. (7-1-97)

c. If the strands are over a passageway, a means shall be provided to catch and support the ends of the chain in the event of broken chain. (7-1-97)

d. When the working strand of a conveyor crosses within three feet of the floor level in passageways, the trough in which it works shall be bridged the full width of the passageway. (7-1-97)

e. Whenever conveyors pass adjacent to or over working areas or passageways used by personnel, protective guards shall be installed. These guards shall be designed to catch and hold any load or materials which may fall off or become dislodged and injure a worker. (7-1-97)

f. Walking on rolls is prohibited. Employees shall not be allowed to walk on the rolls of roller type conveyors except for emergency. (7-1-97)

g. Guarding Shaft way and Material Entrances of Elevator Type Conveyors. Guards, screens or barricades of sufficient strength and size to prevent material from falling shall be installed on all sides of the Shaft way of elevator-type conveyors except at openings where material is loaded or unloaded. Automatic Shaft way gates or suitable barriers shall be installed at each floor level where material is loaded or unloaded from the platform. (7-1-97)

h. Conveyors shall be provided with an emergency stopping device which can be reached from the conveyor. Such device shall be located near the material entrance to each barker, chipper, saw, or similar type of equipment except where the conveyor leading into such equipment is under constant control of an operator who has full view of the material entrance and is located where he cannot possibly fall onto the conveyor. (7-1-97)

i. Where conveyors are in excess of seven (7) feet in height, means shall be provided to safely permit essential inspection and maintenance operations. (7-1-97)

j. Any part showing signs of significant wear shall be inspected carefully and replaced prior to reaching a condition where it may create a hazard. (7-1-97)
k. Replacement parts shall be equal to or exceed the manufacturer's specifications. (7-1-97)

05. Servicing Multi-Piece Rim Wheels: (7-1-97)

a. These requirements apply to the servicing of vehicles wheels which have tube-type tires mounted on multi piece rims. (7-1-97)

b. The employer shall provide a training program to train and instruct all employees who service multi-piece rim wheels in the hazards involved in servicing multi-piece rim wheels and the safety procedures to be followed. (7-1-97)

c. The employer shall assure that no employee services any multi-piece rim wheel unless the employee has been trained and instructed in correct procedures of mounting, demounting, and all related services, activities, and correct safety precautions for the rim type being serviced, and the safe operating procedures described in sub-section 280.05 of this section. (7-1-97)

d. Information to be used in the training program shall include at a minimum, the data contained on the charts and the contents of this standard. (7-1-97)

e. Where an employer knows or has reason to believe that any of his employees is unable to read and understand the charts or rim manual, the employer shall assure that the employee is instructed concerning the contents of the charts and rim manuals in a manner which the employee is able to understand. (7-1-97)

f. The employer shall assure that each employee demonstrates and maintains his ability to service multi-piece rim wheels safely, including performance of the following tasks: demounting of tires (including deflation); inspection of wheel components; mounting of tires (including inflation within a restraining device); use of the restraining device; handling of wheels; inflation of tires when a wheel is mounted on the vehicle; installation and removal of wheels. (7-1-97)

g. The employer shall evaluate each employee's ability to perform these tasks and to service multi-piece rim wheels safely and shall provide additional training as necessary to assure that each employee maintains his proficiency. (7-1-97)

h. The employer shall furnish and shall assure that employees use a restraining device in servicing multi-piece rim wheels. (7-1-97)

i. Each wheel restraining device shall have the capacity to withstand the maximum force that would be transferred to it during an explosive wheel separation occurring at one-hundred-fifty (150) percent of maximum tire specification pressure for the wheels being serviced. (7-1-97)

j. Wheel restraining devices shall be capable of preventing rim components from being thrown outside or beyond the frame of the device for any wheel position within the device. (7-1-97)

k. Wheel restraining devices shall be inspected prior to each day's use and after any explosive separation of wheel components and any restraining devices exhibiting any of the following
defects shall be immediately removed from service: cracks at welds; cracked or broken components; or bent or sprung components due to excessive corrosion. (7-1-97)

l. Wheel restraining devices removed from service in accordance with sub-section 280.05.k. of this section shall not be returned to service until they are inspected, repaired, if necessary, and are certified either by the manufacturer or by a Licensed Professional Engineer as meeting the strength requirements of sub-sections 280.05.h. through 280.05.k of this section. (7-1-97)

m. A clip-on-chuck with a sufficient length of hose to permit the employee to stand clear of the potential trajectory of the wheel components, and an in line valve with gauge or a pressure regulator preset to a desired value shall be furnished by the employer and used to inflate tires. (7-1-97)

n. Current charts shall be available in the service area. (7-1-97)

o. A current rim manual containing instructions for the type of rims being serviced shall be available in the service area. (7-1-97)

p. The employer shall assure that only tools recommended in the rim manual for the type of wheel being serviced are used to service multi-piece rim wheels. (7-1-97)

q. Wheel components shall not be interchanged except as provided in the charts, or in the applicable rim manuals. (7-1-97)

r. Wheel components shall be inspected prior to assembly. Rim bases, side rings, or lock rings which are bent out of shape, pitted from corrosion, broken or cracked, shall not be used and shall be rendered unusable and discarded. (7-1-97)

s. Mating surfaces of the rim gutter, rings and tire shall be free of any dirt, surface rust, scale or rubber buildup prior to mounting and inflation. (7-1-97)

t. The employer shall establish a safe operating procedure for servicing multi-piece rim wheels and shall assure that employees are instructed in and follow that procedure. The procedure shall include at least the following elements: (7-1-97)

u. Tire shall be completely deflated by removal of the valve core before demounting. (7-1-97)

v. Tires shall be completely deflated by removing the valve core, before a wheel is removed from the axle in either of the following situations: when the tire has been driven under inflated at eighty (80) percent or less of its recommended pressure; or when there is obvious or suspected damage to the tire or wheel components. (7-1-97)

w. Rubber lubricant shall be applied to bead and rim mating surfaces during assembly of the wheel and inflation of the tire. (7-1-97)
x. Tires shall be inflated only when contained by a restraining device, except that when the wheel assembly is on a vehicle, tires that are under inflated but have more than eighty (80) percent of the recommended pressure, may be inflated while the wheel is on the vehicle if remote control inflation equipment is used and no employees are in the trajectory, and except as provided in sub-section 280.05.u. of this section. (7-1-97)

y. When a tire is being partially inflated without a restraining device for the purpose of seating the lock ring or to round out the tube, such inflation shall not exceed three (3) psig. (7-1-97)

z. Whenever a tire is in a restraining device the employee shall not rest or lean any part of his body or equipment on or against the restraining device. (7-1-97)

aa. After tire inflation, the tire, rim and rings shall be inspected while still within the restraining device to make sure that they are properly seated and locked. If further adjustment to the tire, rim or rings is necessary, the tire shall be deflated by removal of the valve core before the adjustment is made. (7-1-97)

bb. Cracked, broken, bent or otherwise damaged rim components shall not be reworked, welded, brazed, or otherwise heated. (7-1-97)

cc. No attempt shall be made to correct the seating of side and lock rings by hammering, striking or forcing the components while the tire is pressurized. (7-1-97)

dd. Whenever multi-piece rim wheels are being handled, employees shall stay out of the trajectory unless the employer can demonstrate that performance of the servicing makes the employee's presence in the trajectory necessary. (7-1-97)

06. Powered Industrial Trucks: (7-1-97)

a. This section contains safety requirements relating to fire protection design, maintenance, and use of fork trucks, tractors, platform lift trucks, motorized hand trucks, and other specialized industrial trucks, powered by electric motors, or internal combustion engines. This section does not apply to compressed gas-operated industrial trucks, nor to farm vehicles, nor to vehicles intended primarily for earth moving or over-the-road hauling. (7-1-97)

b. All new powered industrial trucks acquired and used by an employer after the effective date of these standards shall meet the design and construction requirements for powered industrial trucks established in the American National Standard for Powered Industrial Trucks Part II, ANSI B56.1, except for vehicles intended primarily for earth moving or over-the-road hauling. (7-1-97)

c. Approved trucks shall bear a label or some other identifying mark indicating approval by the testing laboratory as meeting the specifications and requirements of ANSI B56.1. (7-1-97)
d. Modifications and additions which affect capacity and safe operation shall not be performed by the customer or user without manufacturers prior written approval. Capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly. (7-1-97)

e. If the truck is equipped with front end attachments other than factory installed attachments, it shall be marked to identify the attachments and show the approximate weight of the truck and attachment combination at maximum elevation with load laterally centered. (7-1-97)

f. The user shall see that all nameplates and markings are in place and are maintained in a legible condition. (7-1-97)

g. For the purpose of this standard, there are 11 different designations of industrial trucks or tractors as follows: D, DS, DY, E, ES, EE, EX, G, GS, LP, and LPS. (7-1-97)

h. The D designated units are units similar to the G units except that they are diesel engine powered instead of gasoline engine powered. (7-1-97)

i. The DS designated units are diesel powered units that are provided with additional safeguards to the exhaust, fuel and electrical systems. They may be used in some locations where a D unit may not be considered suitable. (7-1-97)

j. The DY designated units are diesel powered units that have all the safeguards of the DS units and in addition do not have any electrical equipment, including the ignition, and are equipped with temperature limitation features. (7-1-97)

k. The E designated units are electrically powered units that have minimum acceptable safeguards against inherent fire hazards. (7-1-97)

l. The ES designated units are electrically powered units that, in addition to all of the requirements for the E units are provided with additional safeguards to the electrical system to prevent emission of hazardous sparks and to limit surface temperatures. They may be used in some locations where the use of an E unit may not be considered suitable. (7-1-97)

m. The EE designated units are electrically powered units that have, in addition to all of the requirements for the E and ES units, the electric motors and all other electrical equipment completely enclosed. In certain locations the EE unit may be used where the use of an E and ES unit may not be considered suitable. (7-1-97)

n. The EX designated units are electrically powered units that differ from E, ES, or EE units in that the electrical fittings and equipment are so designed, constructed and assembled that the units may be used in certain atmospheres containing flammable vapors or dusts. (7-1-97)

o. The G designated units are gasoline powered units having minimum acceptable safeguards against inherent fire hazards. (7-1-97)
p. The GS designated units are gasoline powered units having minimum acceptable safeguards against inherent fire hazards. (7-1-97)

q. The LP designated unit is similar to the G unit except that liquefied petroleum gas is used for fuel instead of gasoline. (7-1-97)

r. The LPS designated units are liquefied petroleum gas powered units that are provided with additional safeguards to the exhaust, fuel, and electrical systems. They may be used in some locations where the use of an LP unit may not be considered suitable. (7-1-97)

s. The atmosphere or location shall have been classified as to whether it is hazardous or nonhazardous prior to the consideration of industrial trucks being used therein and the type of industrial trucks required shall be as provided in sub-section 280.06.u. of this section, for such location. (7-1-97)

t. The industrial trucks specified under sub-section 280.06.w. through sub-section 280.06.cc. of this section are the minimum types required but industrial trucks having greater safeguards may be used if desired. (7-1-97)

u. For specific areas of use, see Table 280.06-A in this sub-section, which tabulates the information contained in this section. References in parentheses are to the corresponding classification as used in the National Electrical Code; and ANSI Standard CI for the convenience of persons familiar with those classifications. (7-1-97)

v. Power-operated industrial trucks shall not be used in atmospheres containing hazardous concentration of acetylene, butadiene, ethylene oxide, hydrogen (or gases or vapors equivalent in hazard to Hydrogen, such as manufactured gas), propylene oxide, acetaldehyde, cyclopropane, diethyl ether, ethylene, isoprene, or unsymmetrical dimethyl hydrazine (UDMH). Power-operated industrial trucks shall not be used in atmospheres containing hazardous concentrations of metal dust, including aluminum, magnesium, and their commercial alloys, other metals of similarly hazardous characteristics, or in atmospheres containing carbon black, coal or coke dust except approved power-operated industrial trucks designated as EX may be used in such atmospheres. In atmospheres where dust of magnesium, aluminum or aluminum bronze may be present, fuses, switches, motor controllers, and circuit breakers of trucks shall have enclosures specifically approved for such locations. (7-1-97)

w. Only approved power operated industrial trucks designated as EX may be used in atmospheres containing acetone, acrylonitrile, alcohol, ammonia, benzine, benzol, butane, ethylene dichloride, gasoline, hexane, lacquer solvent vapors, naphtha, natural gas, propane, propylene, or zylenes in quantities sufficient to produce explosives or ignitable mixtures and where such concentrations of these gases or vapors exist continuously, intermittently or periodically under normal operating conditions or may exist frequently because of repair, maintenance operations, leakage, breakdown or faulty operation of equipment. (7-1-97)

x. Power operated industrial trucks designated as DY, EE, or EX may be used in locations where volatile flammable liquids or flammable gases are handled, processed or used, but in which the
hazardous liquids, vapors or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems, or in the case of abnormal operation of equipment; also in locations in which hazardous concentrations of gases or vapors are normally prevented by positive mechanical ventilation but which might become hazardous through failure or abnormal operation of the ventilation equipment; or in locations which are adjacent to Class I, Division I locations, and to which hazardous concentration of gases or vapors might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clear air, and effective safeguards against ventilation failure are provided. (7-1-97)

y. In locations used for the storage of hazardous liquids in sealed containers or liquefied or compressed gases in containers approved power-operated industrial trucks designated as DS, ES, GS, or LPS may be used. This classification includes locations where volatile flammable liquids or flammable gases or vapors are used, but which would become hazardous only in case of an accident or of some unusual operation condition. The quantity of hazardous material that might escape in case of accident, the adequacy of ventilating equipment, the total area involved and the record of the industry or business with respect to explosions or fires are all factors that should receive consideration in determining whether or not the DS or DY, ES, EE, GS, LPS designated truck possesses sufficient safeguards for the location. Piping without valves, checks, meters and similar devices would not ordinarily be deemed to introduce a hazardous condition even though used for hazardous liquids or gases. Locations used for the storage of hazardous liquids or of liquefied or compressed gases in sealed containers would not normally be considered hazardous unless subject to other hazardous conditions also. Only approved power operated industrial trucks designated as EX shall be used in atmospheres in which combustible dust is or may be in suspension continuously, intermittently, or periodically under normal operating conditions, in quantities sufficient to produce explosive or ignitable mixtures, or where mechanical failure of abnormal operation of machinery or equipment might cause such mixtures to be produced. The EX classification usually includes the working areas of grain handling and storage plants, room containing grinders or pulverizes, cleaners, graders, scalpers, open conveyors or spouts, open bins or hoppers, mixers, or blenders, automatic or hopper scales, packing machinery, elevator heads and boots, stock distributors, dust and stock collectors, (except all-metal collectors vented to the outside), and all similar dust producing machinery and equipment in grain processing plants, starch plants, sugar pulverizing plants, malting plants, hay grinding plants, and other occupancies of similar nature; coal pulverizing plants (except where the pulverizing equipment is essentially dust tight); all working areas where metal dusts and powders are produced, processed, handled, packed, or stored (except in tight containers); and other similar locations where combustible dust may, under normal operating conditions, be present in the air in quantities sufficient to produce explosive or ignitable mixtures. (7-1-97)

z. Only approved power operated industrial trucks designated as DY, EE, or EX shall be used in atmospheres in which combustible dust will not normally be in suspension in the air or will not be likely to be thrown into suspension by the normal operation of equipment or apparatus in quantities sufficient to produce explosive or ignitable mixtures but where deposits or accumulations of such dust may be ignited by arcs or sparks originating in the truck. (7-1-97)
aa. Only approved power operated industrial trucks designated as DY, EE, or EX shall be used in locations which are hazardous because of the presence of easily ignitable fibers or flyings but in which such fibers or flyings are not likely to be in suspension in the air in quantities sufficient to produce ignitable mixtures. (7-1-97)

bb. Only approved power operated industrial trucks designated as DS, DY, ES, EE, EX, GS, or LPS shall be used in locations where easily ignitable fibers are stored or handled including outside storage, but are not being processed or manufactured. Industrial trucks designated as E, which have been previously used in these locations may be continued in use. (7-1-97)

c. On piers and wharves handling general cargo, any approved power operated industrial truck designated as Type D, E, G, or LP may be used, or trucks which conform to the requirements for these types may be used. (7-1-97)

d. If storage warehouses and outside storage locations are hazardous only the approved power operated industrial truck specified for such locations in sub-section 280.06.u. through 280.06.cc. of this section shall be used. If not classified as hazardous, any approved power operated industrial truck designated as Type D, E, G, or LP may be used, or trucks which conform to the requirements for these types may be used. (7-1-97)

ee. If general industrial or commercial properties are hazardous, only approved power operated industrial trucks specified for such locations in this section shall be used. If not classified as hazardous, any approved power operated industrial truck designated as Type D, E, G, or LP may be used, or trucks which conform to the requirements of these types may be used. (7-1-97)

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<table>
<thead>
<tr>
<th>Classes</th>
<th>Unclassified</th>
<th>Class I locations</th>
<th>Class II locations</th>
<th>Class III locations</th>
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</thead>
<tbody>
<tr>
<td>Description of classes</td>
<td>Locations not possessing atmospheres as described in other columns.</td>
<td>Locations in which flammable gases or vapors are, or may be, present in the air in quantities sufficient to produce explosive or ignitable mixtures.</td>
<td>Locations which are hazardous because of the presence of combustible dust.</td>
<td>Locations where easily ignitable fibers or flyings are present but not likely to be in suspension in quantities sufficient to produce ignitable mixtures.</td>
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<tr>
<td>Groups in</td>
<td>None</td>
<td>A</td>
<td>B</td>
<td>C</td>
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</table>
Examples of locations or atmospheres in classes and groups.

| classes | Piers and wharves inside and outside general storage, general industrial or commercial properties. | Acetylene | Hydrogen | Ethylene | Gasoline | Naphtha | Alcohol | Aceton | Lacquer | solvent | Benzen | Carbon | black | coal dust, coke dust | Metal | dust | Grain | dust, flour dust, starch dust, organic dust | Baled | waste, cocoa fiber, cotton, excelsior, hemp, istle, jute, kapok, oakum, sisal, Spanish moss, synthetic fibers, tow. |

**TABLE 280.06-A - PART 2**

**SUMMARY TABLE ON USE OF INDUSTRIAL TRUCKS IN VARIOUS LOCATIONS - CONTINUED**

Authorized uses of trucks by types is groups of classes and divisions

<table>
<thead>
<tr>
<th>Groups in classes</th>
<th>Non</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>A</th>
<th>B</th>
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**Trucks conforming to these types may also be used.**

ff. Power operated industrial trucks that have been originally approved for the use of gasoline for fuel, when converted to the use of liquefied petroleum gas fuel in accordance with sub-section 280.06.sss. of this section may be used in those locations where G, GS, or LP and LPS designated trucks have been specified in the preceding sections. (7-1-97)

gg. Powered industrial trucks using liquid fuel, LP-gas, or hydrogen shall be refueled outside the building or in an area specifically approved for that purpose. (10-1-06)

hh. High lift rider trucks shall be fitted with an overhead guard manufactured in accordance with sub-section 280.06.a. through 280.06.f. of this section unless operating conditions do not permit. (7-1-97)

ii. If the type of load presents a hazard, the user shall equip fork trucks with a vertical load backrest extension manufactured in accordance with sub-section 280.06.b. of this section. (7-1-97)

jj. Powered industrial trucks when in use shall have audible and visual warning devices in operation anytime the truck is in use. (7-1-00)

kk. Only trained and authorized operators shall be permitted to operate a powered industrial truck. Methods shall be devised to train operators in the safe operation of powered industrial trucks. (7-1-97)

ll. Industrial trucks shall not be driven up to anyone standing in front of a bench or other fixed object. (7-1-97)
mm. No person shall be allowed to stand or pass under the elevated portion of any forklift truck, whether loaded or empty. (7-1-97)

nn. Unauthorized personnel shall not be permitted to ride on powered industrial trucks. A safe place to ride with a fixed seat shall be provided where riding on trucks is authorized. (7-1-00)

oo. The employer shall prohibit arms or legs from being placed between the uprights of the forklift truck mast or outside the running lines of powered industrial trucks. (7-1-97)

pp. When leaving a powered industrial truck unattended, load engaging means shall be fully lowered, controls neutralized, engine shall be shut off, and brakes set. Wheels blocked if the industrial truck is parked on an incline. (7-1-00)

qq. A powered industrial truck is unattended when the operator is twenty-five (25) feet or more away from the vehicle which remains in his view, or whenever the operator leaves the vehicle and it is not in his view. When the operator of an industrial truck is dismounted and within twenty-five (25) feet of the truck still in his view, the load engaging means shall be fully lowered, controls neutralized, and the brakes set to prevent movement. (7-1-97)

rr. A safe distance shall be maintained from the edge of ramps or platforms while on any elevated dock or platform. Forklift trucks shall not be used for opening or closing freight doors. (7-1-97)

ss. There shall be sufficient headroom under overhead installations, lights, pipes, sprinkler systems, etc. to allow forklift and powered industrial trucks to maneuver. (7-1-00)

tt. An overhead guard shall be used as protection against falling objects. It should be noted that an overhead guard is intended to offer protection from the impact of small packages, boxes, bagged material, etc., representative of the job application, but not to withstand the impact of a falling capacity load. (7-1-97)

uu. A load backrest extension shall be used whenever necessary to minimize the possibility of the load or part of it from falling rearward. (7-1-97)

vv. Only approved industrial trucks shall be used in hazardous locations. (7-1-97)

ww. Whenever a forklift truck is equipped with vertical only, or vertical and horizontal controls elevatable with the lifting carriage or forks for lifting personnel, the following additional precautions shall be taken for the protection of personnel being elevated. Use of a safety platform firmly secured to the lifting carriage and/or forks. Means shall be provided whereby personnel on the platform can shut off power to the truck. Such protection from falling objects as indicated necessary to the operating conditions shall be provided. (7-1-97)

xx. Do not use a forklift to elevate workers who are standing on the forks. When using forklifts as elevated work platforms, a platform or structure built specifically for hoisting persons shall be used providing the following requirements are complied with: The structure must be securely
attached to the mast or forks and shall have standard guardrails and toe boards installed on all sides. The hydraulic system shall be so designed that the lift mechanism will not drop faster than one-hundred-twenty-five (125) feet per minute in the event of a failure in any part of the system. Forklifts used for elevating work platforms shall be identified that they are so designed. A safety strap shall be installed or the control lever shall be locked to prevent the boom from tilting. An operator shall attend the lift equipment while workers are on the platform. The operator shall be in the normal operating position while raising or lowering the platform. Elevate a worker on a platform only when the lift truck is directly below the work area. The vehicle shall not travel from point to point while workers are on the platform except that inching or maneuvering at very slow speed is permissible. Use a fall protection means such as guard rails, chains, or a safety harness with a lanyard or deceleration device for the worker(s) on the platform. The area between workers on the platform and the mast shall be adequately guarded to prevent contact with chains or other shear points. (7-1-00)

yy. The driver of powered industrial trucks shall be required to slow down and sound the horn at cross aisles and other locations where vision is obstructed. If the load being carried obstructs forward view, the driver shall be required to travel with the load trailing. (7-1-97)

zz. Railroad tracks shall be crossed diagonally wherever possible by powered industrial trucks. Parking closer than eight (8) feet from the center of railroad tracks is prohibited. (7-1-97)

aaa. The driver of an industrial truck shall be required to look in the direction of, and keep a clear view of the path of travel. (7-1-97)

bbb. Grades shall be ascended or descended slowly. When ascending or descending grades in excess of ten (10) percent, loaded trucks shall be driven with the load upgrade. Unloaded trucks should be operated on all grades with the load engaging means downgrade. On all grades the load and load engaging means shall be tilted back if applicable, and raised only as far as necessary to clear the road surface. (7-1-97)

ccc. Under all travel conditions industrial trucks shall be operated at a speed that will permit them to be brought to a stop in a safe manner. Stunt driving and horseplay shall not be permitted. The driver shall be required to slow down for wet and slippery floors. Running over loose objects on the roadway surface shall be avoided. (7-1-97)

ddd. Dockboards or bridge plates, shall be properly secured before they are driven over. Dockboards or bridge plates shall be driven over carefully and slowly and their rated capacity never exceeded. (7-1-97)

ee. Elevators shall be approached slowly, and then entered squarely after the elevator car is properly leveled. Once on the elevator, the controls shall be neutralized, power shut off, and the brakes set. (7-1-97)

fff. Motorized hand trucks must enter elevator or other confined areas with load end forward. (7-1-97)
While negotiating turns, speed shall be reduced to a safe level by means of turning the hand steering wheel in a smooth, sweeping motion. Except when maneuvering at a very low speed, the hand steering wheel shall be turned at a moderate even rate. (7-1-97)

Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered. (7-1-97)

Only loads within the rated capacity of the truck shall be handled. (7-1-97)

The long or high (including multiple-tiered) loads which may affect capacity of the truck shall be adjusted. (7-1-97)

When attachments are used, particular care shall be taken in securing, manipulating, positioning, and transporting the load. Trucks equipped with attachments shall be operated as partially loaded trucks when not handling a load. (7-1-97)

The load engaging means shall be placed under the load as far as possible; the mast shall be carefully tilted backward to stabilize the load. (7-1-97)

Extreme care shall be used when tilting the load forward or backward, particularly when high tiering. Tilting forward with load engaging means elevated shall be prohibited except to pick up a load. An elevated load shall not be tilted forward except when the load is in a deposit position over a rack or stack. When stacking or tiering, only enough backward tilt to stabilize the load shall be used. (7-1-97)

If at any time a powered industrial truck is found to be in need of repair, defective, or in any way unsafe, the truck shall be taken out of service until it has been restored to safe operating condition. (7-1-97)

Any power operated industrial truck not in safe operating condition shall be removed from service. All repairs shall be made by authorized personnel. (7-1-97)

No repairs shall be made in Class I, II, and III locations. (7-1-97)

Industrial trucks shall not be altered so that the relative positions of the various parts are different from what they were when originally received from the manufacturer, nor shall they be altered either by the addition of extra parts not provided by the manufacturer or by the elimination of any parts, except as provided in sub-section 280.06.a. through sub-section 280.06.f. of this section. Additional counter-weighting of fork trucks shall not be done unless approved by the truck manufacturer. (7-1-97)

Industrial trucks shall be examined before being placed in service, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily. Where industrial trucks are used on a round-the-clock basis, they shall be examined after each shift. Defects when found shall be immediately reported and corrected. (7-1-97)
Industrial trucks shall be kept in a clean condition, free of lint, excess oil and grease. Noncombustible agents should be used for cleaning trucks. Low flash point (below one-hundred (100) degrees Fahrenheit) solvents shall not be used. High flash point (at or above one-hundred (100) degrees Fahrenheit) solvents may be used. Precautions regarding toxicity, ventilation, and fire hazard shall be consonant with the agent or solvent used. (7-1-97)

Industrial trucks originally approved for the use of gasoline for fuel may be converted to liquefied petroleum gas fuel provided the complete conversion results in a truck which embodies the features specified for LP or LPS designated trucks. Such conversion shall be approved. (7-1-97)

07. Industrial Truck Training Requirements: (7-1-03)

a. The employer shall ensure that each powered industrial truck operator is competent to operate a powered industrial truck safely, as demonstrated by the successful completion of the training and evaluation specified in this sub-section. (7-1-03)

b. Prior to permitting an employee to operate a powered industrial truck (except for training purposes), the employer shall ensure that each operator has successfully completed the training except as permitted in this sub-section. (7-1-03)

c. Trainees may operate a powered industrial truck only; (7-1-03)

i. Under the direct supervision of persons who have the knowledge, training, and experience, and (7-1-03)

ii. Where such operation does not endanger the trainee or other employees. (7-1-03)

d. Training shall consist of a combination of formal instruction (e.g., lecture, discussion, interactive computer learning, video tape, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator’s performance in the workplace. (7-1-03)

e. Powered industrial truck operators shall receive initial training in the following topics, except in topics which the employer can demonstrate are not applicable to the safe operation of the truck in the employer’s workplace. (7-1-03)

f. Truck related topics that are required to be covered during training: (7-1-03)

i. Operating instructions, warnings, and precautions for the types of powered industrial trucks the operator will be authorized to operate; (7-1-03)

ii. Differences between powered industrial trucks and an automobile. (7-1-03)
iii. Powered industrial truck controls and instrumentation, where they are located, what they do, and how they work; (7-1-03)

iv. Engine or motor operation; (7-1-03)

v. Steering and maneuvering; (7-1-03)

vi. Visibility (including restrictions due to loading); (7-1-03)

vii. Fork and adaptation, operation, and use limitations; (7-1-03)

viii. Vehicle capacity; (7-1-03)

ix. Vehicle stability; (7-1-03)

x. Any vehicle inspection and maintenance that the operator will be required to perform; (7-1-03)

xi. Refueling and/or charging of batteries; (7-1-03)

xii. Operating limitations; (7-1-03)

xiii. Any other operating instructions, warnings, or precautions listed in the operator’s manual for the types of powered industrial trucks that the employee is being trained to operate. (7-1-03)

g. Workplace related topics that are required to be covered during training: (7-1-03)

i. Surface conditions where the vehicle is to be operated; (7-1-03)

ii. Composition of the loads to be carried and load stability; (7-1-03)

iii. Load manipulation, stacking, and unstacking; (7-1-03)

iv. Pedestrian traffic in areas where the vehicle will be operated; (7-1-03)

v. Narrow aisles and other restricted places where the vehicle will be operated; (7-1-03)

vi. Hazardous (classified) locations where the vehicle will be operated; (7-1-03)

vii. Ramps and other sloped surfaces that could affect the vehicle’s stability; (7-1-03)

viii. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a build-up of carbon monoxide or diesel exhaust; (7-1-03)

ix. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation. (7-1-03)
h. Refresher training, including an evaluation of the effectiveness of that training, shall be conducted to ensure that the operator has the knowledge and skills needed to operate the powered industrial truck safely. (7-1-03)

i. Refresher training in relevant topics shall be provided to the operators of powered industrial trucks when:

   i. The operator has been observed to operate the vehicle in an unsafe manner; (7-1-03)

   ii. The operator has been involved in an accident or near-miss incident; (7-1-03)

   iii. The operator has received an evaluation that reveals that the operator is not operating the vehicle safely; (7-1-03)

   iv. The operator is assigned to drive a different type of powered industrial truck; or (7-1-03)

   v. A condition in the workplace changes in a manner that could affect safe operation of the vehicle. (7-1-03)

j. An evaluation of each powered industrial truck operator’s performance shall be conducted at least every three years. (7-1-03)

k. If an operator has previously received training in a topic covered by this sub-section, and such training is appropriate to the truck and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the vehicle safely. (7-1-03)

l. The employer shall certify that each operator has been trained and evaluated as required by this sub-section. The certification shall include the name of the operator, the date(s) of the training, the date of the evaluation, and the identity of the person(s) performing the training or evaluation. (7-1-03)

08. Fuel Handling and Storage: (7-1-97)

a. The storage and handling of liquid fuels such as gasoline and diesel fuel shall be in accordance with NFPA Flammable and Combustible Liquids Code (NFPA No. 30) and the requirements of section 220 of this standard. (7-1-97)

b. The storage and handling of liquefied petroleum gas fuel shall be in accordance with NFPA Storage and Handling of Liquefied Petroleum Gases (NFPA No. 58). (7-1-97)

09. Changing and Charging Storage Batteries: (7-1-97)

a. Battery charging installations shall be located in areas designated for that purpose. (7-1-97)
b. Facilities shall be provided for flushing and neutralizing spilled electrolyte, for fire protection, for protecting charging apparatus from damage by trucks, and for adequate ventilation for dispersal of fumes from gassing batteries. (7-1-97)

c. When racks are used for support of batteries, they shall be made of materials nonconductive to spark generation or be coated or covered to achieve this objective. (7-1-97)

d. A conveyor, overhead hoist, or equivalent material handling equipment shall be provided for handling batteries. (7-1-97)

e. Reinstalled batteries shall be properly positioned and secured in the vehicle. (7-1-97)

f. A carboy filler or siphon shall be provided for handling electrolyte. (7-1-97)

g. When charging batteries, acid shall be poured into water; water shall not be poured into acid. (7-1-97)

h. Vehicles shall be properly positioned and brake applied or chocked before attempting to change or charge batteries. (7-1-97)

i. When charging batteries, the vent caps shall be kept in place to avoid electrolyte spray. Care shall be taken to assure that vent caps are functioning. Non-venting caps shall not be used. EXCEPTION: Maintenance free batteries. (7-1-97)

j. When charging batteries in the vehicle the battery (or compartment) cover(s) shall be open to dissipate heat. (7-1-97)

k. Smoking shall be prohibited in the charging area. (7-1-97)

l. Precautions shall be taken to prevent open flames, sparks, or electric arcs in battery charging areas. (7-1-97)

m. Tools and other metallic objects shall be kept away from the top of uncovered batteries. (7-1-97)

n. Electric wiring in the battery charging room/area shall be explosion proof and in stalled in accordance with the National Electric Code for such service. EXCEPTION: Small individual battery charging operations. (10-1-06)

10. Lighting for Operating Areas: (7-1-97)

a. Controlled lighting of adequate intensity shall be provided in vehicle operating areas. (See American National Standard Practice for Industrial Lighting, A11.1). (7-1-97)

b. Where general lighting is less than two (2) lumens per square foot, auxiliary directional lighting shall be provided on the vehicle. (7-1-97)

11. Control of Noxious Gases and Fumes: (7-1-97)
a. Concentration levels of carbon monoxide gas created by vehicle operations shall not exceed the levels specified in section 300 of this standard. (7-1-97)

b. Questions concerning degrees of concentration and methods of sampling to ascertain the conditions shall be referred to a qualified industrial hygienist or department personnel. (7-1-97)

12. Dockboards (Bridge Plates): (7-1-97)

a. Portable and powered dockboards shall be strong enough to carry the load imposed on them. (7-1-97)

b. Portable dockboards shall be secured in position, either by being anchored or equipped with devices which will prevent their slipping. (7-1-97)

c. Powered dockboards shall be designed and constructed in accordance with Commercial Standard CS202-56, Industrial Lifts and Hinged Loading Ramps published by the U.S. Department of Commerce. (7-1-97)

d. Handholds, or other effective means, shall be provided on portable dockboards to permit safe handling. (7-1-97)

13. Trucks and Vehicles, General: (7-1-97)

a. The brakes of highway trucks shall be set and wheel chocks placed under the rear wheels to prevent the trucks from rolling while they are boarded with powered industrial trucks. (7-1-97)

b. Fixed jacks shall be used to support a semi-trailer and prevent upending during the loading or unloading when the trailer is not coupled to a tractor. (7-1-97)

c. Brakes shall be set and wheel blocks shall be in place to prevent movement of trucks or trailers while loading or unloading. Fixed jacks may be necessary to support a semitrailer during loading or unloading when the trailer is not coupled to a tractor. The flooring of truck trailers shall be checked for breaks and weakness before they are driven onto. (7-1-97)

d. All traffic regulations shall be observed, including authorized speed limits. A safe distance shall be maintained between vehicles, and vehicles shall be kept under control at all times. (7-1-97)

e. The right of way shall be yielded to ambulances, fire trucks, or other vehicles in emergency situations. (7-1-97)

f. Other vehicles traveling in the same direction at intersections, blind spots, or other dangerous locations shall not be passed. (7-1-97)

g. Fuel tanks shall not be filled while the engine is running. Spillage shall be avoided. (7-1-97)
h. Spillage of oil or fuel shall be carefully washed away or completely evaporated and the fuel tank cap replaced before restarting engine. (7-1-97)

i. No truck shall be operated with a leak in the fuel system until the leak has been corrected. (7-1-97)

j. Open flames shall not be used for checking electrolyte level in storage batteries or gasoline level in fuel tanks. (7-1-97)

k. Any vehicle not in a safe operating condition shall be removed from service. All repairs shall be made by authorized personnel. (7-1-97)

l. No repairs shall be made in Class I, II, and III locations. (7-1-97)

m. Repairs to the fuel and ignition systems of vehicles which involve fire hazards shall be conducted only in locations designated for such repairs. (7-1-97)

n. Vehicles in need of repairs to the electrical system shall have the battery disconnected prior to such repairs. (7-1-97)

o. All parts of any vehicle requiring replacement shall be replaced only by parts equivalent as to safety with those used in the original design. (7-1-97)

p. Vehicles shall be examined before being placed in service, and shall not be placed in service if the examination shows any condition adversely affecting the safety of the vehicle. Such examination shall be made at least daily. Where vehicles are used on a round-the-clock basis, they shall be examined after each shift. Defects when found shall be immediately reported and corrected. (7-1-97)

q. Water mufflers shall be filled daily or as frequently as is necessary to prevent depletion of the supply of water below seventy-five (75) percent of the filled capacity. Vehicles with mufflers having screens or other parts that may become clogged shall not be operated while such screens or parts are clogged. A vehicle that emits hazardous sparks or flames from the exhaust system shall immediately be removed from service, and not returned to service until the cause of the emission of such sparks and flames has been eliminated. (7-1-97)

r. When the temperature of any part of any vehicle is found to be in excess of its normal operating temperature, thus creating a hazardous condition, the vehicle shall be removed from service and not returned to service until the cause for such overheating has been eliminated. (7-1-97)

s. Vehicles shall be kept in a clean condition, free of trash, excess oil and grease. Noncombustible agents should be used for cleaning vehicles. Low flash point (below one-hundred (100) degrees Fahrenheit) solvents shall not be used. High flash point (at or above one-hundred (100) degrees Fahrenheit) solvents may be used. Precautions regarding toxicity, ventilation, and fire hazard shall be consonant with the agent or solvent used. (7-1-97)
t. Where it is necessary to use antifreeze in the engine cooling system, only those products having glycol base shall be used. (7-1-97)

u. Only qualified drivers shall be permitted to operate motor vehicles/trucks, and shall possess a current Motor Vehicle Operator's license. (7-1-97)

v. Motor vehicles/trucks must be equipped with brakes which will safely hold the maximum load on maximum grades. (7-1-97)

w. Trailers equipped with air brakes, shall have the air hooked up to the trailer brake system at the time that the trailer is coupled to the tow vehicle. (7-1-97)

x. Brakes on trucks and trailers must be tested before equipment descends a steep grade. (7-1-97)

y. Vehicle drivers shall at all times operate equipment at a safe speed for roadway conditions. (7-1-97)

z. Safe methods of loading and unloading motor vehicle trucks and trailers shall be observed at all times. (7-1-97)

aa. To prevent accidents during the backing of vehicles where vision is obstructed, a backup alarm shall be in operation. In the event the backup alarm becomes non-operational then a spotter shall be stationed at a point giving a clear view of the rear of the truck and the operator of the vehicle at all times or the vehicle driver shall sound their horn before starting to back, and shall sound the horn intermittently during the entire backing operation. Backup alarms shall be maintained in an operational condition at all times. The employer shall not allow employees to disable backup alarms. EXCEPTION: Combat military vehicles may use a spotter instead of a backup alarm. (7-1-97)

bb. Dump trucks shall have a device installed on the frame which will be of sufficient strength to hold the bed in the raised position when employees are working in an exposed position underneath. (7-1-97)

c. All parts and accessories of vehicles/trucks and trailers shall be kept in good repair and safe condition. Tires worn beyond the point of safety shall not be used. (7-1-97)

dd. All motor vehicles/trucks and trailers shall be equipped with standard lights, horn, flags, etc. to conform to the State of Idaho Motor Vehicle Laws. (7-1-97)

ee. All loads transported on vehicles/trucks and/or trucks and trailers shall be properly secured and distributed, and limited to a safe operating load for the condition of the roadway, and the capacity of the bridges, trestles, and other structures. (7-1-97)

ff. Trucks parked on an incline shall have the steered wheels turned into the curb and shall have at least one "Driver" wheel chocked on each side, independent of the braking system. (7-1-97)
gg. Motor vehicles used regularly for transportation of persons shall be well equipped, covered against the weather, and maintained in good mechanical condition at all times. (7-1-97)

hh. Seats, which shall be properly secured, shall be provided in each vehicle to accommodate the total number of persons normally transported. Where it becomes necessary under emergency conditions to transport more persons than the seating capacity of the vehicle will accommodate, all persons not having seats shall ride within the vehicle. Under no circumstances shall persons ride on fenders or running boards of a vehicle. No person shall ride in or on any vehicle with their legs hanging over the end or sides. A safety bar shall be placed across the rear opening of all trucks used to transport persons which are not equipped with tailgates. (7-1-97)

ii. Vehicles shall be equipped with compartments or screen of such strength to retain sharp tools which could present a hazard to employees being transported. (7-1-97)

jj. All dump-trucks used to transport workers shall be equipped with an adequate safety chain or locking device which will eliminate the possibility of the body of the truck being raised while workers are riding in the truck. (7-1-97)

kk. Explosives or highly inflammable materials shall not be carried in or on any vehicle while it is used to transport persons. (7-1-97)

ll. Exhaust systems shall be installed and maintained in proper condition, and shall be so designed as to eliminate the exposure of the persons to the exhaust gases and fumes. (7-1-97)

mm. The number of persons allowed in the cab of a single bench seat truck shall not exceed two (2) in addition to the driver. Personnel transport trucks designed and constructed with additional seating capacity behind the normal driver's seat may carry additional passengers in the seating area behind the driver's seat. Personnel transport trucks with bucket-type seats shall carry only the number of passengers for which the bucket seats are provided. In any seating arrangement, the driver must be able to maintain full freedom of motion. Additionally, the number of passengers or seating arrangement shall not obstruct the driver's normal vision. When trucks are designed and constructed with larger than normal seating capacity in the front seat, the total number of passengers may be increased provided that the operator's vision and control functions are maintained. (7-1-97)

nn. All enclosed personnel transport vehicles shall have an emergency exit in addition to the regular entrance. (7-1-97)

oo. Trucks used for hauling gravel shall not be used as crew trucks unless they are equipped as follows: steps in proper place or places; wooden floors; seats that are securely fastened; truck is properly covered; and all other general regulations covering crew trucks are fully complied with. (7-1-97)

pp. Half (1/2) ton vehicles shall haul not more than six (6) persons including the driver. Three-quarter (3/4) ton vehicles shall haul not more than eight (8) persons including the driver. (7-1-97)
qq. All vehicles shall be equipped with first aid kits and fire extinguishers. (7-1-97)

rr. No heating units in which there are open flames shall be used in vehicles. (7-1-97)

ss. Trailers and other towed equipment towed by use of a ball hitch shall have safety chains capable of being attached to the towing vehicle. (7-1-00)

EXCEPTION: Trailers and other towed equipment with an operational "brake-away" braking system need not have safety chains. (7-1-00)

tt. Every trailer that is required to be equipped with breaks shall be equipped with breaks of such characteristics as to be applied automatically and promptly upon the trailer breaking away. (10-1-06)

14. Rollover Protective Structures (ROPS) (7-1-03)

a. This sub-section applies to the following types of material handling equipment: to all rubber-tired, self-propelled scrapers, rubber-tired front-end loaders, rubber-tired dozers, wheel-type agricultural and industrial tractors, crawler tractors, crawler-type loaders, and motor graders, with or without attachments. (7-1-03)

b. Equipment manufactured after July 1, 1969 shall be equipped with rollover protective structures which meet the minimum performance standards prescribed in 29CFR 1926.1001, 29CFR 1926.1002, and 29CFR 1926.1003. (7-1-03)

c. The design objective shall be to minimize the likelihood of a complete overturn and thereby minimizing the possibility of the operator being crushed as a result of a rollover or upset. (7-1-03)

d. ROPS shall be designed to provide a vertical clearance of at least fifty-two (52) inches from the work deck to the ROPS at the point of ingress or egress. (7-1-03)

e. ROPS removed for any reason, shall be remounted with equal quality, or better, bolts or welding as required for the original mounting. (7-1-03)

f. Each ROPS shall have the following information permanently affixed to the structure: (7-1-03)

I. Manufacture or fabricator’s name and address; (7-1-03)

ii. ROPS model number, if any; (7-1-03)

iii. Machine make, model, or series number that the structure is designed to fit. (7-1-03)
g. Seat belts shall be provided and used on equipment with ROPS. Seat belts need not be provided for equipment which is designed only for standup operation. (7-1-03)