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SAFETY POLICY & PROCEDURE

Rim Wheels

SPP# 1910.177

Quick Reference

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1.0 Purpose

The purpose of this Safety Policy and Procedure (SPP) is to establish guidelines and accountability for servicing Rim Wheels. Through implementation of this SPP, injuries to North Carolina Department of Transportation (NCDOT) employees can be prevented.

2.0 Scope and Applicability

Rim wheels are an assemblage of tire, tube, and wheel components that are installed on NCDOT vehicles. If certain precautions are not followed, explosive separation or the sudden release of pressurized air may propel projectiles of rim wheel components. The number of workers exposed to tire and rim related hazards is increasing as NCDOT continues to add to its fleet of motor vehicles and rubber-tired equipment.

This SPP provides guidelines for servicing rim wheels by identifying training, equipment, and procedures to be used by NCDOT employees who service multi-piece and single-piece rim wheels.

This document also details the areas of responsibility for managers/unit heads, supervisors, employees, and Safety and Risk Management (SRM), within NCDOT.

This SPP affects all NCDOT employees directly or indirectly in the supervision, management, authorized users', procurement, receiving, handling, storage of, and repair/replacement/ installation of Tires, Wheels, and Rims (Single-Piece and/or Multi-Piece Rim Wheels) in the equipment shops who service single or multiple rim wheels.

3.0 Reference

SPP is established in accordance with Occupational Safety and Health Standards for General Industry (29 CFR 1910.177). In addition, industry best practices must be reviewed.

4.0 Policy

It is the policy of NCDOT to provide a place of employment that is free from recognized hazards that cause or are likely to cause death or serious physical harm to employees or the public. Therefore, all NCDOT employees who service Rim Wheels will be furnished with the equipment, tools, and training necessary to safely perform their duties. When hazards exist that cannot be eliminated, then engineering practices, administrative practices, safe work practices, Personal Protective Equipment (PPE), and proper training regarding Rim Wheels will be implemented. These measures will be implemented to minimize those hazards to ensure the safety of employees and the public.

5.0 General Responsibilities

It is the responsibility of each manager/unit head, supervisor, and employee to ensure implementation of NCDOT's SPP on Rim Wheels. It is also the responsibility of each NCDOT employee to report immediately any unsafe act or condition to his or her supervisor. Specific responsibilities are found in Section 6.3.

6.0 Procedure

This section provides applicable definitions, establishes general provisions, and identifies responsibilities required by NCDOT's SPP on Rim Wheels.

6.1 Definitions

Barrier

A fence, wall, or other structure placed between a single piece wheel and an employee during tire inflation that can contain the rim wheel components in the event of sudden release of the contained air in the single piece rim wheel.

Charts

Posters that are available from the United States Department of Labor, Occupational Safety and Health Administration, titled, "Dismounting and Mounting Procedures for Truck/Bus Tires," or from the National Highway Traffic Safety Administration (NHTSA) titled, "Dismounting and Mounting Procedures Truck/Bus Tires" and "Multi-Piece Rim Matching Chart," or any other poster which contains at least the same instructions, safety precautions, and other information contained in the charts that is applicable to the types of wheels being serviced.

Installing and Removing

The transfer and attachment of an assembled rim wheel onto a vehicle axle hub. Removal means the opposite.

Multi-Piece Rim Wheel

A wheel consisting of two or more parts, one of which is a side-locking ring designed to hold the tire on the wheel by interlocking components when the tire is inflated.

Restraining Device - An apparatus such as a cage, rack assemblage of bars, and other components that will contain all rim wheel components during the sudden release of the contained air of single piece rim wheel.

Rim Manual

A publication containing instructions from the manufacturer or other qualified organization for correct mounting, dismounting, maintenance, and safety precautions specific to the type of wheel being serviced.

Rim Wheel

An assemblage of tire, tube, and liner (where appropriate) and wheel components.

Service Area

That part of an employer's premises used for the servicing of rim wheels or any other place where an employee services rim wheels.

Service or Servicing

The mounting and dismounting of rim wheels and related activities such as inflating, deflating, installing, removing, and handling.

Single Piece Wheel

A vehicle wheel consisting of one part, designed to hold the tire on the wheel when the tire is inflated.

Trajectory

Any potential path or route that a rim wheel component may travel during an explosion separation or the sudden release of the pressurized air, or an area at which an air blast from a single piece rim may be released. The trajectory may deviate from paths which are perpendicular to the assembled position of the rim wheel at the time of separation or explosion.

Wheel

That portion of a rim wheel which provides the method of attachment of the assembly to the axle of a vehicle and provides the means to contain the inflated portion of the assembly (i.e., the tire and/or tube).

6.2 General Provisions

This section details the provisions of this ~~safety policy and procedure~~ **SPP** with each provision discussed in a separate subsection. These provisions are:

- Training
- Tire Restraining Device (Cage)
- Air-Line Assembly
- Charts and Rim Manuals
- Tools
- Wheel Component Acceptability
- Safe Operating Procedure

6.2.1 Training

All employees who service multi-piece and single-piece rim wheels shall be trained annually and be able to demonstrate knowledge in the following:

- The hazards involved in servicing rim wheels
- The correct procedure to follow for the specific rim wheel type being serviced
- How to use the restraining device (cage) and inspect it for damage that would remove it from service
- The type of air-line assembly required to remain outside of the trajectory

Refresher training shall be provided at the discretion of the supervisor.

Appendix A presents a checklist for tire safety training.

Applicable Learning Management System (LMS) classroom courses available:

1. Tire, Wheel, and Rim Safety (SAF-180) (This course is designed to educate DOT employees on the proper handling procedures when working with tires and rims. The following topic will be covered: rims, rings, tires, and wheels mounts, how to spot defects, safe work procedures for each job step, and proper lifting procedures).
2. Tire Safety (Meets OSHA requirements for annual tires and rim safety training).

6.2.2 Tire Restraining or Barrier Device (Cage)

A restraining device (cage) capable of withstanding 150% of the maximum tire specification pressure for the type of rim wheel being serviced will be provided. This cage will be capable of containing all parts of the tire or rim in the event of an explosion or separation. The maximum tire specification should be conspicuously posted on this equipment.

All restraining devices shall be inspected prior to each day's use or after any explosion or separation. If inspection of the cage reveals any of the following defects it must be removed from service immediately:

- Cracked welds
- Bent components that alter the structural integrity or ability of the cage to contain exploding rim or tire parts
- Pitting of components due to corrosion

Restraining devices or cages removed from service may not be used until repairs have been made and the cage has been reinspected. Component replacement or welding of structural members must be certified by the manufacturer or a Registered Professional Engineer before it may be returned to service.

6.2.3 Air-line Assembly

An air-line assembly consisting of the following components must be used when inflating tires:

- A clip-on chuck.
- An in-line valve with a pressure gauge or a pre-set regulator.
- A sufficient length of hose between the clip-on chuck and the in-line valve to allow the employee to stand outside the trajectory.

Only approved repairs to airlines and air-line assemblies are authorized (refer to manufacture regarding repairs). (i.e., The use of water pump clamps for repair/connections are not approved).

6.2.4 Charts and Rim Manuals

Current charts or rim manuals containing instruction for the type of wheels being serviced shall be available in the service area.

6.2.5 Tools

Only tools recommended in the rim manual for the type of wheel being serviced are to be used when servicing rim wheels.

6.2.6 Wheel Component Acceptability

Multi-piece wheel components shall not be interchanged except as provided in the charts or in the applicable rim manual.

Multi-piece wheel components and single-piece wheels shall be inspected prior to assembly. Any wheel or wheel component which is bent out of shape, pitted from corrosion, or broken or cracked shall be tagged out of service and removed from the service area. Damaged or leaky valves shall be replaced as well.

Prior to mounting and inflation the following items shall be cleaned and free from any dirt, surface rust, scale, loose, or flaked rubber:

- Rim Flanges
- Rim Gutters
- Rings
- Bead seating surfaces

- Bead areas of tires

The size (bead diameter and tire/wheel widths) and type of both the tire and the wheel shall be checked for compatibility prior to assembly of the rim wheel.

6.2.7 Spare and Replacement Tires

Shall be inspected prior to installation (I.e., Side walls, tread/tread cap, valve stem, rims, date of manufacture, tire brands, etc...). Follow current industry and Federal Motor Carrier Safety Administration (FMSCA) standards. Recapped tires should not be placed on the vehicles steering axle, follow NCDOT Policies and FMSCA Standards.

6.2.8 Road Service

Road service shall be safely performed and according to best standards of practice. It is recommended that the vehicle towed to equipment shop for repair, if possible.

7.0 Specific Responsibilities

7.1 Managers / Unit Heads

Managers/Unit Heads are responsible for ensuring that adequate funds are available and budgeted for the purchase of equipment, tools, and training necessary to service rim wheels in their areas. They will also be responsible for identifying the employees affected by this SPP. Managers/Unit Heads will obtain and coordinate the required training for the affected employees.

Managers/Unit Heads will also ensure compliance with this SPP through their auditing process.

7.2 Supervisors

Supervisors will not allow any employee who has not received the required training to perform any of the tasks or activities associated with this SPP.

Supervisors are responsible for communicating appropriate needs to managers/unit heads and/or supervisors. They are responsible for conducting annual employee training, documenting, and coordinating any additional training needs through their managers/unit heads.

Supervisors will audit and document for compliance with this SPP during their Facility and Jobsite Audits. Supervisors will periodically inspect restraining devices, air-line assemblies, and tools as well as check for the availability of posted rim charts and rim manuals during facility and worksite ~~site~~ audits.

Supervisors will ensure that employees are provided with appropriate PPE for their performance of this job.

7.3 Employees

Employees shall comply with all applicable guidelines contained in this SPP.

Employees will attend training on safe operating procedure for servicing multi-piece and single-piece rim wheels.

Employees will wear all the required PPE when servicing rim wheels.

Employees must report any suspected damage to restraining devices (cages) as well as report any tire explosion or separation within the restraining devices.

Employees must follow the Safe Operating Procedure (SOP) for servicing rim wheels.

7.4 Division Safety Staff

Division Safety Staff are responsible for:

- Providing assistance to managers/unit heads, supervisors, or others, as necessary on any matter concerning this SPP.
- Providing prompt assistance to managers/unit heads, supervisors, or others, for ensuring that products, supplies, and related equipment that are made available are of the highest quality, are safe, and appropriate for the work to be performed.
- Evaluating rim wheel servicing equipment and work practices.
- Periodically inspect and report to supervisors any deficiencies found in the restraining devices, air-line assemblies, tools, rim charts, rim manuals, and procedures for servicing rim wheels.

7.5 Safety & Risk Management

Safety and Risk Management will:

- Will assist in developing/or securing the required training, upon request.
- Safety and Risk Management will provide consultative and audit assistance, upon request.
- Coordinate with Purchasing to ensure that all newly purchased rim wheel servicing equipment comply with current safety regulations and this safety policy and procedure.

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APPENDIX A; Checklist for Tire Safety Training Compliance

Division and Equipment Shop: _____

Employee (Given) Name: _____

Employee Number: _____

Has the OSHA required training been completed in the following categories?

Topics Covered 1910.177	Completion Date	Trainer/Supervisor Signature	Employee's Initials
Rim Wheel Hazards			
Safety Procedures			
Procedure for Tire Wheel			
Safe Operating Procedures			
Chart Data			
OSHA Reg. 1910.177			
Safety Policy & Procedure			

Employee demonstrates and Maintains ability to service rime wheels and to perform the following task safely	Completion Date	Trainer/Supervisor Signature	Employee's Initials
Dismounting tires including deflation.			
Inspect/identify rim wheel components			
Mounting tires includes inflation with restraining device and other equipment			
Use of restraining device/barrier and other equipment			
Handling of rim wheels			
Inflating a tire when a 1-piece rim wheel is mounted on a vehicle			
Installation and removal of rim wheels			
Employee demonstrates as understanding of the necessity to stand out of the trajectory both during inflation and inspection of rim wheel after inflation			