Memphis Shelby County Schools (MSCS)

Fall Protection, Ladders & Aerial Lifts Program

The Fall Protection, Ladders and Aerial Lifts program has been developed in accordance with OSHA 1910.28 as well as 1910.67. **MSCS** is committed to the prevention of injuries associated with falls in the workplace. The program is developed and evaluated in accordance with conventional fall protection and ladder & aerial lift usage. This includes the following:

- Guardrail systems
- Safety net systems
- Personal fall protection systems
- Ladders
- Aerial Lifts

A copy of this program will be distributed to all relevant departments where Fall Protection and Aerial Lifts are or will be used. Maintaining this program will be the responsibility of the **Department Managers** and **Risk Management**.

It is the responsibility of all Department Managers to abide by and enforce this program with District employees as well as Contractors & Vendors.

Notes:

Qualified person: means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.

Competent person: means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

The 4-ft and 6-ft Rule: as required by OSHA 1910.28, excluding the use of ladders, any employees working at heights above **4-ft** must be protected from falling by a guardrail system or personal fall arrest system. Any employee working in *construction* (excluding the use of ladders) must be protected from falling by a guardrail system or personal fall arrest system at heights above **6-ft**.

This plan excludes the use of scaffolds

Responsibility

Each employee will be trained in these procedures and will strictly adhere to them except when doing so would expose the employee to a greater hazard. If, in the employee's opinion, this is the case, the employee is to notify their **Department Manager** as well as a *competent person* of their concern and have the concern addressed before proceeding.

It is the responsibility of the **Department Managers** to implement this Fall Protection & Aerial Lift program. Continual observational safety checks of work operations and the enforcement of the safety program and procedures will be regularly enforced by the **Department Managers** and **Risk Management**. Both a *qualified person* and a *competent person* are responsible for correcting any unsafe practices or conditions immediately.

MSCS is responsible, as an employer, for ensuring that all employees understand and adhere to the procedures of this plan and follow the instructions of the *qualified or competent person*. It is also the responsibility of each employee to bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either himself or herself or any other employees.

Any changes to the Fall Protection & Aerial Lift program must be approved by the **Department Manager** & **Risk Management**.

Guardrail Systems

A guardrail system must first be considered prior to the use of fall arrest systems. Guardrails are a barrier erected along an unprotected or exposed side, edge, or other area of a walking-working surface to prevent employees from falling to a lower level. For heights above 4-ft or above 6-ft (construction), a guardrail must be installed.

Guardrails must be installed or affixed with the top rail at a height of 42 inches above the working surface or platform. A midrail is required to be installed at 21 inches above the working surface or platform.

Guardrail systems must be able to withstand a force of at least 200 lbs applied downward or outward without failure.

Where falling objects may be present, a toeboard must be installed at a vertical height of 3.5 inches and be capable of withstanding 50 lbs of force in a downward or outward direction without failure.

Fall Arrest Systems

In the absence of a guardrail, a personal fall protection system must be used for any work completed by employees at heights above 4-ft or above 6-ft (construction).

A personal fall protection system is a system (including all components) used to provide protection from falling or to safely arrest an employee's fall if one occurs. Examples of personal fall protection systems in *general industry* include personal fall arrest systems, positioning systems, and travel restraint systems.

Personal fall arrest systems includes three basic components:

- **Harness**
- **Lanyard**
- **Anchor point**

All fall arrest components must be capable of withstanding 5,000 lbs of force applied for each employee (unless specified below).

Body harnesses must include straps that secure about the employee in a manner to distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders, with a means for attaching the harness to other components of a fall protection system.

Body harnesses must contain D-rings, snaphooks, and carabiners that are proof tested to a minimum tensile load of 3,600 lbs without cracking or breaking.

Snaphooks and carabiners must have an automatic locking system that requires at least two separate, consecutive movements to open.

Lanyards must have the capability of bringing employees to a complete stop and limit the maximum deceleration distance the employee travels to a maximum of 3.5 ft.

Lanyards that are self-retracting that are capable of limiting free fall distances to 2 feet or less must have components able to sustain a minimum tensile load of 3,000 pounds applied to the device with the lanyard in the fully extended position.

Anchor points used to attach to personal fall protection equipment on mobile work platforms on powered industrial trucks (forklifts) must be attached to an overhead member of the platform at a point located above and near the center of the platform.

Per 1910.140(d)(2)(ii), a fall arrest system (harness and lanyard) must be utilized in a forklift safety cage at heights over 6 ft.

Additionally, harnesses, lanyards, and anchor points must be inspected by a competent person prior to use and be in good working order with no damage to the equipment, D-ring, snaphooks, or carabiners.

In the event of a fall and deployment of the fall arrest system, the qualified or competent person must provide prompt rescue of the employee as well as call **911** emergency services.

Handrails

Where 3 or more steps (risers) are present, handrails must be installed at a minimum of 30 inches and no more than 38 inches from the leading edge of each step.

Handrails must be able to withstand a force of at least 200 lbs applied downward or outward without failure.

Safety Net Systems

Safety net systems are required when workplaces are more than 25 feet above the ground or water surface, or other surfaces where the use of ladders, scaffolds, catch platforms, temporary floors, safety lines, or safety belts is impractical.

Nets must extend 8 feet beyond the edge of the work surface where employees are exposed to and be installed as close under the work surface as practical but in no case more than 25 feet below such work surface.

Nets must be hung with sufficient clearance to prevent user's contact with the surfaces or structures below. The mesh size of nets shall not exceed 6 inches by 6 inches.

All nets must meet accepted performance standards of 17,500 foot-pounds minimum impact resistance as determined and certified by the manufacturers and bear a label of proof test. Edge ropes must provide a minimum breaking strength of 5,000 pounds.

Ladders

All portable & extension ladders are required to be stored in a designated area of the school or facility and returned to this area after each use.

Ladders are NEVER to be left lying on the floor near doorways, passageways, driveways or any high pedestrian traffic areas.

Portable & extension ladders must be inspected ***prior to use*** and **red** tagged, '***Dangerous: Do Not Use***' if defective and removed from service & discarded properly.

Portable & extension ladders used to gain access to an upper landing surface must extend at least 3 feet above the upper landing surface.

Multiple ladders and ladder sections cannot be tied or fastened together to provide added length nor can they be placed on unstable surfaces for use.

All ladders must be used according to the 4-to-1 ratio. This ratio compares the distance of the base of the ladder from the wall to the height it reaches on the wall; for every 4 feet the ladder reaches up, the base needs to be 1 foot away from the wall.

The 4-to-1 rule helps to stabilize the ladder in use and prevent an accident or injury. The higher you climb a ladder and the closer it is to the wall or vertical surface, the less stable it will become. Following this rule ensures stability because the ladder won't be too close to the wall.

The metal spreader on portable stepladders must be fully extended and locked into place to securely hold the front and back sections in an open position while in use.

All ladders must have legible manufacturer labels and weight limit that must be followed when in use.

All employees must adhere to the following requirements when climbing up & down any type of ladder:

- Face the ladder when climbing up or down it
- Use at least one hand to grasp the ladder when climbing up and down it
- Maintain 3-point contact with the ladder (1 hand, 2 feet or 2 hands, 1 feet) as they climb up & down it
- Do not carry any object or load that could result in loss of balance and fall while climbing up or down the ladder.

Types of Ladders

Fiberglass ladders are the preferred type of ladder to be used for electrical work.

Aluminum ladders ***cannot*** be used for any ***electrical work*** and can only be used for general work per the manufacturer's label and weight limit.

Wooden ladders are ***prohibited*** from use as they have a lower weight limit, are prone to splintering, vulnerable to pests, water & fire damage, and have a limited working height.

Fixed ladders can be found inside & outside of schools and facilities within the District attached to the walls of these buildings. For any fixed ladders at **20 ft** in height or greater, a protective safety cage must be provided as well as a locked security door attached to the base of the fixed ladder to prevent unauthorized access at **24 ft** in height or greater. Fall protection (harness & lanyard) is also required at **24 ft** in height or greater.

Aerial Lifts

Aerial lifts are to be inspected prior to use for signs of wear, defects, or damage that can affect the safe usage of the lift. This inspection includes the testing of the lift controls.

Aerial lifts can only be operated by trained employees and within each equipment's rating & design limitations.

Never exceed the manufacturer's recommended weight or person(s) capacity for the lift.

If any activity or use of the aerial lift poses a fire hazard, then proper fire extinguishers are kept in the immediate vicinity of each lift. A ***competent person*** is in charge of fire extinguisher selection and maintenance.

Specific types of Aerial Lifts are as follows:

- **Scissor Lift**
- **Boom Lift**
- **Bucket Truck**
- **Telehandler**
- **Articulating Lift**
- **Extensible Boom Platform**

An aerial lift ***cannot*** be used outside when winds exceed 20 mph.

Aerial lifts must maintain a safe distance of **10-ft** from any overhead power lines. Any overhead power line must be considered energized unless and until the person owning the line or the electric utility authorities tests the line and indicates that it is not energized and have visibly grounded it.

Employees working from the ground near power lines and an aerial lift must also maintain a safe working distance of **10-ft** from the power lines and lift.

Lifts can NEVER be driven (forward/reverse) while an employee is elevated in the basket or bucket.

Fall Protection

Any employee working from the following aerial lifts listed above must use the personal fall arrest (harness, lanyard, & anchor point) or travel restraint system selected and approved by each department. In these cases, the selected fall arrest or travel restraint system must be anchored to any designated anchor point or apparently substantial part of the aerial lift.

If the lift has outriggers, then they must be set unless the work area or terrain prevents their use. This is to prevent the lift from tipping over at any point while the employee is working at an elevated position.

When working on wooden floors or any surface with a crawlspace below, it is important to know the weight of the aerial lift and the load capacity of the flooring. Additionally, the use of 'cribbing'

with plywood boards to distribute the weight of the lift is required on these types of floors/surfaces.

Charging/Refueling Procedures

Aerial lifts operate with highly flammable fuels, oils, and greases. When refueling gas-powered lifts, ensure that the aerial lift engine is shut down, the area is well-ventilated, and no ignition sources are present.

Battery-operated aerial lifts present a hazard because they contain corrosive chemical solutions but may also emit highly explosive hydrogen gas during the recharging process. Proper gloves and goggles must be used when handling batteries. Moreover, battery charging is performed in a well-ventilated area where no ignition sources are present.

Accident Reporting & Emergency Procedures

Although **MSCS** works to prevent aerial lift accidents, upon the discovery of a lift-related accident, injury, illness, or near miss, an employee must cease operation and report it to his or her immediate supervisor or, if the injury is an emergency, then contact **911**. **Risk Management** must also be notified of any employee or property accident involving an aerial lift.

Employees working on the ground are also responsible for maintaining a safe operating distance and barrier between the lift and any pedestrian traffic. Employees working on the ground must also be familiar with the ground controls on the lift in the event, an employee gets stuck while the lift is extended.

Maintenance

While defective parts may be found, we prefer to invest time and effort into the proper upkeep of our lift equipment, which results in day-to-day reliability. Keeping up with the manufacturer's recommended maintenance schedules, and completing the proper records, will also increase our equipment's longevity and enhance their resale value.

Department Managers are required to follow the manufacturer's recommendations for daily maintenance and to schedule the routine maintenance with the proper vendor.

Safety Monitoring System

Where conventional fall protection is infeasible or creates a greater hazard and a safety monitoring system is indicated for the area and work activity, a safety monitoring system can be utilized using only a minimum number of employees for the time necessary to accomplish the work.

A safety monitoring system is a fall protection system in which a *competent person* is responsible for recognizing and warning employees of fall hazards. The duties of the safety monitor are to:

- Be competent in recognizing fall hazards.
- Warn employees when they appear to be unaware of a fall hazard or are acting in an unsafe manner.
- Be on the same walking-working surface as the monitored employees and within visual sighting distance of the monitored employees.
- Be close enough to communicate orally with the employees.
- Not allow other responsibilities to encumber his or her monitoring responsibility.

The maximum number of employees to be monitored by one safety monitor is two. No other employee(s) are allowed in an area protected by a safety monitor system.

The safety monitor shall be identified by a hi-viz vest. No mechanical equipment cannot be used or stored in areas where safety monitoring systems are being used to monitor employees.

Controlled Access Zones

A controlled access zone (CAZ) is an area designated and clearly marked, in which the work may take place without the use of conventional fall protection to protect the employees in the area.

Access to the CAZ is controlled, which means employees are protected through limited access to the area. These areas include work on flat roofs and must be controlled using control lines that mark off the area where work can be done.

The control lines must be secured to a wall or guardrail system at each end and must be at least **6ft** from a leading edge. The control lines must be a minimum of **39 inches** in height from the working surface. The competent person shall ensure that all protective elements of the CAZ are implemented prior to the beginning of work.

Employee Training

Before any employee is exposed to a fall hazard, the employer must provide training for each employee who uses personal fall protection systems or who is required to be trained as specified elsewhere in this subpart. Employers must ensure employees are trained in these requirements prior to use of fall arrest systems.

Annual training will be completed by each department on Fall Protection, Ladders, Handrails/Guardrails and Aerial Lifts. The information and training is provided in a manner that each employee can understand.

When **MSCS** has reason to believe that any affected employee who has already been trained does not have the understanding and skill required, the **Department Manager** shall retrain each such employee. Circumstances where retraining is required include, but are not limited to, situations where:

- Changes in the worksite render previous training obsolete or inadequate,
- Changes in the types of fall protection systems or equipment to be used render previous training obsolete or inadequate, or
- Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill necessary to use equipment or perform the job safely.

Accident Investigations

All events that result in an employee fall, or some other related serious incident, regardless of their nature, shall be reported to their **Supervisor**, **Department Manager**, and **Risk Management**. It is an integral part of any safety effort that documentation takes place as soon as possible so that the cause and means of prevention can be identified to prevent a reoccurrence.

In the event that an employee falls or there is some other related, serious incident that occurred, this plan shall be reviewed by the **Department Manager** and **Risk Management** to determine if additional practices, procedures, or training need to be implemented to prevent similar types of falls or incidents from occurring.

[Any necessary changes to the plan will be made and approved by the **Department Manager** and **Risk Management**. This program shall also be reviewed by **Risk Management** annually.]

APPENDIX A

Fall Protection Checklist

Location/Department:	Date:
Inspection form completed by: (Competent person)	

PERSONAL FALL ARREST SYSTEMS	**Corrective Action**	**Acceptable**
Workers are trained on proper use and care of fall arrest systems		
Workers are using an approved safety harness and equipment inspected for wear, damage & deterioration prior to use. Defective components are removed from service.		
The anchor point and lanyard and/or lifeline are approved and capable of withstanding at least 5,000 pounds per attached worker		
The fall arrest system will limit the maximum arresting force to 1,800 pounds		
The system is rigged so a worker cannot free fall more than 4 feet nor contact a lower level or hazard		
Anchor points are designed, installed & used under the supervision of a qualified person		
Horizontal and vertical lifelines are designed, installed, and used under the supervision of a qualified person		
Vertical lifelines can be locked in both directions and are protected from cuts or abrasion		
Self-retracting lifelines or lanyards that limit free falls to 3.5 feet or less are designed to withstand a force of 3,000 pounds, fully extended		
Lanyards, lifelines, and harnesses are made of synthetic fibers (ropes/straps)		
Snap hooks are locking type designed to prevent disengagement		
FALL/TRAVEL RESTRAINT SYSTEMS	**Corrective Action**	**Acceptable**
Workers are trained on proper use and care of fall/travel restraint systems		
Workers are using an approved safety harness and equipment that have been inspected for wear, damage, and deterioration prior to use		
Defective components are removed from service		
The anchor point and lanyard and/or lifeline are approved and capable of withstanding at least 3,000 pounds per attached worker		

The fall/travel restraint system will prevent the worker from falling downward		
Positioning devices are set up so a worker cannot free fall more than 3.5 feet		

APPENDIX B

Ladder Safety Checklist

LADDERS	Corrective Action	Acceptable
Ladders are in good repair and free of slippery surfaces		
Ladders are clean and not painted in a way that hides defects		
Ladders have UL-approved seal and are designed to carry worker weights		
Ladders are used on a level, stable and non-slippery surface		
Ladders are only used for the purpose they were designed for (not tied together)		
Metal ladders are not used around power lines or near electrical equipment		
Ladders are not used near doors or similar hazards		
Ladders are not used horizontally like a platform		
Ladders are not moved or shifted while a worker is on it		
Workers always face the ladder when climbing and working		
Workers use tool belts or hand lines to keep hands free when climbing ladders		
Workers travel up and down ladders using 3-point contact always		
Workers keep body inside the side rails (do not lean out beyond the side rails)		
No work is performed during windy conditions		
Routine ladder inspections are performed and documented		
All manufacturer labels are legible		
STEPLADDERS	**Corrective Action**	**Acceptable**
Stepladders are used fully open with spreaders locked in place		
The rear is never used for climbing or cross-bracing unless designed for that purpose		
Workers never stand on the top cap or top step		
EXTENSION LADDERS	**Corrective Action**	**Acceptable**
Extension ladder rails extend 3 feet above the landing		
The base is positioned away from the wall at least 4:1 ratio of the landing height		
Ladders used for egress are secured		
FIXED LADDERS	**Corrective Action**	**Acceptable**
Fixed ladders/cleats are structurally sound		
Ensure that fixed ladder anchors are in good condition (no rust, secured, not damaged)		

Fixed ladders/cleats meet the required design distances		
Fixed ladder handrails extend 42 inches above landing/step-off surface		
Fixed ladder safety systems have been inspected and are being used (cages/ladder ascent systems)		
Fixed ladder systems have a rest/landing platform every 50 foot		
Fixed ladders 20 ft in height or greater has a safety cage		
Fixed ladders 24 ft in height or greater must use a personal fall arrest system and a locked security door preventing unauthorized access		

APPENDIX C

AERIAL LIFT CHECKLIST

AERIAL LIFTS – MOBILE ELEVATED WORK PLATFORMS	Corrective Action	Acceptable
Aerial lifts are operated by a trained and qualified person in accordance with manufacturer's instructions		
Aerial lifts are in good repair and inspected by a competent person prior to use		
All open sides have a guardrail with a mid-rail or full enclosure		
Operators use a full body harness with a retractable lanyard attached to the engineered anchor point on the boom or basket.		
Lift is not moved with a worker elevated		
Aerial lifts are properly stabilized on firm, level surfaces and away from hazards		
Lifts are operated at least 10 feet away from energized overhead power lines		
Brakes are set and wheels chocked when on an incline		
Outriggers are used, if provided		
Load limits are not exceeded		
No work is performed during windy conditions (20 mph or greater)		