

Hot Work (Welding) Program



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Hot Work includes the following operations: brazing, cutting, drilling, welding, grinding, soldering and torch work. The prevention and protection against fires and other hazards associated with hot work can be addressed by general requirements as specified by OSHA standard 29CFR 1910.252. This program applies to all employees working within a designated hot work area as well as those working outside of a designated hot work area.

Revision History

<3/31/2025>

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Purpose & Scope

Memphis Shelby County School (MSCS) District is committed to providing a safe and healthy work environment and to protecting our employees from injury or death caused by uncontrolled hazards in the workplace. MSCS recognizes the potential for fire from hot work operations. The Hot Work Program has been established to help protect the safety of MSCS's employees and property by establishing appropriate hot work procedures and designated areas for hot work operations.

This program applies to all employees (permanent, temporary and contractors) who complete hot work or work in areas where hot work is taking place. All employees are required to follow the procedures outlined in this program. Any deviations from this program must be immediately brought to the attention of the Program Administrators who are defined as the Director of Facilities Maintenance and Director of College Career & Technical Education (CCTE).

Program Responsibilities

Management. The management of the District is committed to the overall safety of its workers and facilities. Management supports the efforts of the Program Administrators by pledging leadership support and financial resources for this program and ensuring the program is being followed. The Director Facilities Maintenance is responsible for all hot work completed at the designated hot work area for 1364 Farmville Rd and any permit-required welding completed across the district by Facilities Maintenance employees. The Director of CCTE is responsible for all hot work completed at designated hot work areas for Southwest VoTech and Kingsbury CTC.

Program Administrators. The Program Administrators (**Director of Facilities Maintenance and Director of CCTE**) report directly to senior leadership and are responsible for developing and implementing the Hot Work Program. The Program Administrators are responsible for:

- Developing safe usage protocols for all heat, flame, and spark-producing equipment.
- Providing appropriate training to all employees of MSCS that perform or authorize hot work activities.
- Establishing designated hot work areas.
- Establishing procedures and a permit system for performing hot work in non-designated areas.

- Designating individuals on all shifts who can approve hot work activities and issue permits in non-designated areas.
- Identifying the proper personal protective equipment (PPE) needed during the hot work procedures.
- Completing air monitoring in the event a potentially explosive atmosphere is identified.
- Providing outside contractors working on MSCS premises with training and information on the Hot Work Program and procedures.
- Retaining records of training and all hot work permits.
- Reviewing program at least **annually**, and when changes are needed, or new equipment is added.

Supervisors.

Duties of the Supervisors are as follows:

- Ensuring that only qualified and trained authorized employees perform hot work activities.
- Ensuring that employees who are found to have insufficient skills or understanding of hot work procedures do not perform hot work activities and receive retraining before conducting any hot work procedures.
- Ensuring employees comply with all procedures described in this program.
- Ensuring all hot work activities are approved prior to being performed in both designated and non-designated areas.
- Completing hot work permit requests when necessary.
- Identifying dangerous situations, not suitable for hot work.
- Designating a fire watch employee for all hot work performed in a non-designated area during and for no less than 30 mins after work is completed.
- Conducting final inspections after a fire watch period has concluded.
- Inspecting designated hot work areas after each shift to ensure no smoldering materials are present.
- Providing information to the Program Administrators regarding needed improvements to this program.
- Determining if the work can be completed or moved to a designated hot work area.
- If the work cannot be moved, ensure all combustible materials in the vicinity are removed.
- If all combustible materials cannot be removed, ensuring that guards are in place to confine the heat, sparks, and slag.
- Inspecting hot work areas and reviewing planned safety precautions before hot work operations begin.
- Communicating to employees regarding hot work activities to ensure their safety.
- If approval for hot work is granted, issuing, and posting hot work permits which list all required precautions.

- Establishing a fire watch during and for no less than 30 mins after completion of the hot work.

Authorized Personnel. Authorized personnel include employees and/or contractors who are trained to perform hot work activities including soldering, welding, pipe-cutting, heat-treating, grinding, thawing pipes, hot riveting, torch-applied roofing, and any other application involving heat, sparks or flames.

Authorized personnel must be certain that a functioning fire extinguisher appropriate for the type of potential fire is always present while hot work is being performed in the area. At the end of each shift, a supervisor on duty must inspect each designated hot work area to ensure no smoldering materials are present and all hot work equipment is properly shut off and stored.

Duties of authorized personnel include:

- Completing all required hot work training.
- Seeking approval and/or a permit to perform hot work prior to beginning operations.
- Performing hot work activities and procedures in accordance with this program.
- Inspecting designated hot work areas for combustibles & other hazards prior to beginning hot work.
- Inspecting hot work equipment to ensure it is in safe operating condition before beginning work.
- Retaining control of the equipment while hot work is in progress.

Fire Watch Personnel. A fire watch is a designated employee who monitors the hot work area for fires while work is being performed and for 30 mins after its completion.

Duties of the fire watch personnel include:

- Maintaining continuous watch over hot work activity during and for 30 mins after work has been completed.
- Monitoring adjacent areas for fires.
- Extinguishing small, controllable fires with extinguishing equipment available in hot work area.
- Activating fire alarm if an uncontrollable fire occurs.
- Signing the hot work permit prior to beginning the work and re-posting signed permit in the hot work area.
- After the hot work and mandatory 30 mins monitoring period is complete, periodically returning to the area where the hot work was completed to check for fires for 3 hours.
- Ensuring that the supervisor has conducted a final inspection after the fire watch period has concluded and signs off on the permit.
- Having a supervisor find another trained person to relieve him/her if the designated individual must leave for any reason.

Other Personnel. This includes employees or contractors who are neither authorized personnel nor fire watch personnel but are still exposed to areas where hot work is performed. Other personnel should not perform any hot work activities. Duties include wearing proper personal protective equipment when in a 35-foot radius of hot work.

Hot Work Designated Areas

There is a designated welding/hot work area located in the sheet metal area at the maintenance shop (1364 Farmville Rd). Therefore, a hot work permit issuance is **NOT** required before the work is performed for this area only.

Additional hot work designated areas include the welding shops of Kingsbury CTC and Southwest VoTech schools. Hot work permits are not required for these two shop locations. The individual welding instructors will be responsible for maintaining the designated hot work areas of at their respective schools.

Hot Work Non-Designated Area Procedures

Basic Precautions. At a minimum, all the following precautions must be met to perform hot work in a non-designated area.

- Building fire sprinkler system is operational at the hot work location. (if applicable)
- All combustible materials within 35 feet of the hot work shall be moved to a safe distance or other location.
- If combustible materials cannot be moved, they are protected by fire retardant covers or they are shielded with fire retardant or metal guards.
- Appropriate PPE is provided to employees performing hot work based upon a hazard assessment.
- A fire watch is initiated during and for 30 mins after all hot work has stopped.
- The Supervisor has inspected the hot work area prior to beginning work.
- The Supervisor has issued and posted a hot work permit (Appendix A).

Special Precautions. Where any of the following conditions exist, additional precautions shall also be taken above the basic precautions. The final protection measures will be determined by the Supervisor prior to beginning work.

Floor Openings/Coverings – The floors shall be protected from exposure to flames, sparks, slag, or other hot materials whenever there are combustible floors or materials on the floor, floor openings or cracks in the floors.

Protections may include:

- Fire-resistant shields or material.
- Wetting down floors.

- Covering floors with damp sand.
- Sweeping combustibles from floor.
- Additional protections deemed necessary by the Supervisor.

Wall Openings –The walls shall be protected from exposure to flames, sparks, slag, or other hot materials whenever there are combustible walls, wall openings, pipe penetrations or ducts.

Protections may include:

- Fire-resistant shields or materials.
- Shutting dampers.
- Separate fire watch on the other side of the walls.
- Additional protections deemed necessary by the Supervisor.

Potentially Explosive Atmospheres – If there is a potential for mixtures of flammable gases, vapors, liquids or dust in the air, no hot work will be conducted until the Program Administer has completed a review and air monitoring has confirmed that there is no danger of an explosion.

Containers – No hot work will be performed on used drums, barrels, tanks, or other containers until they have been cleaned thoroughly. The Supervisor must determine that no flammable materials and no substance such as grease, tar, acid, or other materials which might produce flammable or toxic vapors if exposed to heat are present.

Ventilation

Mechanical ventilation must be provided for Hot Work Designated areas listed (Farmville, Kingsbury CTC, and Southwest VoTech) as well as Hot Work Non-Designated areas when the following is present:

- The welding area is < 10,000 ft³ per welder. This is equivalent to 1,250 sq ft of space.
- The welding area has a ceiling height < 16 ft

Adequate ventilation as defined by OSHA 1910.252(c) and ANSI Z49.1 is 2,000 ft³ per minute per welder.

Where welding booths are available for use, they must have a movable hood adhering to the following requirements listed in the table below:

Welding zone	Minimum air flow ¹ cubic feet/minute	Duct diameter, inches ²
4 to 6 inches from arc or torch	150	3
6 to 8 inches from arc or torch	275	3½
8 to 10 inches from arc or torch	425	4½
10 to 12 inches from arc or torch	600	5½

Air line respirators or local exhaust ventilation is required when welding is performed on the following metals or compounds:

- Fluorine Compounds
- Zinc
- Lead
- Beryllium
- Cadmium
- Mercury
- Chromium
- Copper
- Nickel
- Manganese
- Magnesium
- Cobalt
- Arsenic
- Bismuth
- Antimony
- Molybdenum
- Thorium
- Vanadium Compounds

Oxygen cutting/welding using a chemical flux, iron powder, or gas-shielded arc cutting of **stainless steel** must be done using mechanical ventilation as listed in the table above meeting the **10,000 ft³ per welder** and **16 ft ceiling height** requirements.

Outside Contractors

Whenever outside contractors perform any hot work activity, they will be informed of the MSCS Hot Work Program and procedures by the Program Administrators or the Supervisor. All outside personnel are required to obtain a permit (Appendix A) from the Program Administrators or Supervisor. All appropriate safety information will be communicated to the contractor(s) before work begins.

Personal Protective Equipment (PPE)

General. All personnel conducting hot work or assisting with hot work on elevated platforms, scaffolds or runways will be protected from falling. The fall protection system will consist of either full railings or a fall arrest system with a full body harness, lanyard, and approved connection point. Hot work personnel will position all cables, hoses, and other equipment out of passageways and emergency egress paths whenever possible.

PPE. All personnel conducting hot work or assisting with hot work must wear the appropriate personal protective equipment. The appropriate protection is determined by the Authorized Employee in conjunction with the Supervisor. **Do NOT begin any hot work operations without obtaining and wearing the required PPE.**

The following PPE must be worn when completing welding, soldering, cutting, heating, and brazing.

- Eye and Face Protection
 - Ultraviolet Helmet with filter lens and cover plate that complies with ANSI Z87.1.
 - Ultraviolet Safety Glasses with side shield.
- Head and Ear Protection
 - Fire-resistant welder's cap under helmet.
 - Approved earplugs.
- Foot Protection
 - Composite-toed or steel-toed shoes or High-topped leather boots in good condition and that meet the requirements of ASTM F2412 and ASTM F2413.
 - Do not wear pants with cuffs. The bottoms of pants should be worn over the tops of the boots.
- Hand Protection
 - Dry, hole-free, insulated, and flame-resistant welding gloves.
- Body Protection
 - Fire-retardant, oil-free protective clothing made of wool or heavy cotton.
 - Clothing should allow for freedom of movement and should prevent skin exposure.
 - Leather aprons, leggings, capes and sleeves as needed.

Equipment. All tools and equipment used to perform hot work operations will be inspected prior to use. No person should use any tool or equipment unless trained. All safety precautions as outlined in this program will be followed at all times.

Permit System

To ensure adequate controls and safety precautions are being used in non-designated hot work areas, a hot work permit system will be used.

Procedures. The following procedures must be incorporated into the hot work permit system prior to beginning the work.

1. Authorized person or supervisor will complete and submit hot work permit request (Appendix A).
2. Supervisor will review planned safety precautions and inspect the hot work site using the hot work permit checklist (Appendix A) within 1 hour of receiving the request.
3. Supervisor will inform employees in the immediate area that hot work is going to be conducted and to avoid the area.
4. Supervisor will communicate any additional special precautions that need to be taken prior to beginning operations.
5. If all necessary precautions have been taken and work can proceed, the Authorized Employee & Supervisor will complete the hot work permit and post the warning sign in a highly visible area.
6. Copies of all hot work permit information will be sent to the Program Administrators.
7. Upon completion of the hot work operations and the 1-hour fire watch, the Supervisor will inspect the completed job and ensure the area is clear and ready to return to normal operations.
8. Supervisor will inform the employees in the immediate area that work is completed to return to normal operations.

Voiding Permits. Hot work permits will be void and all hot work must not begin or must be immediately stopped if any of the following occur:

- Fire alarm sounds.
- Work has not begun within 60 minutes of approved time.
- Work has been suspended for more than 60 minutes.
- A work shift ends or there is a change in authorized or approval personnel.
- At any time, the authorized employee or supervisor detects a danger or uncontrolled hazard.

Whenever a hot work permit is voided, a new permit must be issued to begin or continue hot work operations.

Employee Training

Authorized Personnel & Supervisors. Before any employees designated as authorized personnel or supervisors are allowed to perform any hot work operations, they must first receive training. Periodic retraining will occur if an employee has a lack of knowledge, uses equipment improperly or if work tasks change. At a minimum, the training must be **Annual** and will include the following subjects:

- Fire prevention and protection
- Basic precautions
- Special precautions
- Employee classifications and responsibilities
- Authorized personnel
- Supervisors
- Fire watch personnel
- Designated hot work areas (Sheet Metal area of the Maintenance Shop)
- Non-designated hot work areas
- Protection of personnel
- Hot work permit system
- Handling and storage of hot work materials
- PPE selection and use

Periodic Program Review

All hot work procedures will be reviewed at least annually by the Program Administrators and Risk Management. If any inadequacies are identified, the Program Administrators will update the procedures and program. The annual review will include a discussion between the reviewer and each authorized employee to determine if he/she understands their responsibilities under the program.

Record Retention

Written training records, which include trainee names, the type of training provided and the dates when the training occurred, will be kept by the Program Administrators for 10 years.

The Program Administrators will maintain the hot work permits for 10 years and the annual program review documents indefinitely.

These records should be placed in a 3-ring binder and located in the Director of Facilities Maintenance office and the Director of CCTE office and labeled "Hot Work Documents".

Hot Work Permit

PERMIT VALID FOR 1 DAY

PERMIT #

Before Initiating Hot Work, This Form Must Be Completed & Signed.

This Hot Work Permit is required for any operation involving open flames or heat producing sparks. This includes, but is not limited to: Brazing, Cutting, Grinding, Soldering, Pipe-Thawing, Torch-Applied Roofing and **Welding**.

Date of Hot Work: _____ Location: _____

Description of Work: _____

Person(s) Performing Hot Work: _____

Type of Hot Work: Welding ☐ Soldering ☐ Cutting ☐ Roofing ☐ Grinding ☐
Brazing ☐ Other _____

Complete the Hot Work Precautions Checklist prior to any Hot Work performed. Check each box where the statement is true. If any statement is not true, then hot work should not be performed until the issue is resolved.

Required Safety Precautions:

- ☐ Fire Extinguisher available & operable within 15 ft.
 - ☐ Hot work equipment is in good repair.
 - ☐ Smoke/fire detectors in immediate area temporarily disabled.
 - ☐ Flammable/combustible materials & debris at least 35 ft away.
 - ☐ Enclosed equipment is cleaned off and combustibles removed.
 - ☐ Containers are purged of flammable liquid/vapors.
 - ☐ Wall & floor openings covered.
 - ☐ Floors are swept clean & debris removed prior to hot work.
 - ☐ Welding screens/curtains provided.
 - ☐ UV Protection, Fire-resistant Gloves & Fire-retardant Clothing Worn.
 - ☐ Walls and/or Ceiling construction is noncombustible without combustible coverings.
 - ☐ Fire Watch Provided for **30 mins.** (list designated person)
- _____

Supervisor Signature

Date