

Calvin College Hotwork Program		Revision 1	
Prepared by: Heather Chapman	Date: 10/25/2010	Approved by: Cabinet	Date:

1.0 POLICY

It is the policy of Calvin College that employees, visitors or contractors involved in hot work adhere to NFPA 51B and MIOSHA Part 12.

2.0 PURPOSE & SCOPE

To establish the minimum requirements for the safe execution of work that has the potential for destruction of property and/or personnel injury through the initiation of a fire. Tasks that fall under the Hot Work Program would include welding, torch cutting, grinding, brazing, burning or any such activity that could result in the ignition of nearby combustible materials via the generation of sparks, heat, or any other ignition sources.

This program applies to Calvin College employees & sub-contractors who perform or supervise hot work activities in existing buildings, new construction in existing buildings, and new construction attached to existing buildings. Hot work performed by general contractors will be done in compliance with all applicable state and federal regulations and in accordance with the general contractor's safety plan.

This program does not apply to areas that are specifically designed and equipped for hot work, i.e. designated welding areas. Designated welding areas, however, do need to be examined before hot work is performed to be sure that:

- Screens and signs are in place to prevent eye exposure to arc flash
- Combustibles are removed or protected (with welding blankets)
- Ventilation system is functioning properly

3.0 DEFINITIONS

Hot Work: Any temporary or permanent operation involving open flames or producing heat and/or sparks. This includes but is not limited to: brazing, cutting, grinding, soldering and/or welding. The definition of hot work can be applied to activities within a facility such as normal manufacturing processes, periodic/planned maintenance activities, new construction work and emergency repairs.

Hot Work Permit: A hot work permit is required for any temporary operation involving open flames or producing heat and/or sparks. The permit system is intended to act as a fire prevention tool to aid in identification of potential fire hazards and control measures to mitigate the potential for a fire.

Designated Area: An area where hot work is permitted without the use of a hot work permit. Hot Work Permit exempt areas include the designated maintenance shop area (by the welding/fabrication table), fabricating/tool shops, hydrogen gas annealing furnaces and subassembly areas operating under normal conditions that are free of fire hazards.

Non-Designated Area: An area where hot work is not usually performed and in those areas where non-normal (maintenance-type activity) hot work is being introduced into the subassembly areas. This can be generalized as any temporary operation involving open flames or producing heat and/or sparks.

Permit Authorized Individual (PAI): The individual designated by management to authorize hot work by inspecting the area to ensure that it is safe for the hot work to be done and that safe procedures will be followed for the work specified. The PAI cannot be the hot work operator.

Fire Watch: At least one individual dedicated solely to the look out and control of fires caused by hot work permit operations.

4.0 RESPONSIBILITIES

Physical Plant Assistant Directors (Grounds and Mechanical)

- Issue Hot Work Permits
- Oversee hot work operations and program compliance
- Insure that all persons involved in hot work are properly trained in their functions

Hot Work Operator

- Must be trained in their duties and responsibilities.
- Eliminate all the fire hazards before beginning any hot work by:
 - Removing all combustibles to a distance of at least 35 feet from the point of hot work. If it is not possible to remove combustible items, guards must be used to confine the heat, sparks and slag, and protection provided for the immovable combustible items. If these precautions cannot be taken, hot work shall not be performed
 - Ensuring that all combustible materials exposed to hot sparks and other hot materials that could drop through floor cracks, or other floor openings, and through openings in walls, windows, and doorways are protected
 - Protecting or shutting down ducts or conveyor systems where sparks or hot materials might be carried
 - Sweeping floors clean of all combustible materials within 35 feet of the point of hot work. Combustible floors MUST be kept wet, covered with damp sand, or protected by fire resistant shields
 - Putting up warning signs and/or screens to protect others eyes from the welding arc
- Hot Work Operator has additional responsibilities in the case of soldering:
 - Act as PAI
 - Perform fire watch duties

Fire Safety

- Must be trained in their duties, responsibilities, and extinguishing equipment
- Must have fire extinguishing equipment such as fire extinguishers, hoses, pails of water or sand, etc. on site and readily available
- Know where the nearest fire alarm pull station is located
- Inspect area before any hot work operations commence to insure that all precautions have been taken
- Continue to be on watch at least 30 minutes after all hot work has been completed
- Only try to extinguish a fire if obviously within their trained capacity to safely do so
- Locate where more than a minor fire might develop or where:
 - Appreciable combustible material is within 35 feet of the point of operations
 - Appreciable combustibles more than 35 feet away may be easily ignited by sparks
 - Wall or floor openings within 35 feet expose combustibles in adjacent areas including confined spaces
 - Combustibles could be ignited by conduction or radiation through metal partitions, walls, ceilings or roofs

Environmental Health and Safety

- Coordinate training for employees performing hot work
- Provide the necessary personal protective equipment
- Maintain employee training records.
- Review and revise the Calvin College Hot Work program as necessary

5.0 PROCEDURE

Hot work should not be performed if the work can be avoided or performed in a safer location. If hot work is to be performed, a hot work permit must be obtained before the hot work begins. To obtain a permit, contact the appropriate Permit Authorizing Individual (PAI).

All precautions on the hot work permit must be met prior to performing the work. The hot work permit will be issued by the appropriate PAI, and is valid only for the date(s) and time(s) specified on the permit. A copy of the permit must remain at the hot work location until the hot work is completed and the permit canceled. See [Appendix A](#)

Permit Authorizing Individuals (PAI)

Phil Beezhold	Physical Plant Director	ext. 6-6481
Heather Chapman	EH&S Officer	ext. 6-8591
Charlie Huizinga	Assistant Director – Grounds	ext. 6-6249

Soldering

A hot work operator performing soldering is permitted to serve as the Permit Authorizing Individual (PAI) and fire watch, provided that the operator is properly trained and follows regulatory and Calvin College Hot Work Program provisions. In the case of soldering, a checklist is permitted to serve as a written hot work permit. See [Appendix B](#).

Contractors

No welding, cutting or brazing will be done by a contractor unless it has a **hot work** permit. The permit is to be posted at the work site with a copy provided to the Calvin Project Manager after the final inspection is complete.

Hot work MUST NOT be performed:

- In unauthorized areas
- While sprinkler systems are impaired
- In explosive, or potentially explosive, atmospheres, inside improperly prepared equipment, or in areas where combustible dusts have accumulated
- Near bulk storage of readily ignitable materials such as saw dust, sulfur, baled paper or cotton
- When floor or wall openings cannot be covered.
- When appropriate fire fighting equipment is not readily available
- When combustible or flammable materials are within 35 feet and cannot be moved or protected

6.0 PPE

All personnel (employees, contractors, building occupants) must be suitably protected against hazards generated by the work (heat, sparks, fumes, welding rays, etc.). This may include, but is not limited to, the use of personal protective equipment, shields, screens and local exhaust ventilation.

7.0 HISTORY

Revision	Date	Description
1	10/25/10	Changed formatting

Appendix A: Calvin College Hot Work Permit

Date Issued: _____

Valid
Until: _____

Building: _____

Room #: _____

Permit Authorizing Individual (print): _____

Signed (at issue of permit): _____ Date: _____

Contractor contact (if applicable): _____ Phone: _____

FIRE SAFETY PRECAUTIONS

BEFORE WORK - All of the following precautions must be taken:

- Cutting and/or welding equipment must be thoroughly inspected and found to be in good repair, free of damage or defects.
- A multi-purpose dry chemical, portable fire extinguisher must be located such that it is immediately available to the work and is fully charged and ready for use.
- At least one fire alarm pull station or means of contacting the fire department (i.e. site telephone) must be available and accessible to person(s) conducting the cutting/welding operation.
- Floor areas under and at least 35 feet around the cutting/welding operation must be swept clean of combustible and flammable materials.
- All construction equipment fueling activities and fuel storage must be relocated at least 35 feet away from the cutting/welding operation.

Where applicable, the following precautions will also be taken before the work begins:

- Fire resistant shields must cover combustible floors.
- Spark/slag catchers (welding blankets) must be suspended below any elevated cutting/welding operation.
- All floor and wall openings must be covered to prevent sparks/slag from traveling to other, unprotected areas.
- Containers in or on which cutting/welding will take place must be purged of flammable vapors.

DURING / AFTER WORK - The following precautions will be taken:

- Person(s) must be assigned to a fire watch during and for at least 30 minutes after all cutting/welding ceases.
- Fire watch person(s) are to be supplied with multi purpose dry chemical, portable fire extinguisher and trained in its use.
- A fire alarm pull station or means of contacting the fire department (i.e. site telephone) available and accessible to fire watch person(s).

(Over)

The location where this work will take place has been **examined before the start** of cutting/welding operations and all the appropriate precautions have been taken. *Responsible party to sign under Signature 1 for each date.*

The work area and all adjacent areas to which sparks and heat might have spread (including floor levels above and below and on opposite side of walls) were **inspected 30 minutes after** the cutting and or welding operations ceased for the day and were found to be fire safe. *Responsible party to sign under Signature 2 for each date.*

	Signature 1	Signature 2
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____
Date _____	Before _____	After _____

APPENDIX B: SOLDERING FIRE SAFETY PRECAUTIONS

BEFORE WORK:

- Soldering equipment must be thoroughly inspected and found to be in good repair, free of damage or defects.
- A multi-purpose dry chemical, portable fire extinguisher must be located such that it is immediately available to the work and is fully charged and ready for use.
- At least one fire alarm pull station or means of contacting the fire department (mobile phone) must be available and accessible to person(s) conducting the soldering operation.
- Floor areas under and at least 35 feet around the soldering operation must be swept clean of combustible and flammable materials.
- All construction equipment fueling activities and fuel storage must be relocated at least 35 feet away from the soldering operation.

DURING / AFTER THE WORK

- Person(s) must be assigned to a fire watch during and for at least 30 minutes after all soldering ceases.
- Fire watch person(s) are to be supplied with multi purpose dry chemical, portable fire extinguisher and trained in its use.
- A fire alarm pull station or means of contacting the fire department (mobile phone) available and accessible to fire watch person(s).

Where applicable, the following precautions will also be taken before the work begins:

- Fire resistant shields (welding blanket, metal, etc.), must cover combustible floors.
- Spark/slag catchers (welding blanket, metal, etc.) must be suspended below any elevated soldering operation.
- All floor and wall openings must be covered to prevent sparks/slag from traveling to other, unprotected areas.
- Containers in or on which soldering will take place must be purged of flammable vapors.