EHS
ENVIRONMENTAL
HEALTH AND SAFETY

CARLETON UNIVERSITY

Hot Work Program

Prepared by: Environmental, Health and Safety (EHS) Office
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Carleton
UNIVERSITY
Canada's Capital University

Carleton University – HOT WORK PROGRAM
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1. PURPOSE

The purpose of this procedure is to mitigate risk of accidental fires associated with spark producing or open flame work and to reduce the likelihood of false alarms and to ensure that safeguards are in place for building occupants.

2. SCOPE

This program applies to following type of work/activities performed in/on buildings and tunnel system at Carleton University:

a. Any work that is Hot Work as defined in this document.
b. Any work that is classified as dust or particulate producing
c. Any exterior or interior work that generates substantial vibration that could trigger a fire detection device
d. Any activity that requires the activation or draining of fire suppression systems.

This program does not apply to smudging activities.

3. APPLICABLE REGULATIONS AND STANDARDS

- Occupational Health and Safety Act, R.S.O. 1990
- Regulations for Industrial Establishments, R.R.O. Reg. 851
- Ontario Fire Code, R.R.O. Reg. 213/07

4. DEFINITIONS

Building: any structure on the Carleton University campus intended for occupant use.

Carleton Project Representative: A project manager/coordinator within the FMP group who oversees the project on behalf of Carleton University.

Dust Producing Work: Any work that can generate dust or particles that have the potential to trigger a smoke detector. Examples of such work include pressure washing, sanding, woodcutting, dry walling, or vapour generating.

FACP: Fire Alarm Control Panel

Fire Watch - Active: Active monitoring carried out by a qualified person in a dedicated role to identify hotspots or active fires while the fire system is isolated for the work area for 60 minutes after the completion of work or 180 minutes after the ceasing the application of hot surfaces.

Fire Watch - Passive: Monitoring conducted by staff in a fully occupied space who are notified of the loss of fire detection in their area of work and are capable of effectively raising the alarm in the event of fire.

Hot Work: Any work that involves the use of an open flame or the generation of sparks or heat that have sufficient heat to ignite nearby flammable or combustible materials. Examples of such work include but are not limited to metal cutting, welding, grinding, brazing, or torching.

Hot Worker: Trained and equipped personnel involved in the hot work activity.

Hot Work Supervisor: The Carleton University supervisor or contractor that is responsible for organizing and coordinating the hot work or dust producing work at Carleton University.

Particulates: Material suspended in air that is usually generated from burning, cutting/grinding or aerosolization activities.

Work Area: The location of the hot work activity and the area 10 meters from the source.

5. RESPONSIBILITIES

Carleton University shall:

- Ensure that all hot and dust producing work activities are coordinated to avoid where practicable the accidental activation of the fire detection and suppression system.
- Protect Carleton University employees, students and visitor from the hazards of the hot work activity under their direction.
- Ensure appropriate alternate measures are in place to protect building occupant when hot work activity affects the fire detection system.
- Inform affected organizations when the fire detection and suppression systems are compromised.
- Notify Ottawa Fire Service when required due to fire detection or suppression issues impact OFS response.
- Ensure orientation of all employees and contractors who engage in activities identified within this document in the proper procedure to follow.

Hot Work Supervisors shall:

- Review and understand how to apply the Hot Work program to the work performed.
- Accurately identify the scope of work and the location of work in part one of the Hot Work Permit.
- Complete and sign the Hot Work Permit accepting the requirements of hot work.
- Submit the Hot Work and Dust Producing Permit to the Project Representative no less than 48 hours prior to start of work.
- Protect all detectors within the identified area of work from exposure to particulates that could damage the detectors.
- Protect all sprinkler heads within the identified work area from physical or heat damage
- Provide proper ventilation when there is a risk of smoke or dust exposure involving Carleton University staff, students, or visitors.
- Use alternate methods where practicable to limit dust, heat or smoke generation. Such as wet cutting or welding assembly in an alternate location.
- Provide dedicated fire watch when required.
- Ensure that appropriate alternate measures are in place to initiate a building evacuation when required.
- Sign all affected fire alarm pull station in accordance with this program.
- Ensure that they provide certified portable fire extinguishers of rating 4A40BC within 6 meters of persons using open flame or other ignition sources.
- Train all workers involved in hot work to use fire extinguishers.

- Implement controls required by this program, their own hot work program and as required by all applicable regulations and the Ontario Fire Code.
- Not start hot or dust producing work until notified by Carleton University electrician that isolations are completed.
- Assume responsibility for monitoring the affected area and raising an alarm in the event of a fire within the affected area for the scheduled bypass period.
- Remove all protective covering from fire detection and suppression equipment prior to the restoration of services.
- Supervise the work area until full restoration of all fire detection/suppression systems.
- Provide an onsite contact name and telephone number during operational hours.
- Complete the daily checklist with daily sign off.
- Post the most current copy of daily checklist on site.
- Upon work all completion; submit all copies of the daily prestart checklist along with the posted HWP and bypass log to the project representative.

Carleton Project Representative shall:

- Review all contractor submitted hot work permits to ensure completeness and legibility prior to completing part 2 of the permit.
- Coordinate work activities with building occupants and other active projects when required.
- Coordinate alternate measures for fire detection when required with the contractor.
- Inform EHS when there is a bypass of fire detection or suppression.
- Submit the reviewed, completed, and signed permit to FMP Service Centre.

Electrical & Mechanical Managers shall:

- Ensure that a qualified worker completes proper isolations of the building systems.

FMP Electricians shall:

- Bypass fire detection systems when scheduled and notify the site contact.
- Complete part 3 Panel Isolation/Reinstatement log for each isolation/reinstatement performed.
- Post the Hot work and Dust producing permit at the FACP.
- Reinstate fire detection systems when scheduled and notify management of any issues.

6. RESTRICTIONS ON PERMITS

Permits are intended to provide a snapshot of daily activities on campus that could impact employee safety, the fire detection or fire suppression systems on campus. This places the following limits on permit:

6.1. Permits start and end date period cannot exceed 30 days.
6.2. Permits must be specific regarding the work area.
6.3. If work activities need to be performed in a new work area, a new hot work permit must be taken out.
6.4. Identified work area must be contiguous and actively occupied during the identified window otherwise a fire watch may be required.
6.5. Any required extension to the hours on the permit must be coordinated with the FMP Service Centre and the Manager of Electrical Services.
6.6. A new permit is required if the hot work extends beyond the end date of the permit.
6.7. Contractor must maintain a presence in the area at all times during a bypass

7. PROCEDURE

7.1. **Interior Spaces**

Submission Procedure

1. Prior to the start of work, the Hot Work Supervisor completes part 1 of the hot work permit and submits the permit to the Carleton University Project Representative.
2. Carleton Project Representative verifies that the bypass does not affect areas beyond the immediate scope of work. If impact extends beyond work are inform supervisor of the need to implement a fire watch.
3. Carleton Project Representative confirms the scope of work, supervisor, and the site contact number and signs off on the permit.
4. Carleton Project Representative submits permit the FMP Service Centre two working days prior to the proposed start time.
5. FMP Service centre will generate a Work Order # and add it to the permit and Panel bypass log (part 3).
6. FMP Service centre will scan and attach parts 1, 2, and 3 of the permit to Maximo Work Order.
7. FMP Services centre will arrange for fire system isolation with Manager of Electrical and Mechanical Services by the scheduled start time for the hot work.
8. FMP will email scanned copies of the permit to Manager of Electrical Services, Fire Prevention Officer and Carleton Project Representative indicating that the bypass has been scheduled.
9. The Carleton Project Representative will notify the Hot Work Supervisor that work is scheduled.

System Bypass Procedure

10. The assigned electrician will arrive at the FACP and bypass the identified work area. **Note:** On the first day of bypass, the site contact needs to meet with the electrician to confirm the location of work and devices to protect.
11. On subsequent bypass days, the assigned electrician will contact the onsite representative listed on the HWP using text message.
12. The electrician will post the original HWP at the FACP on the first day of bypass, and update part 3 indicating that the bypass was done.
13. The permit and bypass information sheets will remain at the panel until the hot work permit has expired.
14. The contractor will assume full responsibility for monitoring the workspace from the start time on the hot work permit through to confirmation of full reinstatement of the fire alarm system.
15. Each day of prior to the start of work the site contract must complete **Part 4 – Daily Pre-start Checklist** ensuring that all requirement are in place for the performance of work.
16. Work involving dust or particulate generation will require the protection of all detection devices within 10 meters of the work using capping devices or bagging.
17. The site contact will post **Part 4 – Daily Pre-start Checklist** at an acceptable location at or near the worksite. Acceptable locations are on project safety board or at the entrance to the work area.
    Note: each checklist must include the project or WO #, date, and be signed by the supervisor or worker performing the hot work.
18. The workers can then proceed with the hot work.

System Re-instatement Procedure

19. At the predetermined time for re-instatement, the Hot Work Supervisor will ensuring that all work that could affect the fire alarm system been completed.
20. In the event that there is a need to extend the end-time for the hot work the Hot Work Supervisor must notify the FMP Service Centre as soon as possible so the electrician can be rescheduled for a later time
21. The electrician will arrive at the fire alarm panel at the scheduled reinstatement time and begin reinstatement of all devices. In the event of device reinstatement issues, they will contact the site contact to resolve the issue.
22. If there is a need to delay the reinstatement due to system issues or at the request of the supervisor, the electrician will notify the FMP Service Centre or Manager of Electrical and Mechanical maintenance to reschedule.
23. The electrician will document the time and date of reinstatement in part 3.
24. Upon successful re-instatement the Hot Work Supervisor will secure/release their site and be able to leave.
25. Issues with re-instatement may require that the Hot Work Supervisor provide an appropriate fire watch.

Hot Work Completion Procedure

26. Upon completion of all scheduled hot work the FMP electrician will collect parts 1, 2, and 3 of the HWP from the FACP and return them to the FMP Service Centre.
27. The contractor will collect all copies of the daily checklists and return them to the FMP Service Centre.
28. Parts 1, 2, 3 and 4 of HWP will be sent to the FPO for review and archiving.

7.2. **Exterior Spaces**

Submission Procedure

1. Prior to the start of any work the Hot Work Supervisor completes part 1 of the hot work permit and submits the permit to the Carleton University Project Representatives.
2. Carleton Project Representative determines if the nature of the exterior work is likely to cause a false alarm due to smoke/dust drawn into the building ventilation or due to vibrations.
3. If the Carleton Project representative determines the work has a likelihood of triggering an alarm they need to proceed as if the work is in an interior space and issue the HWP under **7.1 Interior Spaces**.
4. If the work is determined to not be likely of causing a building system alarm the Carleton Project Representative will indicate no bypass required on the HWP.
5. Carleton Project Representative submits permit the FMP Service Centre.
6. FMP Service centre will generate a Work Order # and add it to the permit.
7. FMP Service centre will scan and attach the permit to Maximo Work Order.
8. FMP will email copies of the permit to Manager of Electrical Services, Fire Prevention Officer and Carleton Project Representative indicating that the original permit has been processed.
9. FMP Services centre will arrange for the HWP to be posted at the panel in the event of an accidental alarm.
10. Each day of prior to the start of work the site must complete **Part 4 – Daily Pre-start Checklist** ensuring that all requirement are in place prior to the start of work.
11. The site contract will post **Part 4 – Daily Pre-start Checklist** at an acceptable location at or near the worksite. Acceptable locations are on project safety board or at the entrance to the work area.

    Note: each checklist must include the project #, date, and be signed by the supervisor or worker performing the hot work.
12. The workers can then proceed with work.

Hot Work Completion Procedure

1. Upon completion of all scheduled hot work the FMP electrician will collect parts 1, 2, and 3 of the HWP from the FACP and return them to the FMP Service Centre.
2. The contractor will collect all copies of the daily checklists and return them to the FMP Service Centre.
3. Parts 1, 2, 3 and 4 of HWP will be sent to the FPO for review and archiving.

8 HOT WORK REQUIREMENTS

Daily pre-start checklist

Completion of a daily pre-start checklist (Part 4) is required for all supervisors using the HWP.

1. A reliable method for contacting DUS in the event of an emergency must be in place and communicated to all workers.
2. When performing work with open flame, generating sparks, or creating hot slag a certified extinguisher rated at a minimum of 4A40BC to contain accident fires must be present. Measures must also be in place to control fume and flash exposure of the Carleton University population when welding.
3. Work shall only occur within the identified area of work. Any need to expand the work area requires reassessment of the bypass and may require a second hot work permit be issued.
4. When a bypass affects fire alarm pull stations rendering them inoperable the supervisor must provide signs identifying them as not in service and identify the nearest active pull station.
5. All equipment used for hot work is in good operating condition in accordance with manufacturer's guidelines and applicable regulations.
6. Reasonable precautions are in place for the safety of workers.
7. Prescribed PPE provided is in good condition.

Requirements within 10 meters of work

8. Appropriate hoarding of the work area must be in place to protect the Carleton Population from fume or flash exposure.
9. Protect all heat detectors, smoke detectors, and sprinkler head in the area of work from damage.
10. Adequate ventilation must be in place to reduce smoke or dust accumulation within the work area and beyond.
11. Ensure that nearby activities do not pose a significant risk to the work. If activities are determined to pose a risk, the supervisor must to notify their Carleton Project Representative to arrange a coordinated shutdown or removal of the risk.
12. The supervisor must ensure there is no explosive atmosphere and if there are procedures are in place to eliminate it.
13. All flammable products within 10 meters of hot work area must be removed when performing spark, flame or welding type work
14. Remove or protect all combustible materials from sparks, flame or hot slag.
15. Sweep floor for debris and combustible dust within 10 meters of hot work.
16. All openings in floors, walls, or ceilings which sparks or hot slag could travel are blocked or protected.
17. Identify and control hazards to limit injury or property damage.

Hot work monitoring during and after work

18. Assign a competent worker to perform the hot work.
19. Supervisor must ensure an extinguisher is immediately available to the hot worker.
20. All workers know how to sound the alarm, use an extinguisher, and notify the Department of University Safety regarding a fire or false alarm.

21. Provide a fire watch for 1 hour after non-open flame work or 3 hours after open flame work completion. **Note**: if using a hand held thermal scanner only a two hour watch is required.
22. Remove all covers from heat detectors, smoke detectors, and sprinklers within the area of work, prior to reinstatement.

9 PERMIT EXTENSION

9.2 Time extension

HWP will only be extended to the end of the work day for dates within the scheduled hot work window. If the HWP is required to be extended beyond the set end date period then a new HWP is required.

To ensure effective scheduling of extensions, the FMP Service Centre must be notified as soon as practicable of the need to extend.

Whenever there is an extension to the reinstatement time the supervisor assumes responsibility for ensure the fire safety of the affected area through the appropriate use of a fire watch.

9.3 Work space extension

HWP work area extension will only be permitted if there was an error in identifying the workspace and that the area extended is contiguous and logical to the original scope work. Work spaces that are not logical or contiguous to the original scope of work will require a separate hot work permit be issued.

10 FIRE WATCH AND SIGNAGE

Active Fire Watch

An active fire watch is required when the fire system bypass affects unobserved and unoccupied spaces outside the immediate work area. When this occurs the supervisor in charge must assign a dedicated worker to inspect this areas on an hourly basis to ensure there is no fire or insipid fire starting.

Passive Fire Watch

A passive fire watch can be used with the space affected by the bypass is either regularly observed or regularly occupied on an hourly basis. When this is being used the affected occupants must be notified that if they observe a fire they are to raise the alarm and notify the Department of University Safety at x4444 or 613-520-4444.

Signage

In the event that public fire alarm pull-stations are affected by the bypass rendering them inoperable legible and clear signage must be posted at all affected pull-station. Signage must be posted immediately prior to the bypass and removed once the system is reinstated. The sign must state the following:

FIRE ALARM PULL OUT OF SERVICE
NEAREST ACTIVE PULL STATION IS AT
(LOCATION OF PULL)
IN CASE OF FIRE CALL DUS @ 4444 OR
ACTIVATE NEAREST PULL STATION

11 COMMUNICATION

Contractors – All contractors will be provided a copy of this program, Hot Work and Dust Producing Workflow, Hot Work and Dust Producing Permit and Checklist prior to the start of work activities on campus as part of the tender package.

Carleton FMP – All FMP Employees who have a need to use the Hot Work and Dust Producing permit will be trained by their supervisor in its use.

Carleton Users – Information regarding the need to use the Hot Work and Dust Producing permit will be provided through the special events program.

12 MONITORING

Supervisors in charge of the hot work are responsible for monitoring all hot work performed under their direction.

Upon completion of work the hot work permit and all part 3 and part 4 documents will be collected and provided to the Fire Prevention Officer for review. Issues with the documentation will be provided to the Carleton Project Manager for follow-up with the Supervisor in charge and will be taken into consideration for all future work on the campus.

13 ACCIDENTAL ALARMS

In the event of an accidental alarm at anytime there must not be any attempt to silence the alarms.

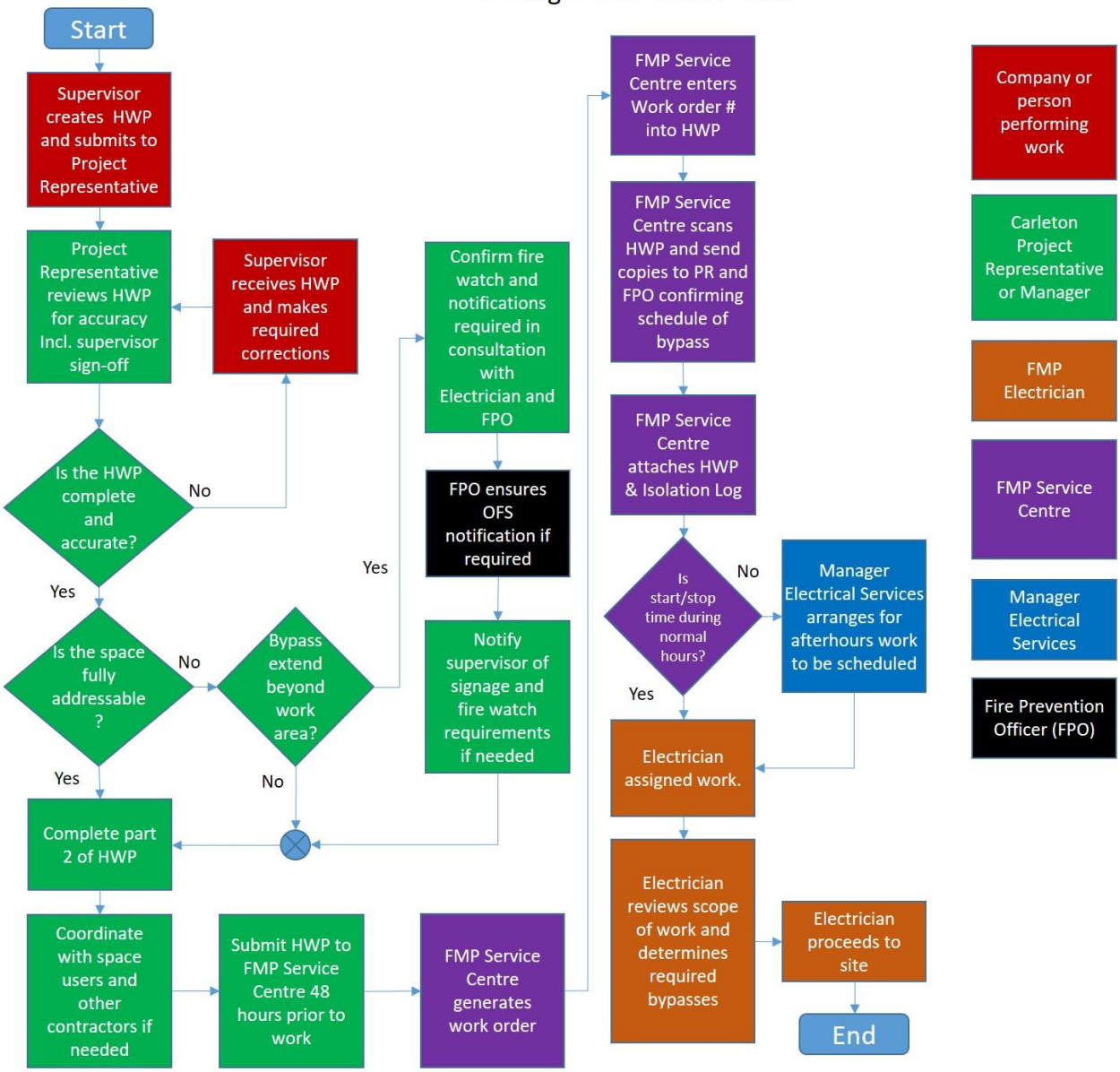
1 Allow all audible devices to sound we want the evacuation to proceed to the normal resolution for the Occupants.
2 Notify Department of University Safety at 3612 of the exact cause of the alarm.
3 Department of University Safety are to dispatch an officer to the building as if it was a normal fire alarm.
4 If Ottawa Fire Services (OFS) has not been alerted of the alarm:
    a. DUS will notify the FPO of the false alarm.

b. DUS officer(s) will monitor the evacuation and when they have determined that the building has been evacuated they will direct that the all clear signal is to be initiated from the panel.

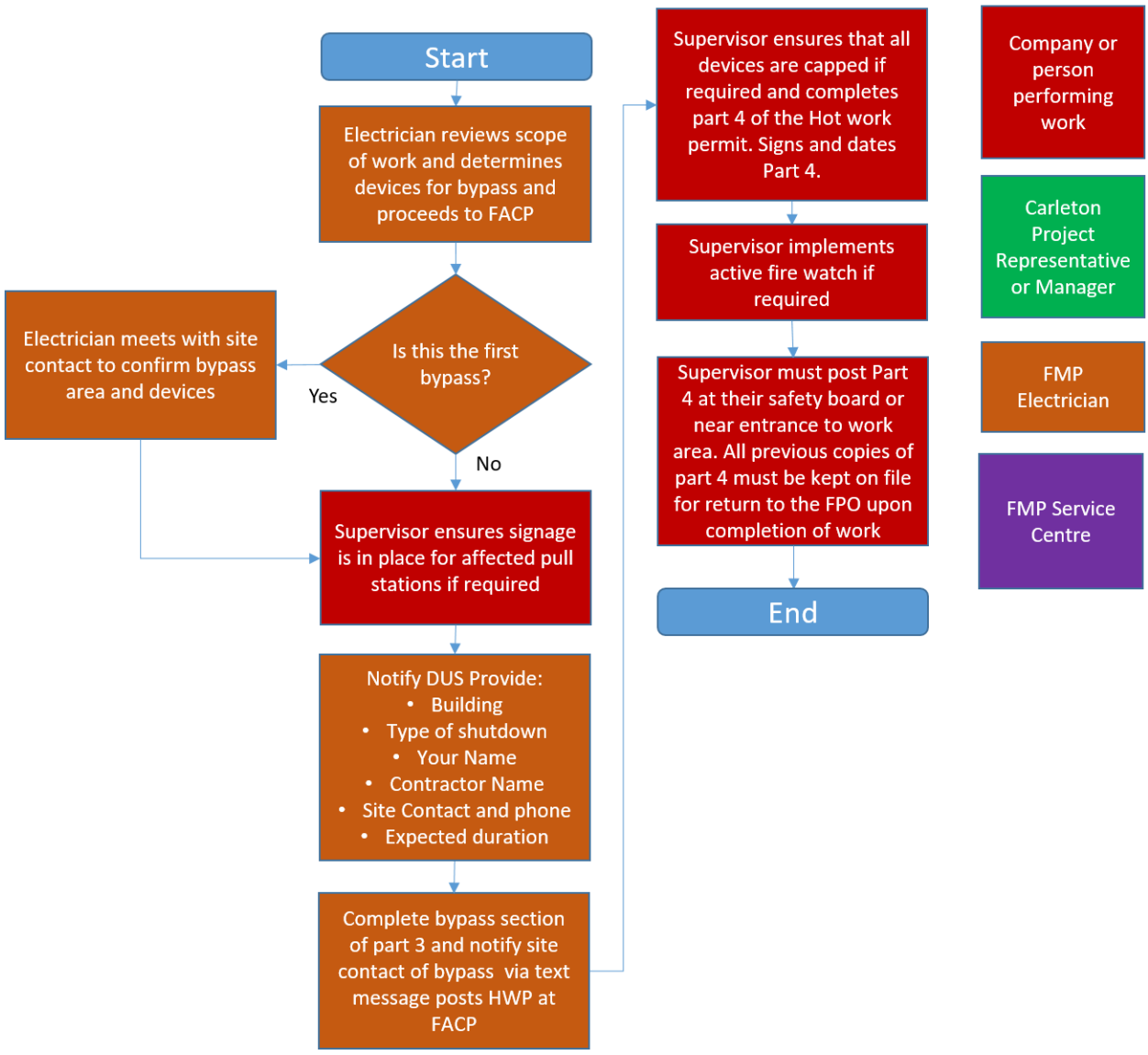
5 If OFS has been alerted and are on their way to the Carleton Campus, DUS will inform OFS either on route or upon arrival that the suspected cause is human error, OFS will assess and direct the all clear upon their arrival.

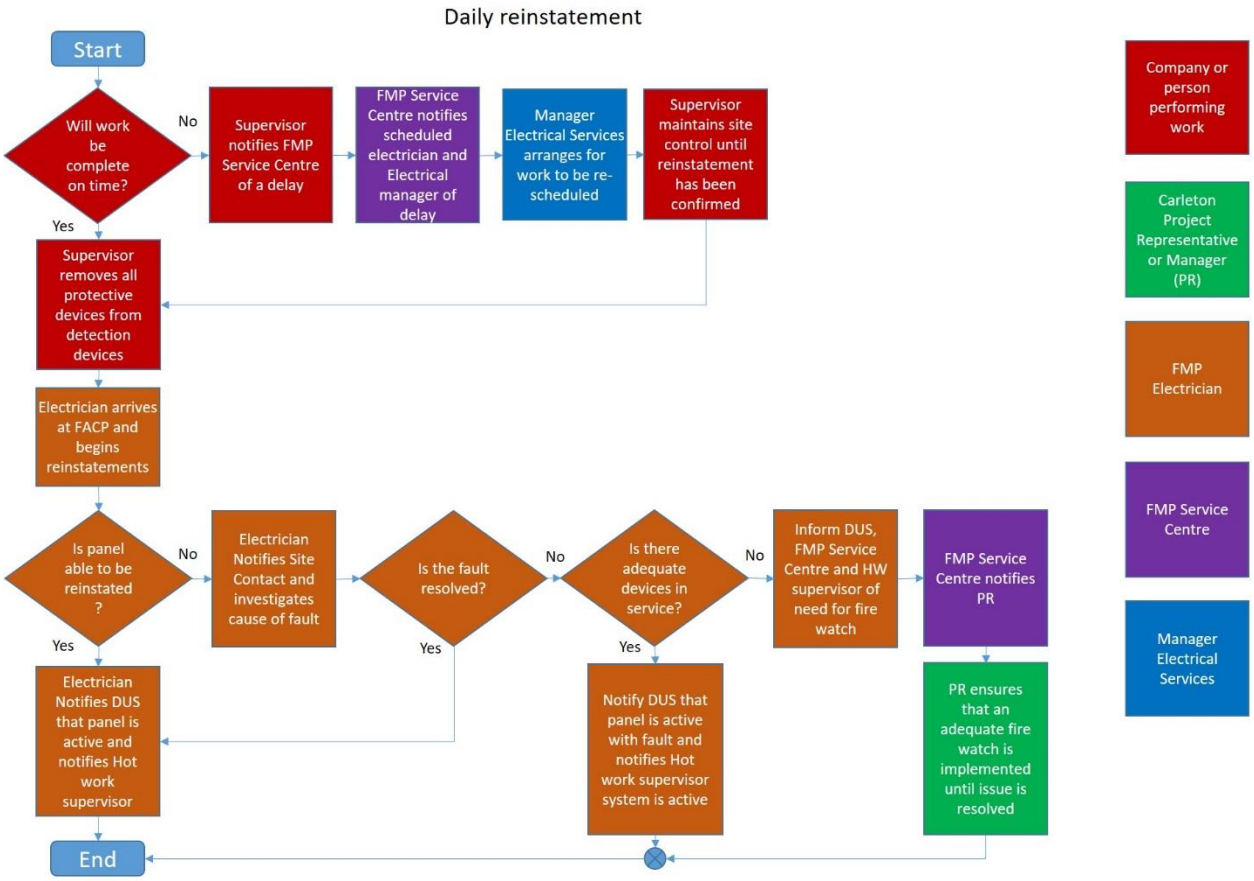
APPENDIX A – PROCESS FLOWCHARTS

Issuing of Hot Work Permit

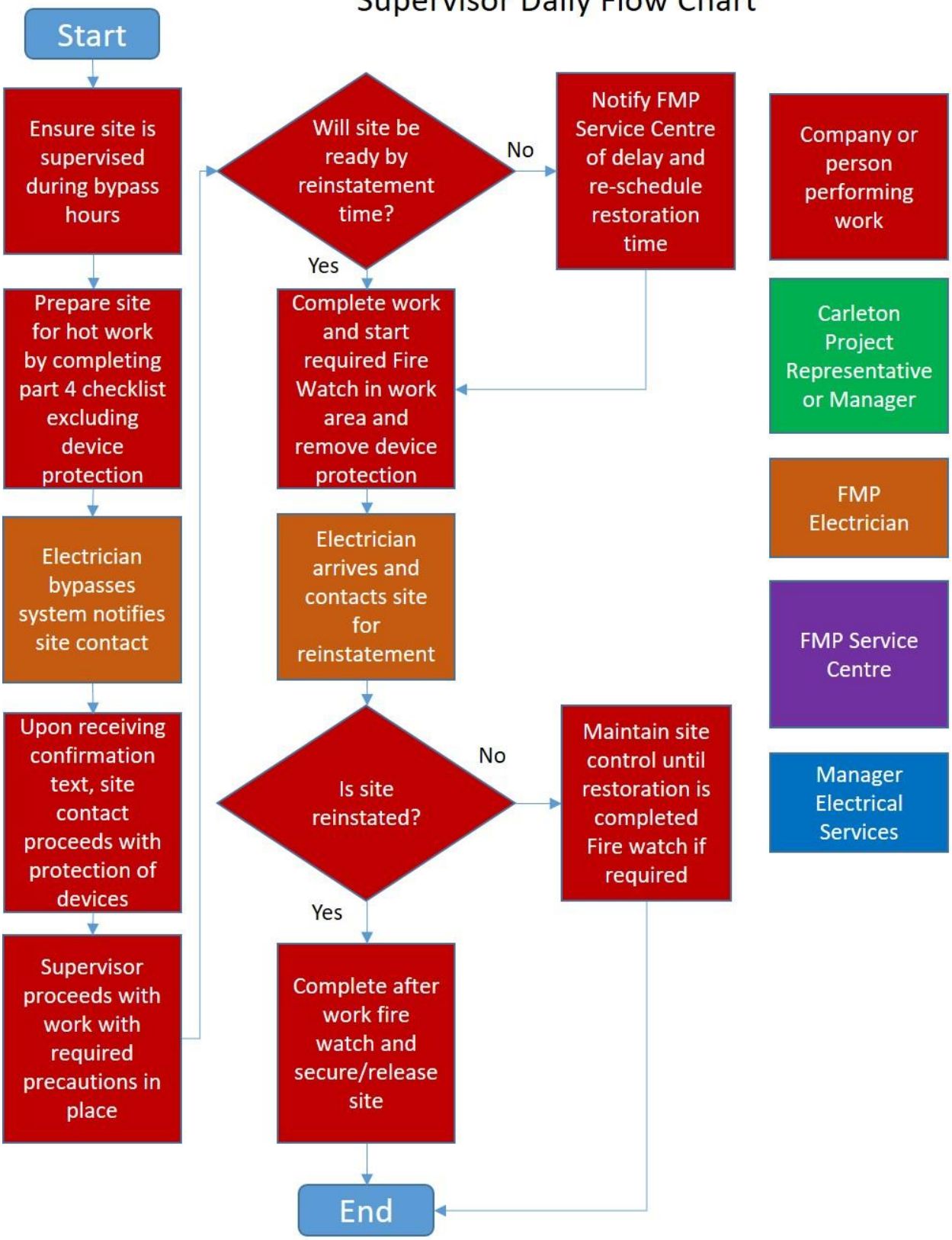


Daily bypass




Daily reinstatement
Start
Will work be complete on time?
No
Supervisor notifies FMP Service Centre of a delay
FMP Service Centre notifies scheduled electrician and Electrical manager of delay
Manager Electrical Services arranges for work to be re-scheduled
Supervisor maintains site control until reinstatement has been confirmed
Yes
Supervisor removes all protective devices from detection devices
Electrician arrives at FACP and begins reinstatements
Is panel able to be reinstated ?
No
Electrician Notifies Site Contact and investigates cause of fault
Is the fault resolved?
No
Is there adequate devices in service?
No
Inform DUS, FMP Service Centre and HW supervisor of need for fire watch
FMP Service Centre notifies PR
Yes
Yes
Yes
Electrician Notifies DUS that panel is active and notifies Hot work supervisor
Notify DUS that panel is active with fault and notifies Hot work supervisor system is active
PR ensures that an adequate fire watch is implemented until issue is resolved
End
Company or person performing work
Carleton Project Representative or Manager (PR)
FMP Electrician
FMP Service Centre
Manager Electrical Services

Supervisor Daily Flow Chart



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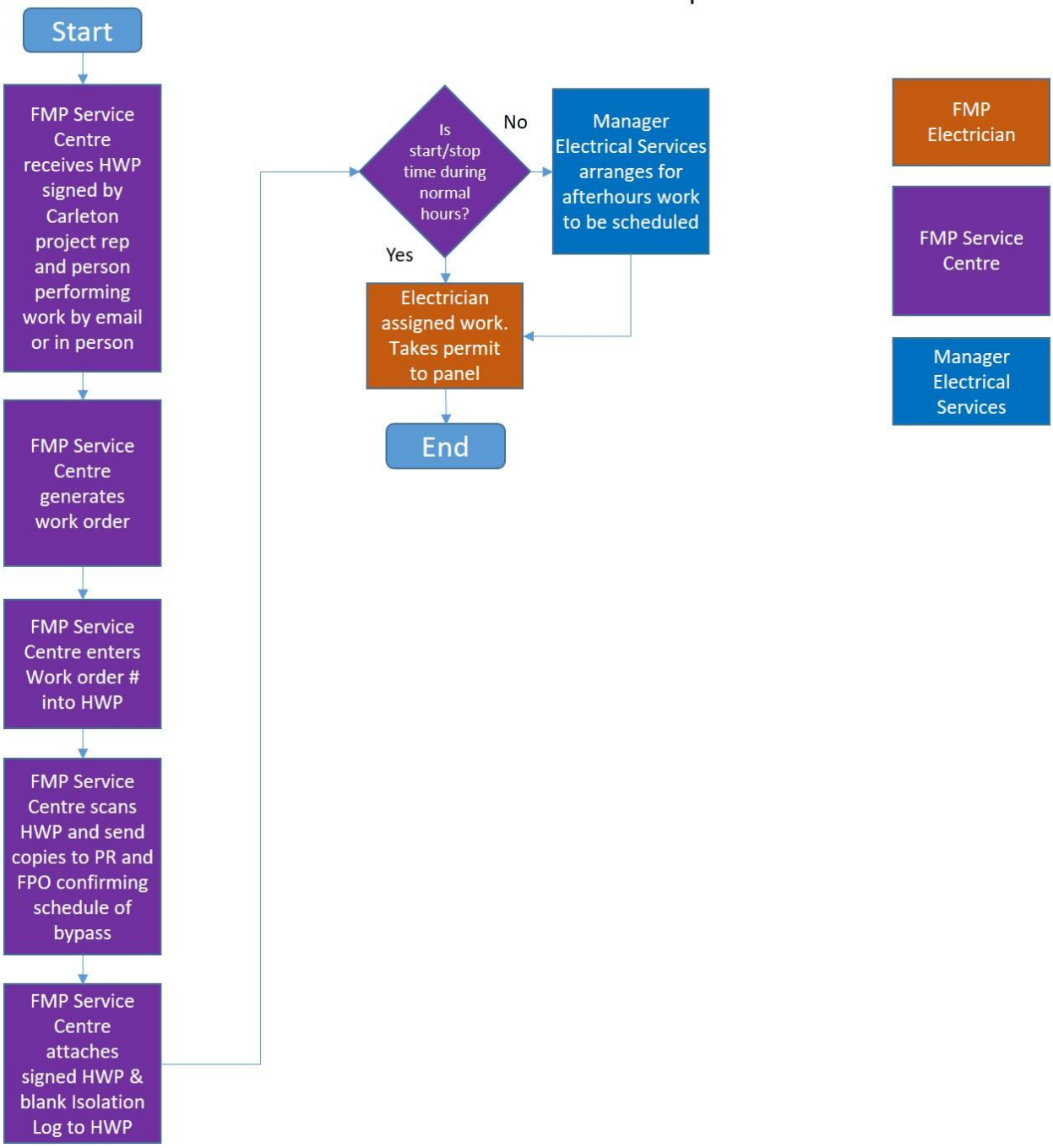
FMP Service Centre HWP process flow



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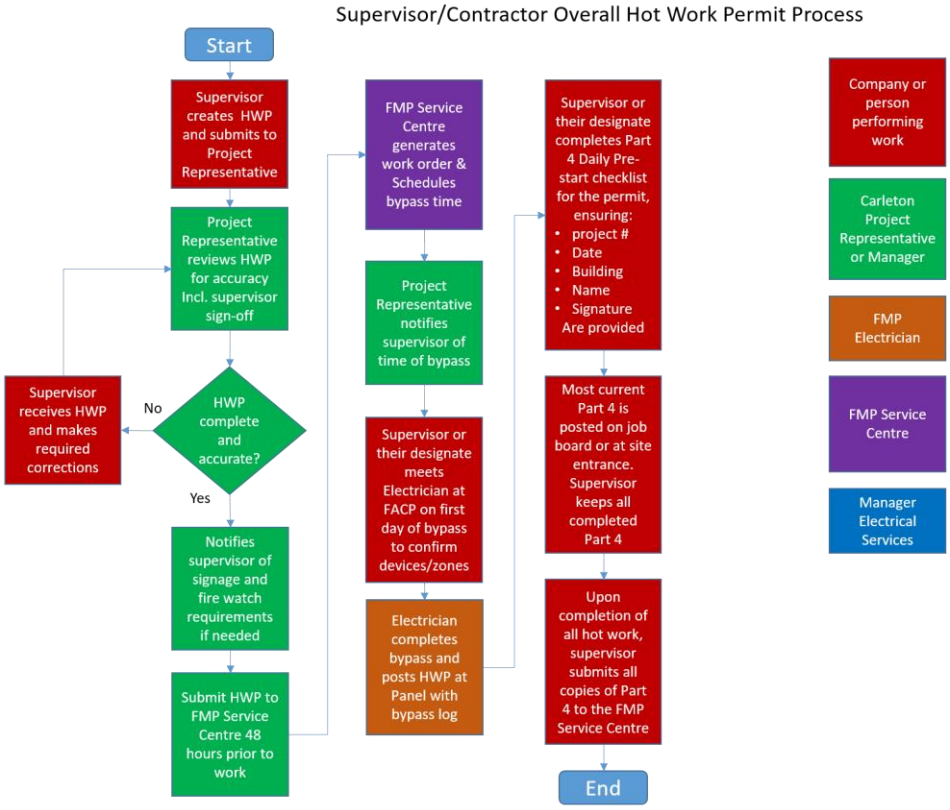
Supervisor/Contractor Overall Hot Work Permit Process



APPENDIX B – HOT WORK PERMIT FORMS

WORK ORDER/PROJECT #:

PART 1: WORK INFORMATION			
To be completed by: SUPERVISOR			
Work Performed By:	☐ CU Employee ☐ Contractor		
Company/Department:			
Building:		Room/Work Area:	
Permit Start Date:		Permit Start Time:	
Permit End Date:		Permit End Time:	
Type of Work Performed (check all that apply)			
☐ Welding ☐ Cutting ☐ Grinding ☐ Brazing ☐ Torching ☐ Sanding ☐ Soldering ☐ Other (Please Specify):			
Description Of Work			

ACCEPTANCE OF REQUIRED SAFETY PRECAUTIONS AND HOT WORK MONITORING			
I have read and understand **Carleton University's Hot Work and Dust Producing Procedures** and will complete the required **Daily Pre-Start Checklist (Part 4)** prior to the start of any hot work each day. In addition, appropriate monitoring will be in place and additional precautions will be implemented when required by regulation.			
Supervisor:		Phone:	
Signature:		Date:	
On site contact:		Phone:	
Please Note: The electrician will notify the site contact by text that the bypass is completed. No work is to start prior to this notification. For issues contact the **FMP Service Center at 613-520-3668.**			

PART 2: WORK REQUEST REVIEW		
To be completed by: CARLETON PROJECT REPRESENTATIVE		
Name:	Phone:	Date:
Zoned building? ☐ Yes ☐ No	Fire watch required beyond work zone? ☐ Yes ☐ No	
Occupants notified? ☐ Yes ☐ No	Bypass required? ☐ Yes ☐ No	
Additional Notes:		
Signature:		

TO BE FILLED OUT BY CARLETON ELECTRICIAN

Work Order/Project #: _____

PART 3: PANEL ISOLATION/REINSTATEMENT LOG									
PANEL ISOLATION					PANEL REINSTATEMENT				
Electrician	Month	Day	Hour	Min.	Electrician	Month	Day	Hour	Min.

All copies of the daily panel isolation/reinstatement log checklist must be **kept on site until the completion of the hot work**. At the end of the project, all log sheets must be **returned to the FMP Service Centre**.

PART 4: DAILY PRE-START CHECKLIST

To be completed by: WORKER/CONTRACTOR

Date: _____ Building: _____ Work Order / Project #: _____

GENERAL SAFETY PRECAUTIONS	YES	N/A
1. Communication device(s) (i.e., cell phone) is available for immediate use in case of an emergency		
2. Fire extinguisher and safety devices (i.e., smoke eaters, welding screens) are present, in service and in good operating condition. Note: Extinguishers to be UL Type 4A40BC per Construction Reg. 213		
3. Identification of Smoke/fire detectors affected AND that the certified electrician has confirmed devices are disabled.		
4. Sign all affected fire alarm pull stations as not in service, indicate the nearest active pull station.		
5. Hot Work equipment is in good operating condition.		
6. An assessment and steps have been completed to mitigate worker risks when completing the work (i.e., ventilation needs, air purging/scrubbing)		
7. Appropriate Personal Protection Equipment is provided and in good operating condition		
REQUIREMENTS WITHIN 10 METRES OF HOT/DUST WORK	**YES**	**N/A**
8. Work Area is clearly delineated with signs and/or barriers to restrict access and exposure		
9. All sprinkler heads and smoke detectors are covered if they are vulnerable due to the work		
10. Ventilate the area with appropriate ventilating equipment, if there is a risk due to smoke or dust exposure		
11. Suspend any nearby activity that could constitute a risk (dust collector, nearby painter, use of solvents or glues etc.)		
12. No risk of explosive atmosphere, or it has been eliminated (gas, vapours, dust)		
13. All flammable liquids, dust, powders and oily products have been removed		
14. All combustible materials have been removed from the work area		
15. Floors are swept and clear of debris		
16. Openings in ceilings, floors and walls are protected		
17. All other hazards that may result in damage, injury or loss to personnel and property are identified and controlled		
HOT WORK MONITORING (DURING AND AFTER WORK)	**YES**	**N/A**
18. A trained Hot Worker has been assigned		
19. The Hot Worker was provided with suitable extinguishers		
20. Workers are trained in use of equipment, sounding the alarm and notifying Department of University Safety		
21. A Fire Watch provided for 60 minutes after the completion of work, or for 3 hours after the completion of open flame torch work (2 hours if a hand held thermal scanner is used)		
22. All devices protected and covered prior to the start of work are uncovered and able to operate properly		

Worker (PRINT) : _____ Signature: _____ Date: _____

All copies of the daily pre-start checklist must be **kept on site until the completion** of work. In the event of a fire or fire alarm the checklist may be required. At the end of the project all checklist must be **returned to the FMP Service Centre**.

APPENDIX C – BUILDINGS WITH ZONED DEVICES

MacOdrum Library Fire Alarm Device Groupings

Level	Module/Zone	Device locations
P3	01-02-0150	Pull @ (P3 Stair F, G, & room P305)
P2	01-02-0151	Pull @ (P2 Stairs F, G)
P1	01-02-0152	Pull @ (P1 Stair F, G, room P109)
P1	01-02-0145	Pull @ Tunnel to Southam elevator lobby, Heats @ (C&W supervisor office, Film storage room)
1	01-02-0153	Pull @ (Stair C, D, E, room 146, 147), Heat @ (room 125, 144)
2	01-02-0154	Pull @ (Stair C, D, E, room 246, 247) Heat @ (room 236, 244)
3	01-02-0130	Pulls @ (Stair A, entry rooms 346, & 347), Heats @ (rooms 350, 350A, 352, 360, 360A, 360B, 360C, 360D, 360E, 360F, 360G, 360H, North east half of room 301)
3	01-02-0131	Pull @ Stair B, Heats @ (Rooms 319, 381, South east half of 301)
3	01-02-0144	Pull @ (Stair A, room 326, 346, 347), Heat room 344
3	01-02-0155	Pull @ (Stair C, D, room 300, 326), heat room 336
4	01-02-0132	Pull @ Stair A, Heats @ (Rooms 402, 403, 404, 405, 408, 409, 410, 420, 421, 422, 450, 450a, 451, 452, North East half room 401)
4	01-02-0133	Pull @ Stair B, heats @ (Rooms 416, 418, 418a, 419a, 423, 424, 425 and South East half of room 401)
5	01-02-0134	Pull @ Stair A, Heats @ (room 504, 505, 506, 507, 508, 509, 509a, 511, 512, 550, 550a, 551, 552, North East half room 501)
5	01-02-0135	Pull @ Stair B, Heats @ (rooms 517, 519, South east half of 501)

St. Patrick's Alarm Device Groupings

Level	Module/Zone	Device locations
1	01 02 0145	Level 1 Mechanical room heats
1	01 03 0001	All Pulls and detectors on level 1 (excluding room 118, 113, 114, 115, 117, 119, smokes in art gallery)
1	01 03 0005	Smokes in Art gallery
1 & 2	01 03 0006	Smokes @ (Room 113,114, 118, 117, 119, 115, Level 2 Gallery)
2	01 03 0002	All Pulls and detectors on level 2 except Art Gallery
3	01 03 0003	All Pulls and detectors on level 3
4	01 03 0004	All Pulls and detectors on level 4

Paterson Hall Fire Alarm Device Groupings

Level	Module/Zone	Device locations
0	ZN1	All devices room 001
0	ZN2	All devices @ (rooms 002, 003, 004, 005, 006, 007, 008, 010)
0	ZN3	Pull @ room 021, Heats @ room 021
1	ZN4	Pulls @ (Stair A, room 176, at tunnel), Heats @ (Rooms 115, 120, 125, 135A, 129, 133, 124, 132A, 123A)
1	ZN5	Pulls @ (Bank main entrance, Bank exit, room 160, Stair C exit), Heat @ room 168
2	ZN15	Smoke @ (Stair B level 2, Stair B level 4)
2	ZN6	Pulls @ (Stair A, room 276, 271), Heats @ (Rooms 225, 235A)
2	ZN7	Pulls @ (Stair C, room 290), Heats @ (Rooms 250, 258)
2A	ZN8	Pulls @ (Stair C, room 2A90), Heats @ (Rooms 2A50, 2A94)
3	ZN9	Pulls @ (Stair A, 377), Heats @ (Room 325, 330F, 335A)
3A	ZN10	Pull @ (3A90W, 3A91), Heats @ (3A94, 3A58)
4	ZN11	Pull @ (Stair A, room 476), Heats @ (room 413, 421, 425, 433, 423A, 472)
4	ZN12	Pull @ (Stair C, Room 426), Heats @ (room 450, 458)
4	ZN13	Heat @ (Top Elevator Shaft, Elevator room)

Social Sciences Fire Alarm Device Groupings

Level	Module/Zone	Device locations
1	ZN1	Pulls @ Level 1, All detectors except rooms 116 & 119
2	ZN2	Pulls @ Level 2, All detectors level 2
3	ZN3	Pulls @ Level 3, All detectors level 3

Southam Hall Fire alarm device groupings		
Level	**Module/Zone**	**Device locations**
1	01-04-0006	All Pulls and Heats @ Rm 107
1 & 2	01-04-0007	Theatre Pulls @ (Stair E, F, exit room 217A, 217B), Smokes @ (Room 212), Heats (Room 218, 102, 102A, 102B, 103, Stair F)
1 & 2	01-05-0003	Heats @ (Crawl space, Rooms 220A, 222)
2	01-04-0008	Theatre Pulls @ (Mezzanine Loft, Lighting Control room), Heats @ (Costume Loft, Stage North, Stage South, Lighting control East, Lighting control East Centre, Lighting control West Centre, Lighting control West, Lighting control Catwalk)
2	01-07-0001	Pull @ room 237, Smoke @ room 235, Heats @ (room 237, 231)
2	01-08-0003	Pulls @ (stairs E, F) Smokes @ (Stair E, room 205, 209) Heats @ (room 201, 202, 203, 204, 205, 206, 207, 208, 209, 210)
2	01-09-0005	Pulls @ (at tunnels)
2	01-09-0007	Pull @ tunnel theatre B, Smokes @ tunnel theatre B
2	01-09-0008	Smokes in tunnel theatre B
3	01-02-0001	Theatre Pulls @ (Stair A, Stair B, room 315, Exit near room 303, room 307) Heats @ (Rm 321, 322)
3	01-02-0008	Theatre Pulls @ (Lobby exit near 325A, Loading door, Stair E, Stair F), Smokes @ (Room 324, Stair E, F), Heats @ (Room 326, 328A, Loft, 326B)
4	01-05-0004	Pulls @ (stairs A, B, C, D) Heat @ room 421
5	01-08-0004	Pulls @ (stairs A, B, C, D) Heat @ room 539A
6	01-09-0004	Pulls @ (stairs A, B, C, D) Heats @ (room 601, 615, 617, 621, 641)

Minto CASE Alarm Device Groupings

Level	Module/Zone	Device locations
1	ZN29	Pulls @ (lvl1 Stair A, B, C, D), Heat room 1021A
2	ZN31	Pulls @ (All Level 2 exits (except Stair C, D, south exit room 2060, Bell Theatre)), heat room 2021A
2	ZN37	Pulls @ (Level 2 Stair C, D and south exit room 2060)
2	ZN45	Pulls @ Bell Theatre
3	ZN39	Pulls @ (All Level 3 except Bell Theatre), Heat Room 3021A
4	ZN47	Pulls @ (Level 4 Stair A, B, C, D, Mackenzie link), Heat room 4021A
5	ZN3	Pulls @ (lvl 5 Stair A, B, C, D, E), Heat room 5004A
6	ZN5	Pulls @ (Level 6 Stair A, B) Heat room 6002A
7	ZN16	Pulls @ (Top of Stair A, B, Elevator Machine room)
7	ZN19	Pulls @ (Stair A, B), Heat room 7025

Athletics and Fieldhouse Fire Alarm Device Groupings

Level	Module/Zone	Device locations
1	01-01-001	Pulls @ (NE under pool, Stair B, Tunnel entrance, Underpool window, entrance 1189), Heats @ (1178, 1174, 1175, 1176, 1171, 1172, entrance from tunnel, all underpool detectors,
1	01-01-002	Pulls @ (Stair B, C, D, E, G, entrance at Tim Hortons, room 1183, 1163, 1115, 1110, 1120), Smokes @ (room 1180, entrance Tim Hortons, 1115A), Heats @ (room 1189, 1166G, 1166B, 1166, 1100E, 1103, 1103A 1103B, 1110F, 1106, 1163, 1164C, 1160, 1164, 1150, 1155, 1126, 1127, 1124, 1122,1115B, 1183A)
1	01-02-012	Pulls @ (Fieldhouse All), Smokes @ (Rm 1205, 1206), Heats @ (Rm 1201, 1207)
2	01-01-003	Pull @ (Stair B, Sun Deck, Rm 2140), Heat Rm 2140A
2	01-01-004	Pull @ (Stair A-B-C-F-G, Rm 2185, Woman's Locker room, Link to gym) Smoke @ Stair A, Heats @ (Rm 2128, 2196, 2110, 2110A, 2110F, 2110G, 2110H, 2122, 2130, 2130A, 2131, 2127, 2182, 2104)
2	01-02-009	Smokes @ Rm 2185
3	01-01-005	Pulls @ (Stair A, E), Smoke @ Stair A, Heats @ (Rm 3130, 3103, 3102A, 3102B, 3103, 3104, 3190)
3	01-01-006	Pull @ Rm 3110, Heats @ Rm 3110
3	01-01-007	Pulls @ Rm 3101, Heats @ 3101

Herzberg Laboratories Fire Alarm Device Groupings

Level	Module/Zone	Device locations
1	3-0002	Pulls @ (Stair A - loading dock - room 1111 - Stair C - room 1119 - Stair D - room 1175 - room 1160 - Tunnel Junction), Heats @ (11XX and 10XX spaces, 12xx space, all heats in tunnel, room 1301)
1	4-0183	Pull @ (Stair F), all heats in crawl space and room 1350
1	4-0380	Pull @ (Stair G, West Exit), Smokes and Heats @ 14xx block
2	3-0003	Pulls @ (Stair C, Stair D, entry to 2000 block), Heats @ 21xx block
2	3-0004	Pulls @ (Stair B, Entry to 2000 Block), Heats @ 22xx Block
2	4-0179	Pull @ (Stair F, exit room 2354, entry into block 2000), Heats @ 23xx block
2	4-0376	Pulls @ (Stair F, Stair G), smokes and heats @ 24xx block
2	4-0378	Pulls @ (Frieght elevator, Woman's washroom), Smokes and Heats @ 20xx block
3	3-0006	Pulls @ (Stair A - Stair B), Heats @ 32xx block
3	4-0135	Pulls @ (entry to 3000 block, Stair E, Stair F), Heats and Smokes @ 33xx block
3	4-0137	Pulls @ (Passenger elevator, Freight elevator), smokes and heats @ 30xx block
3	4-0178	Pulls @ (Stair A, Stair D, Stair C), Heats @ 31xx block
4	3-0007	Pulls @ (Stair B, Entry to 4000 Block), Heats @ 42xx block
4	4-0131	Pulls @ (Entry to 4000 block, Stair E, Stair F), Heats and Smokes in 43xx block
4	4-0133	Pull @ (Passenger Elevator, Freight elevator), Smokes and Heats @ 40xx block
4	4-0176	Pulls @ (Stair D, Stair C, Stair A), Heats @ 41xx block
5	3-0008	Pulls @ (Stairs A, Stairs B), Heats @ 52xx block
5	4-0127	Pull @ (Freight elevator block 5000), Smokes @ 50xx block
5	4-0129	Pull @ (Entries to 5000 block, Stair E, Stair F), Smokes and Heats @ 53xx block
5	4-0174	Pull @ (Stair A, Stair C, Stair D), Heats @ 5100 block
Roof	3-0005	Pull @ (top of stair C), heats at Observatory

Loeb Fire Alarm Device Groupings level 1-6

Level	Module/Zone	Device locations
Crawl	1-1	Heats and Smokes @ Tower D Crawl Space
1	1-3	Pulls @ (Stair A, Room 110C, at entry to room 110C), heats and combo in A Block
1	1-4	Pulls @ (Room 111A, Entry to 111A) Heat @ room 110D
1	25-4	Pull @ (room 131 exit, Loeb café, exit at Loeb), heats @ (Loeb café, room 142A, 142, 173, 175, 176, 170D, C164, C164A, 145A)
2	16-1	Pull @ (Stair C, Pillar near Café) Heat @ room 245
2	16-2	Pull @ (Stair D, At east fire doors tunnel) heats @ room 270, 266, 266A, 264,264A, 264B)
2	2-4	Pull @ (stair A, stair B), heats @ (room 205A and A240C)
3	17-1	Pull @ (stair A, in stair A, stair B, in stair B) heat @ room 308C
3	17-2	Pull @ (Stair C, In Stair C) heat @ room 352C
3	17-3	Pull @ (Stair D, in Stair D), Heat @ room 365C
3	17-4	Pull @ (Stair E, in Stair E)
3	18-1	Duct smokes Stairs A - B - C - D level 3
4	18-2	Pull @ (Stair A, Stair B) Heat @ room 444C
4	18-3	Pull @ (Stair C), Heat @ 451C
4	18-4	Pull @ (Stair D), Heat @ room 478C
4	19-2	Duct smoke @ (Stairs A-B-C-D-E Level 4)
5	19-3	Pull @ (Stair A, Stair B) Heat @ (room 537C, 514C, 556C)
5	19-4	Pull at Stair C, Heat @ comms closet
5	20-1	Pull @ Stair D, Heat @ room 569
5	20-3	Duct smokes @ (Stairs A - B - C - D-E) level 5
6	20-4	Pull @ (Stair A, Stair B), heat room 635C
6	21-1	Pull at Stair C, Heat @ 645C
6	21-2	Pull @ Stair D, heat @ room 667C
6	21-4	Duct smoke @ (Stairs A-B-C-D Level 6)

Loeb Fire Alarm Device Groupings level 7-9

7	22-1	Pull @ (Stair A, Stair B) Heat @ room 710C
7	22-2	Pull @ Stair C, heat @ room 748C
7	22-3	Pull @ Stair D, Heat @ room 777C
7	23-1	Duct smoke @ (Stairs A-B-C-D-E) level 7
8	23-2	Pull @ (Stair A, Stair B), heat @ room 837C
8	23-3	Pull @ Stair C, heat @ room 861C
8	23-4	Pull @ Stair D, Heat @ room 873C
8	24-2	Smokes @ (Stairs A, B, C, D, E)
9	24-3	Pull @ (Stair A, Stair B) Heat @ room 938C
9	24-4	Pull @ Stair C, Heats @ (room B945, C950)
9	25-1	Pull @ Stair D, Heats @ (room B945, C950)
9	25-2	Pull @ Stair E, Heat @ (room D951, Stair D)