AWAIR Safety Program

2022 AWAIR Safety Program
Reviewed 01/21/2022

Access NAC's SDS Book online at:

https://nac-hvac.com/download/sds-book/

NAC

Mechanical ♦ Electrical ♦ Fabrication
Building Technology ♦ 24 Hour Service


AWAIR - SAFETY PROGRAM
AWAIR
Safety
SAFETY PROGRAM
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I. Safety Guidelines

1. Summary of AWAIR Safety Program
    a. Statement of Safety Policy
    b. NAC Incident Investigation Form
    c. First Report of Injury (FROI) Form
    d. Written Statement Form
    e. Disciplinary Action Form
2. Drugs & Alcohol
    a. Consent to Drug and Alcohol Testing
    b. Notice of Drug and Alcohol Testing Form
3. Emergency Action Plan
    a. EAP Bomb Threat Checklist
4. Fire Prevention
5. Fleet Safety Guidelines
    a. Daily Vehicle Inspection Log
    b. Vehicle Accident Report Form
    c. Vehicle Driving Policy Agreement
6. Harassment Policy
7. Return to Work

II. Construction Safety

1. Construction Safety
    a. Activity Hazard Analysis (AHA
    b. Construction Site Inspection Form
    c. Pre-task Check
2. Fall protection
    a. Fall Protection Checklist Form
    b. Site Specific Fall Protection Template
    c. Fall Protection Help Sheet
3. Hand and Power Tools
4. Heavy Equipment Operation
5. Ladders
6. Scaffolding
    a. Scaffolding Card
7. Mobile Elevated Work Platforms
8. Subcontractor
    a. Subcontractor Equipment Release

III. Environmental, Health + PPE Programs

Environmental Programs

1. Asbestos
    a. Asbestos Hazard Concern Form
2. Lead Safe Work Practices
    a. Lead Abatement Form
    b. EPA Lead Rules
    c. Lead Renovation Notice
    d. Lead Pre-Renovation Form
    e. Lead Recordkeeping Checklist
3. Silica Exposure Control Plan
4. Waste Reduction and Recycling

Health + Personal Protective Equipment

5. Bloodborne Pathogens (BBP)
    a. BBP Exposure Incident Report
6. First Aid Injuries
    a. Emergency and First Aid Guide
    b. Heat Stress
7. Hazard Communication + Right to know
8. Noise Exposure and Hearing Protection
    a. Noise + Vibration Work Permit
9. Personal Protective Equipment (PPE) + Eye Safety
    a. PPE Assessment Checklist
    b. PPE Hazard Assessment Checklist
10. Respiratory Protection Program
    a. Voluntary Use of Respiratory Protection Form

IV. Hazardous Energy Safety

1. Confined Space
    a. Tripod Setup, Gas Monitor, Confined Space Reminders
    b. Confined Space Entry Permit
2. Electrical Safety
    a. GFCI Test Form
    b. Energized Electrical Work Permit
3. Hot work
    a. Hot Work Permit
4. Welding + Cutting
5. Line Break
    a. Service Interruption Form
6. Lockout/Tagout (LOTO)
    a. NAC LOTO Tags
    b. Lockout Procedures for Refrigeration Piping

V. Material Handling

1. Ergonomics
2. Hoists, Cranes + Scissor Lifts
    a. Universal Rigging Signals
    b. Crane Lift Approval Form
3. PIT Forklifts
    a. Forklift Pre-Operation Check
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4. Storage + Stacking

VII. Safe Work Practices

1. Compressed Air
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Section I

Safety Guidelines

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SUMMARY OF AWAIR SAFETY PROGRAM

(AWAIR= A Workplace Accident Injury Reduction)

NAC has developed a Safety AWAIR program to identify, anticipate and control hazards in the workplace, and promote a safe working environment for our employees. Please read this summary of the safety program for an understanding of roles, responsibilities and policies at NAC. Safety is essential to maintain a safe workplace, whether on a service call, a construction project, in the offices, or while driving company vehicles. Each employee has the right and responsibility to address safety concerns, and management will work to mitigate hazards and reduce risk in order to create a safe and healthy work environment. The program is available for all employees to review on the employee website or upon request from the safety coordinator. The program may be available on job-sites, as well. The program contains:

- A letter to all employees signed by the owner and safety coordinator, stating NAC is committed to safety and has a companywide safety program
- Safety Committee information
- Responsibilities of management, supervisors, safety coordinator and employees, including accountability, meeting requirements, job-site inspection requirements, accident investigations requirements, and training requirements
- Individual safety programs based on hazards, tasks, and work methods to perform job safely.
- Safety forms including incident investigation, first report, confined space permits, etc.

Records for investigations, permits, and training will be kept at NAC's main office. Some records, such as on-site training and toolbox talks, may be kept on job-sites.

If you have any questions, please contact your Supervisor, Safety Coordinator, Stephanie Hagen, or the President, Lynn Bishop.

Stephanie Hagen | Safety Coordinator
Cell: 651-280-8265 | Office: 651-200-3024
shagen@nac-hvac.com

SAFETY COMMITTEE

SAFETY COMMITTEE MEETINGS

NAC's Safety Committee meets on a monthly basis to review injuries, incidents, near misses, and jobsite inspection results. The Safety Coordinator will lead the meetings and allow additional time for committee members to make suggestions, provide feedback, and have open discussion. The Safety Committee is responsible for addressing safety concerns, hazards and risks at jobsites in order to guide the elimination and prevention of future hazards. All employees bring a unique perspective and are encouraged to participate in the meetings, so we can find effective ways to reduce the risk of injuries. Please feel free to contact a member of the committee if you would like to participate in the meetings or if you have any safety concerns, questions, or suggestions.

Safety Committee Members

Safety Coordinator: Stephanie Hagen
NAC President: Lynn Bishop
Vice President, CFO: Julie Krueger
CAD/Project Manager: Mike Heinze
Service Department Representative
Electrical Department Representative
Warehouse Representative
Fab Shop Representative
Rotating field representative or office guests

EMPLOYEE RESPONSIBILITIES

NAC is dedicated to create a safe and healthy work environment for our workers. We actively work to prevent injuries to people and damage to property and the environment through recognizing and correcting hazards that cause injuries and illness. NAC intends to comply with all standards relating to safety and health enforced by Local, State or Federal authorities. Each employee has responsibilities outlined below to help NAC meet our goal of reducing risk to help eliminate work-related injuries. Safety is everyone's responsibility. If you see something unsafe, say something!

MANAGEMENT

RESPONSIBILITIES:

- Commitment to safety as shown through actions
- Commitment to and participation in safety activities, policies, procedures and implementation
- Participate in the annual review of the Safety Program
- Review accident reports and safety activity
- Set goals, establish accountability for supervisors and employees, and be actively involved in promoting and maintaining safety
- Hold teams accountable for safety performance
- Help establish and maintain safety program elements
- Implement safety program elements into work processes
- Communicate safety commitment and policies with teams
- Make necessary appropriations

SAFETY COORDINATOR

RESPONSIBILITIES:

- Responsible for maintaining and updating the safety program
- Work with management and employees to ensure safety policies are effective
- Develop written safety policies and procedures
- Coordinate activities with safety committee, management and supervisors
- Inform management of proposed safety and health information to employees
- Develop and provide safety training for employees, supervisors, and managers
- Develop training for new employees

- Conduct workplace safety inspections
- Investigate incidents, analyze findings, and develop corrective actions to prevent future occurrences
- Monitor and evaluate the effectiveness of safety and health programs
- Assure compliance with government regulations, and prepare and submit progress reports

SUPERVISORS

RESPONSIBILITIES:

- Prepare and plan for workdays (pre-task plans, JSA, AHA)
- Identify and anticipate hazards related to work procedures, and develop and implement control methods to eliminate and control hazards
- Provide employee training for new and current employees: Provide and document necessary training for safety, tool and equipment use, and safe work methods to team members
- Identify training or safety deficiencies and notify Safety Coordinator: Coordinate and document additional training that may be required with the Safety Coordinator or equipment vendors
- Communicate hazards, needs, and progress between management, teams, and working groups
- Incorporate safety into the work process, and be alert for safety and health hazards
- Regularly conduct jobsite inspections, document and take corrective measures to control any identified or anticipated hazards
- Train employees on identifying and anticipating hazards, and promote involvement in day to day safety inspections
- Prepare incident investigations, send to Safety Coordinator, and implement corrective measures
- Enforce safety policies, and utilize disciplinary procedures to hold employees accountable

EMPLOYEES

RESPONSIBILITIES:

- Learn to recognize and anticipate hazards on each jobsite and work to eliminate such hazards to enable safe working conditions for all workers on the jobsite.
- Follow safety rules and perform work in a safe manner. If work cannot be done safely, report hazard to your supervisor
- Conduct and respond to jobsite inspections
- Report hazardous conditions or concerns to supervisors
- Communicate safety to fellow employees when deficiencies are found
- Make suggestions to help improve safety
- Complete all required safety trainings
- Notify your supervisor or safety coordinator if you feel you need additional training
- You have stop work authority. If you see something that is unsafe and likely to cause harm, you have a right to stop work until a competent person can assess the situation to determine necessary control measures.

ACCOUNTABILITY

Management shall be held accountable for the accident prevention program by Lynn Bishop, through the project manager, job superintendents, foremen and crews. The Safety Coordinator shall assist all levels of management in carrying out their duties.

DISCIPLINARY ACTIONS

Violations of the safe work practices shall be subject to disciplinary action. Project managers, job superintendents, supervisors and foremen are responsible for enforcing safe work practices and issuing safety violations. Employees who disregard policy, procedures and safety regulations, putting themselves and others in danger, shall be immediately notified. Work shall cease until the situation is resolved and unsafe behavior or situation has been corrected. Employees may be suspended without pay, for the rest of the day for a zero tolerance or repeat offense, or egregious and severe offense. Disciplinary measures are determined based upon offense and circumstance.

1ST OFFENSE: VERBAL WARNING
2ND OFFENSE: WRITTEN WARNING
3RD OFFENSE: DISCIPLINARY ACTION, WHICH COULD INCLUDE DISCHARGE FOR CAUSE PROVIDED IN THE CURRENT LABOR AGREEMENT

PRE-START UP

As soon as a job has been scheduled, key people shall meet to discuss accident prevention, jobsite conditions, plans of procurement and schedule, safety responsibilities of the general contractor, and an operations schedule must be established and reviewed.

ACTIVITY HAZARD ANALYSIS (AHA) + PRE-TASK PLANNING

A jobsite activity hazard analysis (AHA) may be developed to plan for safe work. The AHA shall address principal steps (the type of work – trenching, hotwork, hand tools etc.), potential hazards and severity (personal injury, burns, electrocution etc.), and recommended controls (wearing PPE, having a fire watch, operating tools with guards, etc.) See NAC's Construction Safety's AHA program. Pre-task planning will be used to help plan for and control hazards that arise during the work process.

STOP WORK AUTHORITY

Employees shall be trained to understand that if they identify any task, situation, or behavior as unsafe, risky or a threat to safety has the authority to Stop Work until all issues and concerns are addressed, without risk of being reprimanded. Stop Work Authority intervention may be invoked by an employee or management when risks are identified or the control of risks are not clearly understood, and shall be respected and taken seriously. When a risk is identified, employees shall stop what they are doing, notify others of the issue, correct the issue, and then resume work after corrections are made. Stop Work should be documented by site management and reviewed with employees, supervisors and management to ensure follow-up occurs, and corrective actions are developed to help prevent a future occurrence. Management and supervisors are responsible for ensuring follow-up and corrective actions are completed.

NEW HIRE TRAINING

All new employees shall receive New Hire Training for an overview of NAC policies and basic safety procedures and to prepare for work on the jobsite. This training can be provided by the Safety Coordinator, a supervisor on the jobsite, a powerpoint, or worksheet. Further training on work procedures or site specific safety rules will be conducted by supervisors.

TOOL BOX TALKS + SAFETY MEETINGS

Toolbox talks are short in duration, about five to ten minutes, and shall be read individually or in group settings, under the direction of the foremen/supervisors in charge. Toolbox Talks may be printed off in booklet form, or may be emailed out to employees. (Emailed versions should supersede printed copies, when possible). Employees may keep records of group trainings on-site. For NAC Service Technicians, additional safety training will be conducted during regular group meetings throughout the year. Additional trainings may required as part of corrective actions, re-training, or safety stand-downs. Employees are expected to participate in safety training.

ANNUAL SAFETY TRAINING

NAC provides Annual Safety Training or Acknowledgement as a refresher for field and office employees. This summarizes key safety policies and procedures relevant to NAC's work.

Example of Safety Topics

1. January: Harassment, Discipline, Drug + Alcohol, and Fleet
2. February: Personal Protective Equipment + Respiratory Program
3. March: Asbestos, Lead + Silica
4. April: Trenching + Excavation
5. May: Confined Spaces + Rescue
6. June: Hazcom, BBP, First Aid + Emergency Action
7. July: Construction Site Safety
8. August: Ladders, Scaffolding, Scissor Lifts & Fall Protection
9. September: Forklifts, Material Handling + Ergonomics
10. October: Compressed Gas, Welding & Hot work
11. November: Hoists, Cranes & Rigging
12. December: Lockout/Tagout, Electrical Safety + Arc Flash

ADDITIONAL TRAINING

Training is essential for employee success and safety throughout the company. NAC will use Toolbox Talks as the primary training resources, however, tasks or site-specific conditions may pose a unique risk to employees, requiring additional training. Supervisors are responsible for ensuring employees are fit for duty, trained to use tools and equipment properly, perform work procedures safely, and complete all required safety training to identify and mitigate hazards encountered in their work environment. Supervisors should reach out to the safety coordinator for training materials, or specified training beyond their expertise.

JOB SITE INSPECTIONS

NAC supervisory staff is responsible for anticipating, identifying and correcting hazards that pose the risk of incidents/injuries, or which do not comply with regulations. Supervisors are responsible for continual, informal job-site inspections to ensure employee compliance, hazard control and reduce risk. The Safety Coordinator conducts jobsite safety inspections at various sites. If unsafe conditions are identified, work may be stopped, and corrective measures shall be taken immediately. The Safety Coordinator is responsible for documenting inspections and corrective actions, while ensuring that supervisors and employees involved with the inspections are informed of the results and complete corrective actions. Retraining shall occur if deviations from NAC's safety policies are observed.

INCIDENT INVESTIGATION

If an incident, injury or near miss occurs, the supervisor/foreman must conduct a preliminary investigation to obtain the facts about the incident. The foreman will work with the Safety Coordinator to determine all likely causes and suitable corrective actions to prevent a recurrence of a similar incident. The supervisor/foreman will implement corrective action. The Safety Coordinator is responsible for ensuring corrective actions are completed, emphasizing the hierarchy of controls including elimination, modifying engineering and administration controls, providing retraining, and providing additional PPE if necessary.

INCIDENT/INJURY REPORTING

Remember: EMPLOYEES MUST REPORT EVERY INCIDENT OR INJURY IMMEDIATELY to your Supervisor. Contact the Safety Coordinator to document or file a First Report of Injury (FROI) if needed. Reporting incidents is essential in helping us to understand and mitigate hazards in the workplace. Each supervisor is responsible for documenting notifications of injuries, and ensuring the Safety Coordinator and management is notified.

Recordable injuries shall be recorded on the OSHA 300 Log within 7 calendar days of notification of injury. The OSHA 300A summary shall be signed by company official, made visible to employees from February 1st through April 30th, and be retained for 5 years.

State and Federal Law requires employers to report to OSHA within 8 hours of finding out about work related fatalities that occur within 30 days of a work-related incident, and within 24 hours of finding out about inpatient hospitalization of one or more employees occurring within 24 hours of an incident, amputations, and losses of an eye. A copy of the first report of injury (FROI) shall then be mailed to the Employee's Local Union within 48 hours of such an incident.

INCIDENT PROCEDURES

1. **Employee reports incident** to foreman/supervisor, and supervisor documents notice of incident
2. Mitigate the injury or results of the incident
   - **Provide first aid**/medical attention to injured employee (Call NAC Safety for occupational clinic locations) *Note: employees must provide NAC with all medical notes regarding workability.*
   - Identify and correct any immediate hazard that remains.
3. Supervisor/foreman conducts **preliminary investigation** to include
   - Describe accident sequence (cause, accident, injury)
   - Identify preliminary Causes, People involved, Tools, Equipment, PPE, and Work practices
   - Identify possible workplace violations and Corrective Actions to prevent future occurrence
4. Supervisor/foreman **reports incident to Safety** Coordinator
5. Safety Coordinator documents incident + completes paperwork
   - Completes ***First Report of Injury*** and sends to Insurance Company
   - Works with Supervisor/Foreman to complete ***Accident/ Incident Investigation Form***
     - ID + develop corrective actions + finalizes *Form*
6. Foreman/supervisor implements **Corrective Actions and disciplinary actions**
7. Incidents are reviewed at the monthly safety committee meeting and are kept on file

STATEMENT OF SAFETY POLICY

SAFETY is everyone's responsibility!

NAC is dedicated to providing a safe and healthy work environment for all of our employees.

To accomplish this, management will provide reasonable safeguards to help ensure safe working conditions and support the safe and efficient development of all work activities.

Remember: no job is more important than your safety. We can and must take the time to perform our work safely.

As an NAC employee, you are expected to use the safety equipment provided and follow all safety rules and procedures. Safety equipment shall be taken care of and maintained, and never be altered or abused. NAC provides and requires you to wear the following PPE on jobsites: Safety glasses, hard hat, high visibility vest, hearing protection, gloves and workboots. All PPE shall be appropriate for the hazards of the work performed and will meet other site-specific requirements.

The joint cooperation of employees and management will help to ensure safe working conditions, help reduce work related accidents, and will be to the mutual advantage of all. We ask for your cooperation and support to help make all of our jobs safe.

Sincerely,
NAC Mechanical & Electrical Services

Lynn Bishop
President

Stephanie Hagen
Safety Coordinator

ACKNOWLEDGEMENT OF RECEIPT OF SAFETY PROGRAM

I acknowledge the receipt of a copy of the NAC Mechanical & Electrical Services Safety Program. I understand it is my responsibility to read the safety rules provided by the Employer. I will notify the foreman or company safety coordinator if any safety questions arise.

I also understand that failure to follow safety rules will result in disciplinary action.

I authorize my employer to send copies of all written disciplinary actions to my Local Union

I am aware that I must report all work-related injuries, within 24 hours of the injury, to my Foreman and the Safety Coordinator/Safety Clerk, and provide any work-release related documentation from a medical visit.

It is my responsibility as an expert in my field to continuously evaluate the safety of the jobsite and work being performed. No one should become so complacent about the hazards on a construction site that the risk of injury is accepted causally. All employees have a right to safe work place and no one should expect to sacrifice their health to hold onto a job. I will work to make each job a safer place.

NAME_____

SIGNATURE_____

DATE_____

Stephanie Hagen, Safety Coordinator
1001 Labore Industrial Court, Suite B
Vadnais Heights, MN 55110

651-200-3024 *Direct*
651-280-8265 *Cell*
shagen@nac-hvac.com

Incident Investigation

Incident Date: _____
Incident Time: _____
Date Reported: _____

Your Name: _____
Or Complete Online: https://nac-hvac.com/incident-injury-reporting/

_____ _____
Jobsite Name/ Location PM/Supervisor Name

_____
Employee(s) Involved

_____ _____
Any Witnesses? Incident Location on Jobsite

Description of Incident:

Incident Classification
Injury: ☐Near Miss ☐Property Damage ☐Incident
☐First Aid ☐Minor (Clinic) ☐Severe Injury(Lost-time)

Injury type: ☐Abrasion/Cut ☐Crush/caught between ☐Fall ☐Eye
☐Sprain/Strain ☐Struck by/against ☐Burn ☐Exposure
☐Electrical/Arc Flash ☐Asphyxiation ☐Amputation ☐Vehicle
Body part(s) Injured: _____

Risk *(what is the future risk of a similar incident)*
Frequency: ☐Very Unlikely ☐Rarely*(yearly)* ☐Occasional*(monthly)* ☐Often*(weekly)* ☐Very Often*(daily)*
Severity: ☐Minor (first aid) ☐Moderate ☐Serious ☐Catastrophic

Activity at Time of Incident
☐Demolition ☐Confined Space Entry ☐Core Drilling ☐Electrical
☐Elevated Work ☐Hotwork ☐Housekeeping ☐Material Handlin
☐Line Break ☐Lift/Hoist/Rigging ☐Lockout/Tagout ☐Power Tools
☐Trench/Excavation ☐Other: _____

Details: _____

Contributing Factors
☐Hazardous Condition/Environment ☐Equipment/Material ☐Work Procedure/Process
☐Management Systems/Policies ☐Planning ☐Communication
☐Employee Action ☐PPE ☐Outside Contractor ☐Other: _____

Details: _____

Corrective Action Plan

How can we prevent a similar incident from occurring in the future?

- ☐ Training
- ☐ Improve Procedures
- ☐ Improve Communication
- ☐ PPE Requirements
- ☐ Check with Manufacturer/Supplier
- ☐ Define Safe Method
- ☐ Improve or Modify (design/condition/tools)
- ☐ Establish purchasing Standards
- ☐ Repair/Replace Bad Equipment

Describe Corrective Action Plan:

Who will implement corrective action plan? _____

Anticipated completion timeline: _____

Describe any follow up measures that should be taken:

Are there:

1. Reasons to doubt the validity of this report? ☐ No ☐ Yes
2. Prior injuries or personal conditions that impact the claim? ☐ No ☐ Yes
3. Recent problems with performance, attendance, etc? ☐ No ☐ Yes

Describe:

Send Completed form to NAC Safety for Review

Provide corrective action follow up information below, or attach additional documents.

Minnesota Department of Labor and Industry
Workers' Compensation Division
443 Lafayette Road North
St. Paul, MN 55155-4305
(651) 284-5030

First Report of Injury

See Instructions on Reverse Side
PRINT or TYPE your responses.
Enter dates in MM/DD/YYYY format.

Reset

FR01

DO NOT USE THIS SPACE

1. EMPLOYEE SOCIAL SECURITY #	2. OSHA Case #				
3. DATE OF CLAIMED INJURY	4. Time of injury ☐ am ☐ pm	5. Time employee began work on date of injury ☐ am ☐ pm			
6. EMPLOYEE Name (last, first, middle)		7. Gender ☐ M ☐ F	8. Marital Status ☐ Married ☐ Unmarried		
9. Home Address		10. Home phone #	11. Date of birth		
City	State Zip Code	12. Occupation	13. Regular department	14. Date hired	
15. Average weekly wage	16. Rate per hour	17. Hours per day	18. Days per week	19. Employment Status ☐ Full time ☐ Part time ☐ Seasonal ☐ Volunteer	
20. Weekly value of:	Meals	Lodging	2nd Income	21. Apprentice ☐ Yes ☐ No	

22. **Tell us how the injury occurred and what the employee was doing before the incident (give details).** *Examples: "Worker was driving lift truck with a pallet of boxes when the truck tipped, pinning worker's left leg under drive shaft." "Worker developed soreness in left wrist over time from daily computer key entry."*

23. **What was the injury or illness (include the part(s) of body)?** *Examples: chemical burn left hand, broken left leg, carpal tunnel syndrome in left wrist.*	24. **What tools, equipment, machines, objects, or substances were involved?** *Examples: chlorine, hand sprayer, pallet lift truck, computer keyboard.*

25. Did injury occur on employer's premises? ☐ Yes ☐ No If no, indicate name and address of place of occurrence	26. Date of first day of any lost time	27. Employer paid for lost time on day of injury (DOI) ☐ Yes ☐ No ☐ No lost time on DOI
	28. Date employer notified of injury	29. Date employer notified of lost time
	30. Return to work date	31. Date of death

32. TREATING PHYSICIAN (name, address, and phone)	33. HOSPITAL/CLINIC (name and address) (if any)	34. Emergency Room Visit ☐ Yes ☐ No 35. Overnight in-patient ☐ Yes ☐ No

36. **EMPLOYER** Legal name	37. EMPLOYER DBA name (if different)	
38. **Mailing** address	39. Employer FEIN	40. Unemployment ID#
City State Zip Code	41. Employer's contact name and phone #	
42. **Physical** address (if different)	43. Witness (name and phone)	
City State Zip Code	44. NAICS code	45. Date form completed

46. **INSURER** name		51. **CLAIMS ADMIN COMPANY** (CA) name (check one) ☐ Insurer ☐ TPA	
47. Insured legal name		52. CA address	
48. Policy # or self-insured certificate #		City State Zip Code	
49. Insurer FEIN	50. Date insurer received notice	53. CA FEIN	54. Claim #

MN FR01 (02/06)

Copies to: Insurer, Employer, Employee, and Workers' Compensation Division (if no insurer)

GENERAL INSTRUCTIONS TO THE EMPLOYER

Filing this form is not an admission of liability. You must report a claim to your insurer whenever anyone believes that a work-related injury or illness that requires medical care or lost time from work has occurred. If the claimed injury wholly or partially incapacitates the employee for more than **three** calendar days, the claim must be made on this form and reported to your insurer within **ten** days. Your insurer may require you to file it sooner. Failure to file within the **ten** days may result in penalties. Self-insured employers have 14 days to file this form with the Department of Labor and Industry (Department). It is important to file this form quickly to allow your insurer time to investigate the claim. **Your insurer will forward a copy of this form** to the Department, if necessary.

If the claim involves death or serious injury (including injuries that later result in death), you must notify the Department and your insurer within 48 hours of the occurrence. The claim can be reported initially to the Department by telephone (651-284-5041), fax (651-284-5731), or personal notice. The initial notice must be followed by the filing of this form within **seven** days of the occurrence.

Employers are required to complete this form. Each piece of information is needed to determine liability and entitlement to benefits. Failure to complete the form may result in delayed processing and possible penalties. You must file this form with your insurer, and give a copy to the employee and the employee's local union office. You are required to provide the employee with a copy of the Employee Information Sheet, which is available on the Department's web site at www.doli.state.mn.us. Employees are not responsible for completing this form.

SEND REPORT TO INSURER IMMEDIATELY – DO NOT WAIT FOR DOCTOR'S REPORT

SPECIFIC INSTRUCTIONS FOR COMPLETING THIS FORM

- Item 2: OSHA Case #. Fill in the case number from the OSHA 300 log. This form contains all items required by the OSHA form 301.
- Items 15-20: Fill in all the wage information. If the employee does not work a regularly scheduled work week, attach a 26 week wage statement so your insurer can calculate the appropriate average weekly wage.
- Items 22-24: Be as specific as possible in describing: the events causing the injury; the nature of the injury (cut, sprain, burn, etc.), and the part(s) of body injured (back, arm, etc.); and the tools, equipment, machines, objects or substances involved.
- Item 26: Fill in the first day the employee lost any time from work (including time lost for medical treatment), even if you paid the employee for the lost time.
- Item 27: Check the appropriate box to indicate if there was lost time on the date of injury and whether you paid for that lost time.
- Item 28: Fill in the date you first became aware of the injury or illness.
- Item 29: Fill in the date you became aware that the lost time indicated in Item 26 was related to the claimed injury.
- Item 30: Leave the box blank if the employee has not returned to work by the time you file this form. If the employee has returned to work, fill in the date and notify your insurer if the employee misses time due to this injury after that date.
- Item 39: Fill in your Federal Employment ID number (FEIN). For information on this number, see www.firstgov.gov and click on Employer ID Number under Business.
- Items 40 and 44: Fill in your Unemployment ID number and North American Industry Classification System (NAICS) code which are both assigned by the Minnesota Unemployment Insurance Program (651-296-6141).
- Items 46-54: Your insurer or claims administrator will complete this information.

INSTRUCTIONS TO THE INSURER/CLAIMS ADMINISTRATOR/SELF-INSURED EMPLOYER

The following data elements must be completed on this form prior to filing with the Department of Labor and Industry: employee's name and social security number; date of injury; and the names of the employer and insurer. If any of this information is missing, the First Report will be rejected and returned to you (per Minn. Stat. § 176.275). Providing the name of the third party administrator does not meet the statutory requirement to provide the name of the insurer. NOTE: If the claim does not involve lost time beyond the waiting period or potential PPD, the form does **NOT** need to be filed with the Department.

- Item 46: Fill in the name of the insurance company. If the employer is self-insured, indicate the name of the licensed or public self-insured company or group.
- Items 47-48: Fill in the legal name of the employer who purchased the policy from the insurer (named in Item 46) and the policy number. If the employer is licensed to self-insure, fill in the certificate number.
- Item 49: Fill in the insurer's Federal Employment ID number (FEIN) number.
- Item 51: Fill in the name and address of the company administering the claim (either the insurer or third party administrator). Be sure to mark either the "Insurer" or "TPA" box.
- Item 53-54: Fill in the claims administrator's FEIN and claim number.

This material can be made available in different forms, such as large print, Braille or on a tape. To request, call (651) 284-5030 or 1-800-342-5354 (DIAL-DLI)/Voice or TDD (651) 297-4198.

ANY PERSON WHO, WITH INTENT TO DEFRAUD, RECEIVES WORKERS' COMPENSATION BENEFITS TO WHICH THE PERSON IS NOT ENTITLED BY KNOWINGLY MISREPRESENTING, MISSTATING, OR FAILING TO DISCLOSE ANY MATERIAL FACT IS GUILTY OF THEFT AND SHALL BE SENTENCED PURSUANT TO SECTION 609.52, SUBDIVISION 3.

Written Statement

Use this form to document written statements.

Location:_____ Incident/event Date:_____

Employee Name: _____ Phone: _____

Supervisor: _____ Phone: _____

Witness Name: _____ Phone: _____

Additional Information: _____

_____

Please provide a written statement regarding the event(s) in question, according to your point of view as you recall.

To the best of my knowledge, the above information is truthful and accurate.

_____ _____

Employee Signature Date

Disciplinary Action Form

Use this form to document disciplinary actions.

Name of Employee:	Supervisor Name:
Job Position:	Date of Occurrence:

Violation:

☐ Absent / Tardiness ☐ Insubordination ☐ Safety ☐ Policy Violation

☐ Substance Use ☐ Work Performance ☐ Other

I. Description of the Occurrence:

II. Has this or a similar infraction occurred before?

☐ No
☐ Yes, Describe:

III. Corrective Action For This Incident:

Type	Action Taken
☐ Zero Tolerance	☐ Training:
☐ Verbal Warning	☐ Suspension: ___ 1 day ____ 3 day ___ 1 week
☐ Written Warning	☐ Other:
☐ Termination (Date:_____)	

☐ Check here if the employee has been informed of this violation and corrective measures, and is aware it will be filed in their personnel file. Failure to complete corrective actions may result in further discipline.

To the best of my knowledge, the above information is truthful and accurate.

_____ _____

Supervisor Signature Date

NAC DRUG & ALCOHOL PROGRAM

Scope

NAC believes in providing all of its employees with a safe and healthy workplace. The use of drugs and alcohol in the workplace is prohibited and can lead to accidents and otherwise endanger employees. NAC's drug and alcohol program has been developed to improve safety of all by eliminating the use of drugs and alcohol in the workplace by establishing testing protocol for drug and alcohol use.

Guidelines

All employees working for NAC shall be free of drug and alcohol on the job. No alcohol use will be permitted during work hours and a blood alcohol content of .00 shall be maintained for 30 minutes prior to reporting to work. The use of prescription medication during work hours should be discussed with your foreman or supervisor, especially if prescriptions may effect driving abilities or the ability to operate heavy machinery.

The following substances and/or their metabolites are prohibited and will be tested for under this policy:

- Alcohol
- Marijuana
- Cocaine
- Opiates
- Amphetamines
- Phencyclidine

Testing Requirements

Drug and alcohol testing will be administered in the following ways:

Client Requirements + Conditional Employment

NAC clients may require drug and alcohol testing for all subcontracted employees prior to working on the jobsite, or during the duration of the work. NAC may also require drug and alcohol testing for higher risk job placements, such as for CDL, DOT drivers, et cetera. Random drug and alcohol testing may also be administered at random times through an unbiased selection process. NAC will notify employees of the requirements, and help set up the necessary appointments. Failure to meet requirements will result in removal from the jobsite or facility.

Reasonable Suspicion + Post Accident

If there is reasonable suspicion that an employee may be under the influence of drugs or alcohol while on the job, or that drugs or alcohol may be a contributing factor to a work related incident, a drug/alcohol test may be required for the employee on behalf of NAC. A drug test, as a result of reasonable suspicion, shall be based on observations concerning the appearance, behavior, speech or body odors of the employee as determined by a company official or other competent person.

Testing Methods

All drug testing will be provided at no cost to employees on behalf of NAC. Employees shall be compensated at their normal wage rates for any time spent taking a drug test.

Drug testing shall be administered by MN Occupational Health, or similar certified facility. Testing results shall be kept confidential. Testing will be conducted using the urinalysis method.

A non-positive test result means the employee is free of drug & alcohol use. A negative test result for drug and alcohol use will confirm that the employee is free of prohibited substances and can carry out job duties to satisfy NAC's drug and alcohol program. If test results come back negative the employee will be free to continue work.

A non-negative test result will mean that the employee may test positive for drugs and alcohol. If a non-negative test is found in a urinalysis the test sample will be sent to a testing lab to be confirmed. When a non-negative test is found the applicant or employee shall remain temporarily suspended from returning to work until test results come back confirmed.

A positive test result means that drugs or alcohol was detected in the sample. An employee who tests positive will be removed from the jobsite and may face disciplinary action or be terminated due to violation of NAC's drug and alcohol policy. If an employee is taking prescription medication that leads to positive test results, the employee will be able to provide a list of medications prescribed by their doctor.

Use of Prescription Drugs

If an employee is using prescription drugs that violate NAC's drug and alcohol policy or may impair their ability to work and/or operate machinery, the employee shall notify their supervisor. Prescription medication use while employed by NAC may require a physician's note regarding the terms and conditions of the prescribed drug. Employees may be temporarily reassigned to low risk tasks if medication are likely to interfere with the employees work operations. Remember: it is illegal to operate a motor vehicle while taking opioid medications.

Program Procedures

Upon hire, each employee has the opportunity to review NAC's drug and alcohol program. Prior to all drug and alcohol testing, a written notice of drug and alcohol testing will be issued to each employee summoned for the test. The written notice will explain the circumstances for the test and any other pertinent information surrounding the test.

Contact the Safety Clerk or Safety Coordinator with any questions regarding this program.

EMPLOYEE ACKNOWLEDGEMENT
Drug + Alcohol Testing

I, _____ acknowledge receipt of the Drug and Alcohol Program and agree to the conditions and rules as stated in the NAC program. I further state that I am aware of the consequences for violating the rules, including revocation of driving privileges, referral to a substance abuse professional (SAP), and possible termination of employment.

I further acknowledge that _____is the point of contact within NAC for questions about this policy and program.

_____ _____

Employee Signature Date

NOTICE: Request for Drug and Alcohol Testing

Date: _____

To:_____

NAC has determined there is a reasonable basis to ask you to submit to a drug and alcohol test. The reason(s) for this request is (are):

_____

_____

_____

Please contact Minnesota Occupational Health (designated tester) at 651-968-5300 for the drug and alcohol test. You will be paid for the time required to participate in the drug and alcohol test.

DATE:_____
TIME:_____
LOCATION:_____

The reasons for this drug and alcohol test have been fully explained to you by NAC.

A copy of NAC's drug and alcohol testing policy is attached for your review.

Please note: you will have the opportunity to state if you have taken any prescription or non-prescription medication prior to the drug and alcohol test. You will also be asked to sign a consent form at the time of the test.

Please contact NAC if you have any questions regarding the policy or testing procedures.

Thank you for your cooperation.

EMERGENCY ACTION PLAN

PURPOSE

The purpose of this Emergency Action Plan is to prepare for and protect NAC employees form serious injury, property loss, or loss of life in the event of a major disaster or emergency, such as: natural disasters, severe weather, fires, communicable diseases, bomb threats, active shooter, or hazardous materials and spills.

In the event of any emergency, this Emergency Action Plan describes the responsibilities and actions to be taken to protect all employees. The emergency action plan is available to all employees to review. If 10 or fewer employees, the plan may be communicated orally.

GENERAL PROCEDURES

In the event of a potential disaster/emergency, warnings may come from any one of the following sources: phone alert, weather alert, radio, tornado warning sirens, police or fire department personnel, various news media, etc.

Employees should evacuate and/or seek shelter according to the emergencies described below. Once employees have evacuation to the designated meeting location, the supervisors or foremen should conduct a role call and report this information to a company/site supervisor or committee member (or Site Superintendent/General Contractor) to compile site-wide roll-call. Employees shall not attempt any rescue or medical services unless they have been trained and qualified. Employees shall be made aware of clients' emergency action plans and follow their rules and training schedules on rescue and medical services while on site.

TRAINING

All employees shall be trained on identifying and using exit routes and meeting locations. Designated employees and leaders shall assist in a safe, orderly evacuation during different types of emergencies. Training shall occur on initial assignment or role-change, and retraining will occur whenever changes to the program are made that affect plans. Training and a review with employees who participate in implementing the plan shall occur at first assignment, and with changes to either the employee's job duties or responsibilities under the plan, or if the plan has changed. Any employee who needs further information regarding the plan or their responsibilities under the program shall be provided with contact information upon request. While on client sites, employees shall orient themselves with the work area, defer to client plans and be made aware of warning methods, exit routes, and shelter locations.

Notification of Early Warning

A person receiving notification of a possible disaster, or an in-facility emergency should notify their immediate supervisor. The type of disaster or emergency situation should then be communicated to all employees as appropriate using the P.A. system.

Emergency Action Committee

The following personnel of **NAC Mechanical and Electrical Services** will constitute the Emergency Control Committee (ECC). In the event of a disaster or immediate emergency, they are to report to the Emergency Manager's office unless the situation dictates otherwise.

Committee members:

- Stephanie Hagen
- Mike Heinze
- Julie Krueger
- Lynn Bishop

Responsibilities – Emergency Action Committee

1. Assess nature and extent of all emergencies;
2. Assume control of all emergency actions;
3. Assign tasks to personnel to carry out specific actions;
4. Order an evacuation if necessary;
5. Take any other action necessary to protect life;
6. Annually review the emergency action plan and revise as necessary;
7. Plan training exercises to test evacuations plan;
8. Instruct employees of their duties under this plan.

Note: in any emergency, the top ranking member of management present shall have final authority to decide emergency actions in order to ensure employee safety.

Utility Controls

All maintenance personnel will know the location and operation of main controls for shutting off the gas, electricity, and water leading into the building.

News Information

Information to any source of news media will only be released at the discretion of the president.

EMERGENCY ALARMS

Fire Alarms and Sprinkler System

Presence of smoke or manually pulling a fire alarm will sound the fire alarm. Employees shall stop what they are doing and exit the building. Gather away from the building in the designated area, and do not go back into the building. Take roll call of all employees present. Do not block access of emergency vehicles.

Phone Alerts

Employees may be alerted to variety of emergencies on cell phones. For Tornado or immediate threats, take action as needed. For severe weather, NAC may provide additional guidance to keep employees safe via email, phone or office intercom.

Note: Before leaving the building, supervisors should ensure all employees are evacuated.

EVACUATION SITES

Meet at a common location away from the evacuated site. A map of evacuation sites may be displayed on the job site showing exit routes. It will be the responsibility of the supervisors to inform new employees of these evacuation routes.

PROCEDURE FOR EMERGENCY SHUTDOWN OF OPERATIONS

An emergency shutdown will only be ordered from the highest ranking member management present during an emergency situation. No employee should risk injury to accomplish this task. However, if time permits, the following personnel should perform the following duties:

A. Personnel and material handling personnel should drive forklift trucks out of aisles and exit ways.
B. Maintenance department employees should shut off gas lines, machinery and electricity as instructed by the emergency manager.

SEVERE WEATHER AND TORNADO

In the event of a tornado or a severe weather warning, supervisors should follow procedures and guide employees to safety as needed:

A. Listen for the latest advisory on a.m. radio station WCCO AM 1500 or the news.
B. If necessary, begin emergency shutdown procedures and prepare for evacuation.
    a. Notify division management about potential evacuation.
    b. Ensure employees know where shelter is in event of evacuation.
    c. Management has all employees accounted for.
C. Heed all warnings and advisories such as notifications on phone or Severe Weather Sirens.
D. Move personnel into the nearest shelters within the building and take a headcount. Basements and interior rooms without windows are preferable.
E. After the tornado/warning passes, check with news and radio to ensure it is safe. Make a final head count.

BOMB THREAT

In the event of a bomb threat, which would likely be received over the telephone, the following procedure should be followed:

A. The person receiving the bomb threat should complete the **BOMB THREAT CHECKLIST** as soon as possible and answer questions once the report has been turned over to the Emergency Manager.
B. The Emergency Manager shall determine the appropriate procedures to be taken among the following:

    1. Commence immediate facility wide evacuation to outside evacuation sites.
    2. Contact proper law enforcement agencies
    3. Contact the fire department.
    4. Do not permit re-entry until the building has been searched and declared safe by the bomb disposal unit or other authorities.

C. If a bomb threat is received by any other means than the telephone, the person receiving the threat should report immediately to their first line supervisor or member of the ECC.

FIRE PREVENTION AND WORKPLACE HAZARDS

All employees are responsible for following fire prevention guidelines below. Management and employees shall work together to identify and mitigate fire risk areas.

1. Do not have open flames around paints, solvents, or other flammables.
2. Do not place potentially hot materials, such as cigarette butts, in trashcans.

3. All welding operations will be done in a designated area unless, otherwise instructed by supervisor/ manager. (Follow guidelines from NAC Hot Work Program)
4. All flammable and combustible materials will be stored in a designated area or within a flammable storage area away from any exits.
5. Good housekeeping will be the responsibility of ALL employees.
    - Operators are to pickup and sweep any debris on or around their machinery throughout and at the end of their shift.
    - All aisles and exists will be kept clear.
    - All combustible scraps shall be placed at least 10ft from buildings when possible.
    - All fire extinguishers will be unobstructed for access and within 100ft of any location, and within 10 feet of a flammable storage area.
    - Fire extinguishers shall be inspected regularly and refilled when needed.
    - All employees will know evacuation routes and exits to proceed to when instructed, if an emergency situation develops.
    - All employees will be instructed on NAC's Emergency Action Plan.

MAINTENANCE OF FIRE EQUIPMENT

Maintenance Personnel Responsibilities:

1. Monthly checks of the main sprinkler valve to ensure that it is secured in an open position (electronically monitored or chain and padlock).
2. Monthly inspection of fire extinguishers will be conducted.
3. An outside fire protection company will perform annual maintenance on all fire extinguishers, and a flow test of the sprinkler system will be conducted by a competent fire protection company.

WORKING ALONE

Employees who work alone, such as service technicians, must take appropriate measures to stay safe. Employees shall evaluate the risk of working alone by assessing the hazards of the job tasks, and take appropriate control measures. If it is unsafe to work alone, employees must notify their coordinator.

Employees shall keep a cell phone on them at all times, and communicate with NAC coordinators and local site contacts that can check in on the employee at regular intervals. If cell-phone service is not available, back-up communication shall be utilized to maintain contact with someone on-site. Employees shall use their tablets to check-in when they arrive, and check-out when they leave the job-sites so NAC can know employee locations. If a worker who is working alone, coordinators shall review electronic records and make attempts to contact the client to check-in on employees. If contact cannot be made, NAC employees shall contact management and attempt to locate the employee by any other means, including going to the client site and contacting the employee's family.

NAC
EMERGENCY TELEPHONE NUMBERS

EMERGENCY NUMBER (FIRE, POLICE, AMBULANCE)	911
FIRE DEPARTMENT	651-204-6030
POLICE DEPARTMENT	911
COUNTY SHERIFF	651-484-3366
NON-EMERGENCY (POLICE REPORTS)	651-767-0640
FBI	202-324-3691
POISON INFORMATION	1-800-222-1222
ELECTRICAL UTILITY - XCEL	1-612-330-5500
811-GOPHER STATE ONE CALL gopherstateonecall.org	651-454-0002
CITY HALL /UTILITIES	651-204-6000
WATER/SEWER AFTER HOURS	651-767-0640

FIRE PREVENTION

Purpose

Keeping up with fire codes and training employees the knowledge of proper use and storage of flammable materials can greatly reduce the risk of damage or harm to employees, guests and property. It is also beneficial to train employees on how to properly locate and use fire extinguishers in the event that a fire should occur. Training employees in the following subjects will be accomplished through NAC's fire prevention program.

Procedures

- General fire protection guidelines
- Classes of fires
- Fire extinguishers
- Flammable and combustible liquids

General Fire Protection Guidelines

Any fire in the workplace has the potential to cause serious personal or property damage. Prevention is the key to eliminating the hazards of any kind of fire where you work. Preparation is the key to controlling the consequences of a fire and includes:

- Keeping work areas clean and clutter–free
- Knowing how to handle and store chemicals or dispose of flammable waste.
- Knowing what you are expected to do in case of a fire emergency.
- Calling professional help immediately; don't let a fire get out of control (this applies to a fire wherever you are).
- Knowing what chemicals you work with; you might have to advise fire fighters on the scene of a chemical fire concerning the type of hazardous substances involved.
- Making sure you are familiar with your company's emergency action plan for fires.

Classes of Fires

Class A-Fires in ordinary combustible materials (wood, paper, cloth)

Class B-Fires involving flammable liquids, gases and greases

Class C-Fires involving energized electrical equipment

Class D Fires in combustible metals

Fire Extinguishers

Training employees the knowledge to locate use and maintain fire extinguisher can greatly reduce the risk of damage caused by fires. The following key points will aid NAC in achieving proper training towards use of fire extinguishers:

- A fire extinguisher, rated not less than 2A:10B:C, should be provided for each 3,000 square feet of the protected building area or major fraction thereof. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed 75 feet.
- One or more fire extinguishers should be provided for each floor. In multi-story buildings, at least one fire extinguisher should be posted adjacent to the stairway.

- Fire extinguishers should be conveniently located and readily accessible at all times. They should be periodically inspected and maintained in operating condition.
- Each fire extinguisher is considered professional equipment and its effectiveness in protecting property depends on knowing: What it can and cannot do, how to use it, where to install it, how to maintain it, knowledge of classes or types of fires, and what class or classes of fire extinguisher is capable of extinguishing.

Flammable & Combustible Liquids

A flammable liquid is defined as any liquid whose flash point, the temperature at which vapors can ignite when there is a spark, flame or static electricity, is below 100 degrees F. At higher concentrations and higher temperatures the vapors of the liquid can ignite or explode without a spark. Most flammable liquids are volatile, evaporate quickly and reach a concentration in the air that could leads to an explosion. Some highly volatile flammable liquids are gasoline, acetone and alcohol. Containers with the flammable liquids must be marked with a red label indicating the hazard. To work safely with flammable liquids the three potential hazards: temperature, concentration of vapor and ignition sources must be controlled. A combustible liquid is defined as any liquid whose flash point is at or above 100 degrees F.

- Only approved containers and portable tanks shall be used for storage and handling of flammable and combustible liquids.
- No more than 60 gallons of flammable or combustible liquids shall be stored in any one storage cabinet. No more than three storage cabinets may be located in a single storage area.
- Inside storage rooms for flammable and combustible liquids shall be of fire resistive construction, have self closing fire doors at all openings, 4 inch sills or depressed floors, a ventilation system that provides at least six air changes within the room per hour, and electrical wiring and equipment approved for Class I, Division 1 locations.
- Storage in containers outside building shall not exceed 1,110 gallons in any one pile or area. The storage shall be graded to divert possible spills away from building or other exposures, or shall be surrounded by a curb or dike. Storage areas shall be located at least 20 feet from any building and shall be free from weeds, debris and other combustible materials not necessary to the storage.
- **No Smoking** signs shall be posted in service and refueling areas.
- Drums containing Class I flammable liquids shall be grounded and bonded before and during dispensing into containers.
- All flammable and combustible liquid wastes shall be kept in fire-resistant covered containers.
- Appropriate fire extinguishers shall be mounted within 50 feet of outside areas containing flammable liquids and within 10 feet of any inside storage area for such materials.
- All NAC vehicles shall have a fire extinguisher kept in the vehicle at all times.

Fleet and Company Vehicle Policy

The use of NAC Company Vehicles is a privilege, and failure to follow company vehicle policies may result in disciplinary measures, revocation of vehicles, or termination. Please review the following NAC policy for use of company vehicles:

1. Authorized drivers must maintain a current driver's license and follow all laws and regulations.
2. Vehicles issued to employees are the property of NAC, and should be taken care of properly.
3. Company vehicles are an extension of NAC and should be presented accordingly, vehicles should be kept neat and clean, inside and out. The vehicle should have a thorough cleaning at least every other week. Company provided vehicles are designated as "non-smoking" areas.
4. Vehicles are to be used for company business only. *Business use is defined as: from home to job site, job site to job site, and job site to home*.
5. The employee assigned to the vehicle is the only authorized driver, loaning the vehicle to another employee or person is prohibited.
6. Fuel cards are for company vehicle use only. Cards are not to be used for a non-vehicle purpose. Mileage must be entered at time of purchase. Fuel cards may be used for oil changes and car washes.
7. Vehicles should not be kept running for purposes of heating/cooling the inside of the vehicle, except in extreme weather conditions.
8. Employees pulling a trailer must have a DOT medical card and shall follow vehicle weight restrictions as per DOT requirements. Only delivery drivers are authorized to pull trailers, unless approved by fleet manager.
9. Any defects or repairs needed should be reported immediately. Pre-authorization is required before any repairs are done. Please contact Casey Irish (651-255-3570) for authorized repair shops.
10. All traffic rules must be followed while operating a company vehicle and seat belts must be worn at all times. Safety equipment on the vehicle may not be disconnected.
11. Use of drugs or alcohol while operating a company vehicle is prohibited and may result in disciplinary actions including vehicle revocation or termination. Use of prescription medications that may affect your driving ability are also prohibited while driving.
12. Traffic violation, fines and parking tickets are the responsibility of the driver.
13. Each policy infraction or traffic violation will be reviewed and discussed and may result in disciplinary actions, including vehicle revocation or termination.
14. Complaints from other motorists will be taken seriously and reviewed. Drivers who receive multiple complaints about driving behavior may receive disciplinary action, including vehicle revocation or termination.
15. All accidents and incidents must be reported in a timely manner, and a vehicle accident report form, located in the glove box, shall be completed and sent in to the office. Employees should take photos of the scene, get other driver and vehicle information. Accidents will be reviewed to determine if it was a preventable or non-preventable accident *(A preventable accident is defined as an accident in which the driver failed to do everything possible to avoid it*).
16. All company vehicles are equipped with a GPS tracking device, which may be used to verify vehicle information, such as location, excessive speeds, start and stop and idle times.
17. Hands-free phone use only while driving. Holding and using your phone while driving is strictly prohibited, and is illegal. Vehicles are equipped with hands-free technology. Employees who

cannot utilize hands-free mode, should not use their phone while driving or pull over in a safe location and park.

ADDITIONAL GUIDELINES FOR COMMERCIAL VEHICLES

NAC commercial vehicles operating over 10,000 lbs will follow all of the guidelines listed above, and also keep an up to date *Drivers Daily Vehicle Inspection Log* to maintain the proper maintenance of their vehicle. This book must be kept in the vehicle at all times and will be scanned in at the end of each month and kept documented in the office.

All vehicles shall be of the correct size and designated for intended use, and all loads shall be secured and within the manufacturer's legal limits. DOT placards shall also be posted when required. Any vehicle and trailer combination with load limits that add up to be 10,000 lbs or greater is subject to commercial vehicle requirements. When drivers are subject to interstate transport, interstate regulations shall be followed according to the state's requirements. CDL drivers must agree to a pre-employment and annual query on the FMCSA clearinghouse.

If a driver is subject to a DOT inspection, a copy of that report shall be obtained at the end of the inspection, even if the report shows no violations. Return the report to your supervisor.

AWARENESS, TRAINING, & DOCUMENTATION

Training will be incorporated throughout the year as a reminder of the safety guidelines, and authorized drivers may receive additional training as needed. Any changes to a driver's record may result in changes to their authorization. Moving violations, or other changes in driver records shall be disclosed to your supervisor, immediately.

While it is not the intent of NAC to inhibit our employees' ability to do their jobs, we do ask that everyone be aware of how company property is being used.

Once you have read the Company Vehicle Policy, please sign and date the signature page and return that sheet to the office.

Thank you for your cooperation.

Casey Irish
cirish@nac-hvac.com
651-255-3570

Keep this page for your records

COMPANY VEHICLE POLICY
Signature Page

I have received and read the NAC Company Vehicle Policy and agree to follow company policies and procedures.

Printed name – please write clearly: _____

Driver's License #: _____

Expiration Date: _____

_____

Signature

_____

Date signed

Please return this page to the office.

Company Vehicle Accident Procedures

The following is the Company Vehicle Accident Procedure:

We realize that accidents will happen, but would like to re-emphasize the importance of staying alert and being aware of your surroundings.

Every vehicle should have an accident form and insurance card in the glove box. Before you take your vehicle out each day you should verify that this information is there. If anything is missing please contact the Fleet Manager as soon as possible to get the proper papers to you.

In the event of an accident please follow the procedure below:

1. Make sure everyone is okay.
2. Take pictures of each vehicle on all sides to document the state each vehicle is in
3. Exchange insurance information, notify authorities as needed.
4. At your earliest convenience fill out the accident report (this is for our information only). Make sure you put your name and vehicle number at the top of the report.
5. Call the office immediately to report the accident.

Casey Irish	651-402-2052 or cirish@nac-hvac.com
Lynn Bishop	612-741-2603 or lbishop@nac-hvac.com
Main Office	651-490-9868

Vehicle Maintenance Information

If you are in an accident or need your vehicle serviced, call **Casey Irish 651-402-2052.**

Servicing Your Vehicle: Use your truck number for Purchase Order. Others: expense it.

1. **TGK Automotive Specialist** – (651-407-3611)
    - **13891 Forest Blvd. North Hugo, MN 55038 –** Pivot vehicle
    - **1435 147th Ave NE, Ham Lake, MN 55304** – Pivot Vehicle
    - Additional locations in St. Paul, Maplewood, Crystal, Bloomington, St. Michael, Big Lake, Chisago, Delano, Brooklyn Park, Eden Prairie, Chanhassem, Maple Grove, St. Louis Park, Mankato, North Mankato. – No pivot vehicle
2. **Dave's Auto Care (651-636-7718)** - Oil Change, Powertrain, Tires, other
    - 2171 Hamline Ave N, Roseville, MN 55113 – Pivot vehicle
3. **Elite Auto Repair – (763-402-0340) –** Oil Change, Poowertrain, Tires, other
    - 17210 Ulysses St NE, Ham Lake, MN – No pivot vehicle
4. **Ford** – for warranty items only or last resort
    - **New Brighten Ford**- 1100 Silver Lake Road NW, New Brighton (651-336-5212) No pivot vehicle
    - **Auto Nation Fleet** – 3191 Fanum Rd White Bear Lake (651-288-6269) No pivot vehicle
5. **Merit Chevrolet** (651-739-4400) for warranty items onlyu or last resort
    - 2695 Brookview Dr E, Maplewood, MN 55119 – No pivot Vehicle

Oil Change:
Every 7,000 miles or "Service Engine Soon" notification. Use Synthetic blend motor oil

- Any Valvoline or Jiffy Lube location. (use gas card)

Car Wash: Any Kwik Trip will allow you to use your gas card. Others: expense it.

Glass: Twin Cities Auto Glass – (651-328-6830) - 1865 Buerkle Rd, White Bear Lake, MN 55110
Only use them. With a 24hr notice, they will come to you!

Towing:

- Call: Statewide Towing – (651-633-4262)
- Send Damaged Vehicles to: Wayne Val Auto Body – (651-483-4493)
  97 S Owasso Blvd W, St Paul, MN 55117

DAILY VEHICLE INSPECTION REPORTS

Complete Inspection form each day, and return to Fleet Manager

Driver Name:

INSPECTION					INSPECTION					INSPECTION					INSPECTION					INSPECTION				
Date:					Date:					Date:					Date:					Date:				
Odometer:					Odometer:					Odometer:					Odometer:					Odometer:				
Vehicle:					Vehicle:					Vehicle:					Vehicle:					Vehicle:				
Fuel Level:	1/4	1/2	3/4	Full	Fuel Level:	1/4	1/2	3/4	Full	Fuel Level:	1/4	1/2	3/4	Full	Fuel Level:	1/4	1/2	3/4	Full	Fuel Level:	1/4	1/2	3/4	Full
ENGINE					ENGINE					ENGINE					ENGINE					ENGINE				
	Oil Level					Oil Level					Oil Level					Oil Level					Oil Level			
	Coolant Level					Coolant Level					Coolant Level					Coolant Level					Coolant Level			
	Brakes Fluid Level					Brakes Fluid Level					Brakes Fluid Level					Brakes Fluid Level					Brakes Fluid Level			
	Power Steering Fluid					Power Steering Fluid					Power Steering Fluid					Power Steering Fluid					Power Steering Fluid			
	Wipers / Fluid					Wipers / Fluid					Wipers / Fluid					Wipers / Fluid					Wipers / Fluid			
	Fan Belts					Fan Belts					Fan Belts					Fan Belts					Fan Belts			
	Battery & Terminals					Battery & Terminals					Battery & Terminals					Battery & Terminals					Battery & Terminals			
VEHICLE					VEHICLE					VEHICLE					VEHICLE					VEHICLE				
	Tires					Tires					Tires					Tires					Tires			
	Suspension					Suspension					Suspension					Suspension					Suspension			
	Windows & Doors					Windows & Doors					Windows & Doors					Windows & Doors					Windows & Doors			
	Lights & Turn Signals					Lights & Turn Signals					Lights & Turn Signals					Lights & Turn Signals					Lights & Turn Signals			
	Mirrors					Mirrors					Mirrors					Mirrors					Mirrors			
	Flat Bed Space & Lift Gate					Flat Bed Space					Flat Bed Space					Flat Bed Space					Flat Bed Space			
DAMAGES & OBSERVATIONS					DAMAGES & OBSERVATIONS					DAMAGES & OBSERVATIONS					DAMAGES & OBSERVATIONS					DAMAGES & OBSERVATIONS				
Vehicle Suitable for Operation?	Yes	No			Vehicle Suitable for Operation?	Yes	No			Vehicle Suitable for Operation?	Yes	No			Vehicle Suitable for Operation?	Yes	No			Vehicle Suitable for Operation?	Yes	No		

Auto Accident Report Form

Keep In Your Glove Box

When an accident occurs:

First Steps	Do Not Say	While Still At the Scene
• Remain calm • Get to a safe place • Check for injuries • Administer First Aid • Call police/EMT	• It's all my fault, (even if it is). • My insurance will pay for everything. • It's OK, I have full coverage.	• Get as much information as possible on this report. • Take Pictures • When the police come, cooperate and tell them what you know.

Accident Details

Day/Date/Time AM/PM	
Weather/Road Conditions	
Location of Accident	
Accident Details	

Damage Descriptions

Your Vehicle	Other Vehicle
Towing Company Name & Phone	Towing Company Name & Phone

Other Driver/Vehicle Information

Owner's Name:	
Owner's Address:	
Owner's Phone:	
Vehicle Make:	
Vehicle Model & Year:	
Vehicle Color:	
License Plate Number	
Insurance Company:	
Agent Name & Phone:	
Other Drivers Name:	
Other Drivers Address:	
Other Drivers Phone:	

Passengers/Injuries:

Your Vehicle	Other Vehicle
# Passengers:	# Passengers:

Police Information

Officer Name:	
Department:	
Phone:	
Badge Number:	
Other Info:	

Witness Information

Name:		Name:	
Address:		Address:	
Home Phone:		Home Phone:	
Work Phone:		Work Phone:	

Sketch The Accident Scene:

COMPANY VEHICLE ACCIDENT PROCEDURE

The following is the Company Vehicle Accident Procedure:

We realize that accidents will happen, but would like to re-emphasize the importance of staying alert and being aware of your surroundings.

Every vehicle should have an accident form and insurance card in the glove box. Before you take your vehicle out each day you should verify that this information is there. If anything is missing please contact Brenda as soon as possible and she will get the proper papers to you.

In the event of an accident please follow the procedure below:

1. Make sure everyone is okay.
2. Take pictures of each vehicle on all sides to document the state each vehicle is in
3. Exchange insurance information, notify authorities.
4. At your earliest convenience fill out the accident report (this is for our information only). Make sure you put your name and vehicle number at the top of the report.
5. Call the office immediately to report the accident.

Main Office 651-490-9868
Casey Irish Fleet Manager: Office:651-255-3570 Cell: 651-402-2052

March 4, 2015

COMPANY VEHICLE ACKLNOWLEDGEMENT FORM

I have received and read the NAC Company Vehicle Policy and Accident Procedure.

_____

Printed name – please write clearly

_____

Signature

_____

Date signed

Please return this page to the office

HARASSMENT POLICY

NAC believes that every employee has the right to a work environment free of unwelcome verbal or physical conduct which harasses, disrupts, or interferes with the individual's work performance or creates an intimidating, offensive, or hostile environment. NAC does not tolerate any employees engaging in this type of behavior. Any employee participating in such negative conduct will be subject to appropriate corrective action including termination.

EMPLOYEE HARASSMENT is any unwelcome conduct that illegally discriminates against you or another employee, unreasonably interferes with an individual's work performance, or creates an intimidating, hostile, or offensive work environment. This would include harassment based upon an individual's race, color, religion, sexual orientation, marital status, gender, family status, age, creed, physical or mental disability, or other protected classifications.

SEXUAL HARASSMENT is defined as any unwelcome sexual advances, requests for sexual favors, or other verbal or physical conduct of sexual nature where submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment; or submission to or rejected of such conduct is used or threatened to be used as the bases for employment decisions affecting such individual; or such unreasonable conduct interferes with an individual's work performance or creates an intimidating, hostile, or offensive work environment.

REPORTING GUIDELINES: if you become aware of situation involving unwelcome and inappropriate behavior directed toward you or another employee, report it immediately to your supervisor. If for any reason, you feel that you cannot speak to your supervisor about the situation, please report to:

Julie Krueger, Safety Clerk or

Lynn Bishop, President.

Upon receipt of a complaint under this policy, NAC will initiate an investigation of the situation and document the responses of all individuals involved. If your complaint is not handled to your satisfaction, then you should follow-up with a written statement to NAC Service President, Controller, or Human Resources Manager.

DISCIPLINARY ACTION: Any disciplinary action taken in response to the findings of a harassment complaint is based on the individual circumstances of each situation. Disciplinary actions may include, but is not limited to written warnings, suspensions without pay, or termination. In addition, if it is determined that a person has falsely and intentionally accused someone of harassment, appropriate disciplinary action may be taken that could include termination.

Return to Work Policy

NAC strives to maintain a safe work environment for all of our employees. Each employee is responsible for following company rules to reduce risk and help prevent work related injuries. Employees must wear the protective equipment that is provided, complete monthly safety agreements and follow all safety guidelines to help protect themselves and others from injuries.

NAC believes injuries are preventable by using careful planning, engineering controls, protective equipment and work procedures to control risks that cause injuries. If you are injured on the job, you must report the injury to your supervisor. Even if your injury seems minor or just requires first aid, you are still required to report it. Supervisors are also required to report even these minor injuries to the Safety Coordinator. By understanding small injuries or near miss incidents, we are able to identify where safety improvements can be made to protect others in the future.

What to do if you are injured:

If you are injured, seek first aid help immediately to treat the injury as best you can. Contact your immediate supervisor as soon as possible. Next, your Supervisor will contact the Safety Coordinator to file a First Report of Injury (FROI). If you need to schedule an appointment or go to a clinic, you should go to an NAC approved clinic such as the Minnesota Occupational Health. To schedule an appointment or find a clinic near you, contact the Safety Coordinator. If the injury is severe and requires a visit to the emergency room, go to the nearest one, and let the Safety Coordinator know. The physician should inform you of any restrictions you may have, and provide you documentation to return to the Safety Coordinator. After the Injury has been evaluated, NAC will consider the work you are capable of performing based on the physician's evaluation. Physicians may provide medical restrictions without realizing the variety of work you do, which may not correspond to "work" restrictions. NAC seeks to find a task for you so that you do not have to stay home and lose work.

Your injury will fall into one of the following categories:

- Severe Work Related Injury – Resulting in Temporary Workers Compensation
- Minor Work Related Injury – Resulting in Light Duty Work, Temporary Workers Compensation
- Non Work Related Injury – Resulting in a Temporary Work Absence
- First Aid Injury or Near Miss Incident

Severe Work Related Injury
Examples: Broken Neck, Paralyzed, Severe Burns…

Procedures:
If it is determined that a severe work related injury has occurred on the job the victim will be allowed a designated recovery time. The employee will receive workers compensation allotted for the designated recovery time. The employee will need to visit their physician for regular checkups and the results shall be mailed to Julie Krueger to report the employee's progress. If the Employees injury status improves to a minor work related injury then the procedures in the Minor Work Related Injury section should be followed.

Minor Work Related Injury
Examples: Sprains, burses, cuts, broken bones…

Procedures:
If a minor work related injury occurs on a job the employee will be expected to perform light duty work. The Employee will receive a reduction in their regular hourly wage with the difference of the pay made up through workers compensation. Before light duty work will be preformed, the worker shall meet with a recommended physician to determine their work limitations. After meeting with their physician verification from the physician should be mailed to Julie Krueger. The employee's limitations will then be reviewed and Julie Krueger, the Employee and the Employee's Supervisor will determine an appropriate light duty tasks to be performed by the employee.

Non Work Related Injury
Examples: Injuries sustain away from work, Injuries sustained by violating company safety procedures…

Procedures:
Any recovery time will not be compensated when the injury is not work related. If you require light duty work because of a non-work related injury, you must speak to your supervisor and Safety Coordinator to determine what tasks will be appropriate.

What is Light Duty Work?
Light duty work is defined as performing less demanding work than your prior duties. It is not the same for everyone, but is based on an evaluation of each person's injury. Your employer determines what light duty work will be available for you based on the treating physician's evaluation.

The following are some examples of light duty work tasks for minor work related injuries that will be assigned to employees in the Return to Work Program.

- Jobsite cleanup
- Inventory
- Parts sorting
- Jobsite paper work
- Material or labor takeoff
- Jobsite scheduling
- Other on-site needs

Section II

Construction Safety

II. Construction Safety

1. Construction Safety
    a. Activity Hazard Analysis (AHA
    b. Construction Site Inspection Form
    c. Pre-task Check
2. Fall protection
    a. Fall Protection Checklist Form
    b. Site Specific Fall Protection Template
    c. Fall Protection Help Sheet
3. Hand and Power Tools
4. Heavy Equipment Operation
5. Ladders
6. Scaffolding
    a. Scaffolding Card
7. Mobile Elevated Work Platforms
8. Subcontractor Pre-Evaluation
    a. Subcontractor Equipment Release
9. Trenching + Excavation

NAC
Mechanical ♦ Electrical ♦ Fabrication
Building Technology ♦ 24 Hour Service

CONSTRUCTION SITE SAFETY

In order to minimize work related injuries on construction sites the following guidelines have been established to ensure the safety of workers and others around the construction site.

PRE-TASK PLANNING or JOBSITE ACTIVITY HAZARD ANALYSIS (AHA): Shall be conducted for non-routine work, or when a new job task is introduced on a construction site. (See section 7a of this safety manual for NAC's comprehensive construction site AHA)

PERIMETER BARRICADES: Entire construction site should be fenced, or otherwise secured, to prevent unauthorized persons from intentionally or unintentionally entering the work site.

INTERNAL BARRICADES: Barricades will help warn workers of hazardous areas where dangerous conditions might exist.

TOOLS: Tools shall be well maintained. They shall be properly stored when not in use. The correct tool shall always be used for the job. Employees unfamiliar with a new tool shall be trained on how to use it by their supervisor.

- Proper PPE shall be used while working with hand & power tools. Cut resistant gloves shall be worn when cut hazards are present unless they create an additional hazard. Minimum site required PPE shall be worn unless it creates an additional hazard. Additional PPE shall be worn when minimum PPE does not adequately protect against hazards.
- Any damaged or unsafe tool shall be tagged "Out of Service" or other effective communication, and locked from operation or removed from its place of operation to be fixed or disposed of.
- The following general tool use safety procedures shall be followed:
    - Tools not suspended by electric cord or air hoses
    - Guards shall be in place and functional/ not damaged
    - Power tools shall be stopped during refueling/ maintenance
    - Power tools shall be double-insulated or grounded
    - Handles shall be free of splinters/ cracks and kept tight to the tool
    - Impact tools shall be free of mushroom heads
    - Safety devices shall be active on muzzle of pneumatic fasteners
    - Grinders shall be equipped with safety guards
    - Load capacity shall be legibly marked on jacks/ not to be exceeded

WALKWAYS: Walkways shall be clearly marked and roped off, allowing employees to safely enter and leave the work site.

HOUSEKEEPING: All debris, tools and equipment, should be picked up and either stored or disposed of in the proper location.

- Rebar shall be guarded to eliminate impalement hazards
- Nails or sharp objects shall not be sticking out

EXCAVATIONS: Excavations shall get special attention and a detailed company procedure should be followed. (See section 32 of this manual on Trenching & Excavation)

ABOVE GROUND WORK: Ladders and scaffolds shall be regularly inspected for damage and weakness. Site specific safety procedures should be adopted to address regular inspections for these devices. (See NAC's Fall Protection Policy)

- Workers shall avoid working under suspended loads and consider barricading areas at risk of falling objects
- Workers should take any damaged equipment out of service
- Use scaffolds or lifts rather than ladders whenever possible.
    - Personal fall protection system must be used when working above 6 feet at an unguarded edge. (excluding ladder and scissor lift work unless site required).
- All holes greater than 2" shall be covered and marked "hole" to prevent objects or personnel from falling.

ELECTRICITY: Electrical power sources not necessary for construction shall be shut off. Insulate all wiring and post warnings around live wires. Fuses circuit breakers, and ground fault interrupters shall be used to help prevent shock injury. GFCI's shall be tested regularly, before use, and after potential damage. Be aware of the dangers of overhead Wires. All temporary electrical wiring shall be secured at least 8 feet high or in a junction box to prevent accidental contact.

FIRES: Fire protection equipment shall be made available and employees trained in proper use. (See section 20 of this manual pertaining to Hot Work)

EMERGENCY ACTION PLAN: All employees shall be informed of emergency evacuation routes and procedures in the event of an emergency. Construction sites change frequently, and emergency plans should reflect these changes.

PERSONAL PROTECTIVE EQUIPMENT: Safety equipment such as protective shoes, gloves, hard hat, eye protection, and safety vest shall be provided to all employees at the site. All employees shall use and maintain these items. (See section 25 of on personal protective equipment for more details)

JOBSITE INSPECTIONS: The Safety Coordinator will conduct random inspections at various jobsites throughout their process. Supervisors and Foremen will lead workers on and personally perform continuous jobsite inspections. Observations will be documented, and any hazards identified will be immediately addressed.

ACTIVITY HAZARD ANALYSIS

Jobsite	Prepared By	Reviewed By

Scope of Work

Task and Principal Steps	Potential Hazards	Recommended Controls
Personnel shall be informed of emergency procedures prior to performing any work on site. **All work to be performed will be done in accordance with the NAC Mechanical & Electrical Services Accident Prevention Plan and applicable Base, State and Federal safety requirements.**	Worker injuries and exposures	In Case of Emergency, Call **911*** or go to the nearest **Hospital:**_____ Contact NAC 1. Jobsite Foreman: _____ phone #: _____ 2. NAC's Project Manager: _____ phone #: _____ 3. NAC's Safety Coordinator: Stephanie Hagen cell #: 651-280-8265 4. NAC's main office: 651-490-9868 (24-hours) Other NAC contacts: Client Site Emergency Contact 1. Primary contact: _____ phone #: _____ 2. Other contact: _____ phone #: _____ Site Specific Requirements: *Know client site-specific procedures, and ensure someone will meet and guide EMS to the incident. If emergency services are called, NAC foreman must be notified.

Minimum PPE requirements **Additional PPE Requirements**	Personal injury Hearing Loss Hand Injuries Respiratory Protection	At a minimum the following PPE is required at all times while in the construction area: • **Hard Hat** • **ANSI approved Safety Glasses w/ Side Shields** • **Heavy Duty Work Boots – safety toe recommended (No Tennis Shoes)** • **High Visibility Class II Safety Vest** • Additional PPE requirements are task specific (ie., Hearing Protection, Face Shield, etc.) Requirements also apply to all deliver personnel and vendors / suppliers who are coming on site. Some specific exposures include: **HEARING PROTECTION** - Ear plugs shall be worn when loud noises are present. **HAND PROTECTION** - Should be worn when exposed to environments which are prone to: • Hazards from chemicals • Cause cuts, lacerations, abrasions or punctures (At least ANSI Cut level 1 or EN Cut level 2) • Burns or harmful temperature extremes • Exposure to biological pathogens (BBP) **Respirators**- will be required when hazard assessments indicate exposures are above the permissible exposure levels. • Employees required to use respirators must first complete a medical questionnaire, be trained on use and selection of appropriate respirators, be trained annually, and have a fit test annually. • Voluntary use of respirators will require employees to read OSHA's Appendix D prior to use.
Heavy Equipment Used to move materials and earth.	Struck by moving equipment, Fall from elevated heights	• Wear High-vis reflective vests • Establish "no go zones" by flagging area off with barrier tape to guide workers and pedestrians • Operators maintain Eye contact with spotters • Stay away from moving equipment and give operators the right of way
Housekeeping Helps keep jobsites clean and safe. Should be done on a regular basis.	Personal Injury Injury to other workers	• Good housekeeping will be maintained to prevent hazards. • All trash will be picked up and thrown away into provided receptacles. • Material will be staged on carts, racks, or pallets out of the way of entryways, stairways, and walkways. Do not block emergency exits, eyewashes, fire extinguishers or electrical panels. • Trash receptacles will be emptied when needed. • Recycle bins may be available on site for items that can be recycled. • Spills should be cleaned up immediately to protect health, safety and the environment. If large quantities are released, contact the client, and NAC PM.
HAZCOM / SDS	Eye Irritation, Chemical	Chemical storage on jobsites will be identified • NAC's SDS Book will be available in the job trailer for reference

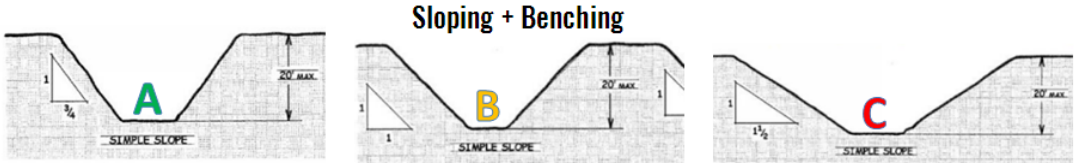
All employees have a right to know the hazards of the chemicals and material they are working with. Employees should read labels to ensure they follow manufacturer instructions, and consult the SDS for more details. Notify employees of chemicals with increased risks.	Burns, Vapor Inhalation, Poisoning, Spills, Contamination	• Eye wash sinks and wash rooms will be located • SDS book is on the company website. Consult SDS sheets prior to using chemicals Reference chemical manufacturers Instructions for using and storing chemicals: • Wear personal protective equipment when using harsh chemicals • If a chemical is spilled it should be cleaned up promptly according to SDS • Chemicals missing labels should be disposed of or tagged • Expired chemicals should be disposed of
Hand Held Portable Power Tools Used to perform work throughout the jobsite	Eye Injury Eye Injury, Foot Injury Hand Injury, Head Protection Fire, Noise	• Use safety glasses with side shields • Wear safety shoes • Machine guards, situational awareness • Face shield • Appropriate placed fire extinguisher, remove all combustibles and fire hazards from machine area. • Hearing protection • Dust masks appropriate for task • Gloves appropriate for task • Proper grounding of frame, manufacturer's instructions strictly followed
Pipe Stands Used to secure pipes during work.	Foot Injury, Trauma	• Situational awareness, wear safety shoes • Follow manufacturer's instructions. Ensure that rated load is legibly and permanently marked in a prominent location on stand, and rated load capacity is not exceeded. • Make sure stands are placed on a sturdy level platform
Ladders Used throughout the jobsite to access elevated work areas.	Falls Ladder failure	• Make sure the correct size ladder is being used for the task • Ladder must be inspected prior to use – damaged / defective ladders shall be tagged and taken out of service • Ladder shall be set up correctly on firm level ground and spreader bars locked • Ladder shall be used in accordance with the manufacturers guidelines and warning labels on the ladder • 3 points of contact shall be maintained while going up or down the ladder and user shall face the ladder while going up or down • Personnel shall not stand on the top two steps of the ladder • If ladder is going to be used in a high traffic area (hall way / corridor) the area around the ladder shall be flagged off or a spotter used to control the area so the ladder is not bumped causing user to fall from the ladder – same thing applies when working near doorways

		• Extension ladders shall always overlap at least (4) steps at their extension points when extended • non-self-supporting ladders shall be placed on a substantial base, have clear access at top and bottom, and be placed at an angle so the horizontal distance from the top support to the foot of the ladder is approximately one-quarter the working length of the ladder • Portable ladders used for access to an upper landing surface must extend a minimum of 3 feet above the landing surface or where not practical, be provided with grab rails and be secured against movement while in use.
Scaffolding Used throughout the jobsite to access elevated work areas.	Falls, Scaffolding Failure, Personal Injury	When positioning or constructing scaffolding the following principles will be maintained: • Scaffolding is placed on a firm footing capable of supporting 4 times the load including materials • Scaffolding must be braced or tied off to a stable structure • Scaffolding should be 20" wide and overlap supports between 6-12" • If the scaffolding is higher than 10' guard rails and toe boards need to be in place • A minimum of 10 feet of clearance should be maintained next to power lines • Do not place unstable blocks or barrels underneath scaffolding to level it, adjust the legs instead • Be certain to lock wheels before using if it is mobile • Do not ride scaffolding while moving it • Be aware of holes in floors and overhead obstructions • Do not allow tools or materials to build up on scaffolding
Fall Protection Roof Work, warning lines. Hoist area with guardrails and tie-off, Personal Fall Arrest Systems when exposed to falls greater than 6 ft. Hole covers for chases and holes in the floor.	Falls, Falling Objects, Injuries from falls	Fall protection is required when exposed to falls 6 feet or greater- 3 Options. 1) Use guardrails that are 42" (+/-3") with midrail and toe-kick, and can withstand 200 lbs downward and outward pressure without failing. 2) Warning line system of cones, or stanchions, flagged every 6 feet. Warning lines must be set 15 feet from the unguarded edge/ fall hazard. If going beyond warning line, wear PFAS. 3) Wear personal fall arrest system (PFAS) fall harness, shock absorbing lanyard or self-retracting lifeline, and an anchorage point capable of supporting 5000 lbs of force. The equipment used shall be exclusive for fall protection, and employees shall be trained on the inspection and proper use of equipment, and shall always have a rescue plan in the event of a fall while wearing PFAS. Prevent falling objects: Skylights + Holes: All holes 2" or larger shall be covered, secured and marked hole, and be capable of withstanding 2x the anticipated load. Skylights are not guaranteed to withstand the force of a fall, and shall be treated as open holes. Employees shall use guardrails, covers, warning lines or PFAS around skylights.
Drum Handling	Eye injury, Trauma, and foot injury	• Goggles and Glove appropriate for task • Use drum dolly when transporting
Material Handling and Ergonomics	Strain and Sprains, Fractures and	• Lift items over 50 pounds with a partner, or mechanical lifting aid • When using mechanical lifting devices, always inspect equipment before use and know your load capacity. Never exceed load capacity limits.

Moving equipment throughout the jobsite, and installing equipment.	Bruises, and Cuts.	• Avoid awkward posture, and use good ergonomic work practices. Lift with your legs, not your back. • Avoid twisting the spine, pivot the feet instead. Pushing is better than pulling on the back. • Perform warm-up exercises or stretches prior to heavy work, and stay hydrated to prevent muscle sprains/strains.
Temporary Power-Generator Used to provide temporary power throughout the jobsite.	Electrical shock, gas inhalation, Burns, Fire Hazard	• Have gas monitor in place to monitor carbon monoxide in the area, and ensure adequate ventilation for combustion to prevent oxygen depletion. • Use temporary power generator as required to complete work • Must use G.F.C.I. at generator • Provide fire extinguisher and utilize OSHA approved fuel container • Generator must be shut down prior to fueling • Use caution as generator may be hot
Compressed Gas Cylinders Used for many things on the jobsite, including welding and hot work.	Inhalation, Eye Injury, Trauma Foot Injury, Fire, Explosion	• Store secured, upright with caps on, in well-ventilated area with flammables stored 20 feet apart, or by 30 min fire wall, from oxygen. May be kept on cart during use. • Always have regulators in place or caps on. • Be aware of your surroundings, and ensure damage does not occur. • Wear safety shoes, gloves, and other required PPE according to SDS when handling • Only use a cylinder wrench on acetylene • Never travel with cylinder in the cab of a vehicle for risk of oxygen depletion • Appropriate placed fire extinguisher, remove all combustibles and fire hazards from area
Air Compressor, Portable, Electric Used throughout the jobsite for a variety of tasks	Electric Shock, Noise Trauma Eye Injury	• Unplug electrical cord and retain control of plug during repair/maintenance • Use hearing protection and eye protection. • Use appropriate nozzle for specific work activity, situational awareness • Goggles or safety glasses with side shields • NEVER point compressed air at another person or your skin. Do not clean your clothing with compressed air. It can create an air bubble under the skin and may be fatal.
Cutting & Core Drilling Used throughout the jobsite to create holes in floors, walls or ceilings.	Property Damage, Personal Injury, Electrical Shock, Water Damage, Silica, Falling Debris, Safety	• The area where cutting or core drilling will take place will be surveyed first to make sure no structural or utilities will be crossing path • Cutting & coring sites will be secured from loss debris by any of the following methods: Cones/ warning barrier around cutting site and beneath drop zone • A spotter will be located below to prevent unauthorized access in barricade and prevent injuries from falling debris • Net, canvas, wood or other device may be placed under drop zone to cushion impact, but should not pose risk to others.

	Work Zones, Pinch Points	• While cutting, dust or debris will be minimized by using wet cutting methods, local exhaust ventilations, vacuums, and isolating the area. • Any open holes will be covered with secured plywood to support twice the possible load and marked "HOLE" • Employees shall use fall protection if cutting a hole large enough to fall through. • After work is complete debris will be removed from the site • Any open permits will be closed, facilities will be notified if work is complete or ongoing, and location will be reopen to the public accordingly
Demolition Performed to remove old material and/or equipment to prepare for installation of new equipment. Demolition plan should be discussed with employees to prevent injuries.	Structural integrity, falls, falling objects, environmental hazard exposure, utility hits, muscle strains, cuts, debris in eye, etc.	Demolition Plan: _____ 1. Engineering Survey: Will any framing, floors or walls, or any other adjacent sturctures be affected by demolition that could affect the structural integrity of the space? YES_____NO_____ • Method of demolition: hand removal, mechanical equipment, heavy equipment, blasting • Hazardous Material Removal: (Asbestos, Lead, Silica exposure control) 2. Locate utilities: (Call 811), Notify utility companies • Private locate method/company used: _____ 3. Employee Training Required: • Asbestos, Lead, Silica awareness, Fall protection, Confined Spaces, Scaffolding, HotWork/Fire protection, PPE 4. Emergency Action Plans and Fire Prevention: • Barricade work areas to protect the general public • Know client site hot work requirements, have extinguishers on-site 5. Other Demolition Hazards: • Confined space, contaminated soils, unknown hazardous material, muscle strains, cuts + abrasions.
Welding & Cutting Performed on job-sites to join or disjoin materials as a means to accomplish the tasks.	Fires, Electrical Shock, Burns, Personal Injury	When welding and cutting the following procedures should be followed: • A suitable fire extinguisher should be available • Clear the area below cutting or welding operations so hot slag will not burn things below • Always wear required eye protection to guard against slag while chipping, grinding, and dressing of welds. • Always wear a welding hood to protect eyes from flash burn • Do not cut or weld around gasoline tanks or attempt to weld or cut a container that contains a flammable or combustible liquid • When electrode holders are left unattended, electrodes should be removed and the holder should be placed or protected so it cannot make electrical contact • All arc welding and cutting cables should be completely insulated
Hot work	Burns, Fires, Ventilation	Hazards while doing hot work will be minimized by: • Complete hot work permits as required by site, and provide trained fire watch with extinguishing system during and for 30 mins after work. Firewatch should also watch below if holes in floor/walls.

Performed on job-sites. Employees shall follow site requirements, ensuring they n		• Hot work equipment shall be inspected before use, and be in good condition • Multi-purpose fire extinguisher or water source is readily available nearby. • Dust, lint, debris, flammable liquids and oily deposits removed. • Remove flammable and combustibles and wet down combustible floors, or covered with damp sand or fire blankets. Cover openings or unmovable combustibles with fire blankets, and have firewatch below. • Ensure any risk of explosive atmosphere in the area is eliminated. • Confined spaces are cleaned of all combustibles such as grease, oil, flammable vapors, and have continuous mechanical ventilation.
Fleet Vehicle Safety May be required for getting between jobsites, but is a privilege.	Vehicle Accidents, Personal Injury, Property Damage	Anyone who operates a licensed vehicle owned or controlled by NAC Mechanical & Electrical Services must maintain a current driver's license and follow these policies: • Vehicles shall be inspected daily • All occupants must wear seatbelts at all times • Obey all traffic laws. No cell phone use while driving. • Unattended vehicles should have keys removed, doors locks and windows rolled up. • All incidences involving damage to company property or personnel shall be reported • Courtesy should be extended to other motorists (company vehicles are rolling billboards)
Forklift Operation Used to move material around the jobsite.	Vehicle Accidents, Personal Injury, Property Damage	Operator of power industrial trucks must be trained and authorized to operate equipment, and be competent in its use and safety guidelines: • Examine forklift truck for defects before using. Remove unsafe or defective forklift trucks form service. Ensure safety and reverse signal alarms are audible above the surrounding noise level. • Drive safely and never exceed 5 mph and slowdown in congested or slippery areas. • Do not handle loads that are heavier than the capacity of the industrial truck. Avoid traveling with loads elevated. Operators shall always wear seatbelts. • Hoist areas must have appropriate fall protection if guardrails are removed causing fall risk.
Man Lifts/ Scissor Lifts Used throughout the jobsite to access elevated areas to perform work safely.	Property Damage, Personal Injury, falls, falling equipment	Lifts designed to elevate personnel should be used with caution. Always review the manual and familiarize yourself with new lifts. While inside lifts make sure: • To set brakes and extending outriggers before using as required by the manual • Do not exceed boom and basket load limits, and be aware of severe weather and wind. • Use personal fall restraint in man-baskets and aerial lifts. In Scissor lifts, use personal fall arrest for additional means of fall protection. Always latch the chain. • Keep feet on platform, do not use ladders, stilts, or step stools to elevate above work platform. • Be aware of environments where caught between or struck by risks are present, and inspect ground and overhead obstructions. Stay clear of moving and rotating objects. • Stay at least 10 feet away from overhead powerlines. • If working outside of the lift fall protection must be utilized
Cranes	Property Damage,	• Watch for overhead electric power lines and maintain at least 10-foot safe working clearance from the lines

Whenever lifting items by crane on jobsites, caution must be taken to prevent injuries.	Personal Injury, Uneven Surfaces, Electric Shock, Caught Between, Stuck By, Falling Debris, Failure to Secure	• Inspect all rigging prior to use, do not wrap hoist lines around the load • Do not exceed the load chart capacity while making lifts • Raise load a few inches, hold, verify capacity/ balance and test brake before delivering load • Only qualified signal persons shall be assigned as the dedicated signal person for a crane or other material lift. • Utilize NAC's Crane Lift Form, and/or review the crane company's pick plan. • Use fall protection on the roof to prevent falls through holes, and off the roof.
Trenching & Excavation Whenever digging in the ground, there is a risk of hitting utilities or being injured.	Cave ins, Trench Collapse, Falls, Trips, Caught Between, Struck By, Asphyxiation	Before digging any trenches/ excavation, or before clearing an unknown obstruction inside a sewer pipe, all underground utilities must be located by contacting local state "one-call" 811. • A competent person must inspect trenches and excavations at least daily for hazards. Hazards shall be eliminated prior to any work in excavations. • Protective means, such as sloping is required when excavation is 5 feet or more deep. • Sloping is angled according to soil type. Sandy soils are type C, and require a 1.5 : 1 slope.  • Keep excavated materials a minimum of two feet from the edge of the trench. • In trenches more than four feet deep, locate adequate means of exit. Such as ladders, or steps, so they can be reached in no more than 25 feet of travel from anywhere in the trench. • Keep heavy loads of all kinds as far from the trench as possible. • Do not allow water, rain, ground water, or surface water to accumulate in a trench, water reduces soil stability. It must be pumped out prior to entering the trench. • Trenches greater than 20 feet require design by an engineer. • Unattended excavations must be well lit and barricaded. Keep non-workers away from the trench, particularly at night. • When excavating near traffic areas, class 2 high-vis vests shall be worn by all employees involved.
Shut Offs / Line Breaking Exposure risk when breaking lines, pressure testing, or any other means where you have	Property Damage, Personal Injury, Pressurized Parts, Water Damage,	1. A line trace will be done to verify that all valves leading to the line break source have been shut closed and locked out/ tagged out. 2. The area near the line break will be set up with drop cloths, poly, drain off buckets, hoses or other means to contain fluids. 3. Pressure from the line will be relieved and fluids will be drained from the line. 4. If necessary a clean flush will be performed to cleanse the line. 5. Sections of the lines will be removed by disassembling or cutting the lines into manageable sections.

to cut into an existing line.	Failure to Make Secure.	6. Lines which are removed will be trucked out of the area by means which contain fluid runoff such as by stacking in fluid tight carts or by capping open ends to pieces which are removed. 7. After the lines are removed any open ends should be repaired, sealed, or capped closed to prevent fluids from leaking on a daily basis. 8. A preliminary inspection should be carried out once work is complete to maintain that all fluids are concealed. Periodic inspections should be performed to ensure that fluids have not leaked from the line. 9. A final Inspection will be performed daily. Any tools, materials, and equipment will be removed. 10. Any open permits will be closed, facilities will be notified if work is complete or ongoing, valves will be opened and mechanical systems will be reenergized accordingly.
Lockout/Tagout Prevent the hazardous release of energy while working on equipment. Follow lockout/tagout written procedures.	Personal Injury, Property Damage, Caught between, Electrical Shock, Moving Parts, Personal Injury	Before servicing or working near equipment which has the potential to release energy or motion of its parts or systems a lock out tag out should be performed. The following procedures detail this process: De-energizing: 1. Notify all "affected employees" that the equipment will be shut down. 2. Shut down the equipment by normal stopping procedures. 3. "Isolate" all the equipment's energy sources. 4. Lock out and/or tag out the energy isolating devices with assigned, individual locks. 5. Release or restrain any stored energy by grounding, blocking, bleeding down, etc. 6. Assure that no personnel are exposed, and then test the equipment to assure that it will not operate. Restoring Equipment: 1. Check to assure that all employees have been safely positioned or removed from the area. 2. Verify that equipment controls are in neutral. 3. Remove lockout devices and/or tags and re-energize the machine or equipment. 4. Notify affected employees that servicing is complete and the equipment is ready for use.
Electrical Safety Risk throughout jobsites wherever electricity is in use.	Electrical Shock, Power Disruption, Critical System Failure, Personal Injury	General electrical safety procedures shall be followed: • Assume that all overhead wires are energized at lethal voltages. Never assume that a wire is safe to touch even if it is down or appears to be insulated. • Never operate electrical equipment while you are standing in the water. • Any live parts of electrical equipment operating at 50 Volts or more must be guarded against accidental contact by cabinets or other forms of enclosures. It should also be secured tightly, and be elevated above the floor or work space a minimum of 8’ in height • Extension cords shall have grounded conductors/ insulation in good condition without splices. • GFCIs shall be inspected weekly and documented • No employees shall enter spaces containing exposed energized parts unless illumination is provided that enables work to be conducted safely

		• All temporary lighting shall be placed above 8 feet if assembled with wire nuts. Temporary lighting is below 8 feet shall have connections placed inside a junction box. All temporary wiring shall be separated from any metal parts by insulated shielding or plastic clips
Arc Flash Electrical work or work on live equipment.	Electrical Shock, Power Disruption, Critical System Failure, Personal Injury	Take these preventions to help prevent arc flash burns: • Read and observe all warning signs of "arc flash protection boundaries" • Wear appropriate PPE when working within the arc flash protection boundary. The type of PPE depends on the electric work being done. (Use NFPA 70E charts to identify PPE needs) • If you need to work in the arc flash boundary use barriers such as insulated blankets to protect against accidental contact
Confined Spaces Any space that is large enough to enter, not meant for continuous occupancy, and has limited means of entry and exit. When hazards are present, introduced, are have a potential to exist that could seriously harm or kill someone, it becomes a permit required space. Follow procedures to ensure safe entry.	Hazardous atmosphere, engulfing, entrapment, asphyxiation, health hazard	*Non-permit confined space: Confirm + document* that it is safe prior to initial entry. If hazards arise or are introduced, exit space, suspend entry, and reassess hazards. You may need to treat as a permit-required space. *Permit Required confined space:* Always use a permit to document entry procedures. **3 Options for Permit Required Confined Spaces in Construction:** 1. Reclassify: When you can fully Eliminate and/or Isolate (Lockout/Tagout) hazards and confirm no *potential* for hazardous atmosphere. This must be approved of by Host, Controlling, and Entry Contractors. a. Competent person evaluates hazards, documents on permit and determines steps needed to eliminate or isolate all hazards. Steps are completed, and then the competent person can re-classify the space as not being permit required. Leave permit at space entrance. 2. Modified Entry: When you can Eliminate and/or Isolate (Lockout/Tagout) hazards, and you can control atmospheric hazards, but not eliminate the potential 100%. a. Competent person evaluates hazards, documents on permit, and determines steps to eliminate or isolate hazards. Proceed with entry after testing air, then using continuous mechanical ventilation, and wearing 4-gas monitor during entry. Leave permit at space entrance. 3. Full Permit Entry: When you can't eliminate or isolate hazards. You will need attendant present, rescue plan, and fill out permit every day you enter space. a. Each day, competent person evaluates, documents on permit and determines safe entry methods. Test air and wear 4-gas monitor. *Attendant and rescue plan* must be in place prior to entry.
Asbestos & Lead Exposure risk occurs during demolition	Airborne particles exposing employees to	If lead or asbestos are encountered on the jobsite, employees shall be made aware of locations, and take appropriate measures to prevent exposure. Foreman shall relay information regarding asbestos abatement to employees. Employees shall be made aware of potential asbestos containing materials, and shall stop work and notify their supervisor if they

when hazards are disturbed.	particulates that may cause adverse health effects. Debris on surfaces, dislodged chunks, Sanding or Grinding	suspect asbestos. Do not disturb asbestos. Testing and abatement shall be performed prior to performing work that may disturb asbestos. Control Methods • Engineering Controls – minimize hazards by isolating and preparing for dangers – (use barricades, ventilation, or saturate surfaces with water so dust is not created) • Administrative Controls – follow abatement procedures – (request NAC abatement forms, contact a qualified professional to perform abatement) • Personal Protective Equipment – PPE may be worn to control exposure to hazards - Use of respirators (follow written respiratory plan), safety glasses, gloves, & covered clothing. Maintain good hygiene, and wash hands, shower after handling, and wash clothes separately to prevent secondary exposure.
Silica Exposure risk during demolition, drilling, hammer drilling, cutting, core-drilling, chipping, and housekeeping	Inhalation of airborne dust containing crystalline silica that, through the use of tools and work practices becomes respirable	If using power tools on material that contains crystalline silica (e.g. concrete, stone, bricks, masonry, hardy board, drywall compound, etc.) you must use engineering controls (wet method or vacuum) to control dust to reduce exposure to below the 8 hr TWA, PEL of 50 micrograms per cubic meter. Follow Table 1 procedures, or work procedures listed in NAC's Silica Exposure Control Program (summarized below). Ensure manufacturer instructions are followed. 1. Restrict Access + Contain Dust: restrict other employees from entering areas of high potential silica exposure. Use plastic to separate areas if necessary and wear respirators when entering area if required. Ensure adequate ventilation and controls are in place for those in contained area. 2. Housekeeping + Sweeping: Use wet sweeping compound, wet sweeping, or HEPA vacuum for cleanup. 3. Safe work practices: use general ventilation and local exhaust ventilation to control exposure to dust. Stand upwind to prevent unintended exposure. When vacuum attachments are not feasible, alternative control measures shall be taken to control dust. Controlling visible dust, is likely to also reduce exposure to invisible, respirable dust. 4. Hammer Drilling: use a vacuum attachment, local exhaust ventilation to remove dust at the source. 5. Core Drilling: Wet Core Drilling-ensure water stream is integrated and delivers effective amount of water directly on the source. Dry Core Drilling-use a vacuum shroud attachment or wet method on dry core drills. 6. Concrete Chipping + Demolition, use a vacuum, local exhaust ventilation attachment to remove dust at the source. Wear a respirator during chipping work indoors, or more than 4 hours outdoors. 7. Excavation, wet soil down during excavation or have all others removed from area and the operator fully enclosed in cab.

Equipment To Be Used	Inspection Requirements	Training Requirements
Ladders	Inspect for damage before use	Use ladders properly and safely
Generator	Ensure ventilated properly to prevent CO.	
Air Compressors	Inspect before use	Trained on safe operation. Never point hose at others.

Material Carts	Inspect before use, don't overload	
Hand Held Portable Tools	Inspect before use, ensure guards are in place	Be trained on proper use of tools.
Pipe Stands	Inspect before use.	
Compressed Gasses	Inspect before use, and store properly, separate flammables from oxygen	Be trained on proper use and storage
Cranes	Complete Crane lift form prior to crane lifts	Rigging signal person must be trained.
Man Lifts	Inspect before use.	Be trained on safe use. Aerial lifts require additional training and 100% tie-off.
Fall Protection Equipment	Inspect before use, ensure plan is effective	Be trained to inspect, wear and setup equipment.
Vehicles	Inspect vehicles each day, and lock up	
Chemicals	Inspect for proper storage and damage	Hazcom training, read labels, review SDS, label chemicals properly.
Hot Work Equipment	Inspect before use	Trained on hot work requirements per site.
Silica	Ensure equipment is working properly	Trained to prevent silica exposure using engineering controls, and work practices in plan.
Ladders	Inspect for damage before use	Use ladders properly and safely
Generator	Ensure ventilated properly to prevent CO.	

Competent Person	Activity

ACTIVITY HAZARD ANALYSIS

ACTIVITY

This Activity Hazard Analysis has been reviewed by the following personnel:

Name (PRINT) _____ Date _____ Name (PRINT) _____ Date _____

_____ _____ _____ _____

Site Inspection Form

			Date
Jobsite Name		Your Name	
Specific location on-site:		Foreman Name	
GC or CM		Trade	

Topic for Toolbox Talk	
Other NAC Trades On-site	
Any consistent safety issues on-site?	

1 star= Unsafe – 5-stars= Excellent

Housekeeping good.					
Emergency Action Plan: known, first aid kit locations, fire extinguishers, evacuation + meeting places.					
Subcontractors being safe, wearing PPE, fall protection, silica plan					
Fall Protection: Used when exposed to fall hazards greater than 6 feet.					
Guardrails: 39-45” tall, midrail, toe-kick. Wire rope ≤3” deflection, flags					
Warning Lines: flagging upright and set at 15 feet from fall hazard.					
Personal Fall Arrest System: Inspected, anchors 5k lbs force, effective?					
Hole Covers: holes 2” or larger coverd, secured, marked “hole”					
Description:					
Heavy Equipment, Elevated Loads, Struck-by Hazards: High vis-vests worn, spotters used when needed, designated paths.					
Electrical Hazards: Cords protected from damage, temp electrical/ 8ft up or in junction box, lights protected. GFCI or Double Insulated used.					

Trenches/Excavations: Competent person inspects daily, 4 ft deep-ladder, 5 ft deep-sloped. Hand dig within 2 feet. Locates identified beforehand.					
Confined Space Entry: 4 gas-monitor used, hazards ID, permits completed properly. Permit Required: Attendant at entrance, Rescue plan discussed.					
Elevated Work: Workers are protected from falling and falling objects					
Ladders: used safely, in good condition. Not on top or second to top step, use 3 points of contact. Extension ladders at 1:4 slope, have 3ft extension over top, secure. Good access areas.					
Scissor Lifts and Aerial lifts, inspected, and used properly. Stay 10+ feet from power lines. Gate chained, feet remain on platform. 100% in aerial lifts.					
Scaffolding is stable, set up properly, inspected + tags in place. Used properly and 10+ feet protected with guardrails or harness.					
Lockout tagout should be in place during shut-down, line break, working on live equipment, or other tasks where you must ensure effective isolation of energy sources					
Hot Work permits used, and fire risks are effectively controlled. Fire extinguishers are present, checked monthly and inspected annually.					
Hoisting, lifting, and rigging are done safely, loads balanced, and minimizing risk for falling loads or injuries. Tag-lines used. Rigging equipment is inspected and not overloaded. Hoist areas protected, fall harness used when guardrails removed. Hoist not above walk-way.					
Chemicals and products labeled and stored properly. Storage does not create additional hazards. Hazard Communication/GHS/Right to Know/ SDS Book is available to employees online.					
Silica, Lead, Asbestos: controlled with engineering controls and isolation methods are in place (wet cutting, vacuum attachments, work practices to reduce airborne dust). Asbestos concerns are addressed promptly and communicated with employees on-site. PPE is used where necessary.					

Corrective Actions: What Actions will be taken to fix any hazard found?

Pre-task Planning

Site Name:	Foreman:	Date:
Company/Trade:	GC/Sup:	Time:

Scope of Work	Hazards Identified	Hazard Elimination	✓

Potential hazards (Check all that apply + write hazard control measures for each)

	Slips, Trips		Particles in Eyes/Face		Moving Machinery
	Falls over 6'		Overhead Work		Electric Shock/Live Utilities
	Falls from Ladder		Holes/dropping hazard		Heat/Cold Exposure
	Elevated work		Sprains/Strains		Fire Hazard
	Pinch/Crush hazard		Overexertion		Chemical hazard
	Cuts/Abrasions		Crane Lifts		Emergency Exit Plan
	Hot Work: PERMIT		**Confined Space: PERMIT**		
	Flammables, Fire extinguishers, Cylinders up + secure, Ventilation		Air Monitoring, Ventilation, Rescue Plan, Attendant, Entrant, Hazards, eliminated		

Daily Inspections:		Inspected by:
Lifts, Hoists, Heavy Equip.		
Ladders/ Scaffolds		
Cords/GFCI/Lighting		
Tools + Equipment		
Fall protection equip.		
Guardrails/barricades/holes		

To Do:

Employee Names:

Name: _____

Trade: _____ Date: _____

TASK HAZARD CONTROLS

1.

2.

3.

4.

	High-Risk Tasks:	Where?
	Fall Hazards / Elevated Work	
	Trench/Excavation (Cave-ins)	
	Heavy Equipment (Struck-by)	
	Electrical Hazards	
	Confined Space Entry	

Name: _____

Trade: _____ Date: _____

TASK HAZARD CONTROLS

1.

2.

3.

4.

	High-Risk Tasks:	Where?
	Fall Hazards / Elevated Work	
	Trench/Excavation (Cave-ins)	
	Heavy Equipment (Struck-by)	
	Electrical Hazards	
	Confined Space Entry	

Name: _____

Trade: _____ Date: _____

TASK HAZARD CONTROLS

1.

2.

3.

4.

	High-Risk Tasks:	Where?
	Fall Hazards / Elevated Work	
	Trench/Excavation (Cave-ins)	
	Heavy Equipment (Struck-by)	
	Electrical Hazards	
	Confined Space Entry	

Name: _____

Trade: _____ Date: _____

TASK HAZARD CONTROLS

1.

2.

3.

4.

	High-Risk Tasks:	Where?
	Fall Hazards / Elevated Work	
	Trench/Excavation (Cave-ins)	
	Heavy Equipment (Struck-by)	
	Electrical Hazards	
	Confined Space Entry	

Any Near Misses, Incidents, or Injuries?

2 Week Look Ahead Planning:

Notes:

Any Near Misses, Incidents, or Injuries?

2 Week Look Ahead Planning:

Notes:

Any Near Misses, Incidents, or Injuries?

2 Week Look Ahead Planning:

Notes:

Any Near Misses, Incidents, or Injuries?

2 Week Look Ahead Planning:

Notes:

FALL PROTECTION

Falls are the leading cause of death in the construction industry and are the most common OSHA violation. Employers have the duty to provide fall protection for employees exposed to fall hazards and falling objects, set the criteria and practices for all protection systems, and provide training to employees. Fall related injuries and fatalities are preventable. To reduce the risk of falling, employees shall identify fall hazards and create a plan to control them prior to beginning work whenever possible. NAC employees shall fallow state and federal OSHA regulations and Industry Standards.. Some tasks may require a site-specific fall protection plan to effectively manage fall hazards on the job. Regular surveys of project operations and conditions shall be conducted to identify and mitigate fall hazards.

Responsibilities

Safety Coordinator: Provides oversight and technical support, ensuring appropriate safety checks, reporting and record keeping are executed, conduct annual review of the program, and update to ensure its effectiveness.

Supervisor/Foreman: Compliance with this program, perform routine safety checks and inspections of work operations, correcting any unsafe practices or conditions immediately, ensuring employees have proper tools and equipment for working on elevated work surfaces, identifying gaps in knowledge and training needs, and coordinating training, and notifying NAC Safety of potential hazards requiring assessments or improvement of the program

Employees: Compliance with this program, cooperating with all safety and health matters, reporting incidents to supervisor/foreman immediately, inspect and wear all required PPE, report hazardous conditions or other health and safety concerns immediately to supervisor/foreman, or project manager.

Regulatory Standards:

Most work at NAC falls under the Construction standard, however most service work and Fab shop work, falls under General Industry. All fall protection equipment provided and used shall meet requirements of applicable ANSI, ASTM, & OSHA standards.

- Construction Standard: Construction is defined as "construction, alteration, and/or repair, including painting and decorating and applies to all employees who work in areas with fall hazards 6 feet or greater from the surface below. (See 29 CFR 1926 Subpart M)
- General Industry Standard: Applies to non-construction work such as maintenance, service work, and the fab shop. Note: larger scale service work may be categorized as construction work, such as replacing a large air handling unit using a crane. Applies to all employees engaged in non-construction work, such as service work, exposed to fall hazards 4 feet or greater. Regulation: 29 CFR 1910 Subpart D, Walking Working Surfaces.
- Minnesota State Standard: Specific Minnesota regulations shall be followed
- Mechanical Code Standard: References the Minnesota and international mechanical code

Fall Prevention

Fall prevention uses engineering controls to prevent a worker from falling, such as guardrails, hole covers, and fall restraint systems.

A. Guardrails Systems

Guardrails shall be installed to prevent workers from falling from heights 6 feet or greater from an unguarded edge, into holes, or openings. Guardrails shall have a horizontal top rail 42" (+/- 3") from the walking surface, with a midrail, and toe-board. Guardrails shall meet the following requirements:

- Strength to withstand 200 lbs applied within 2" of top edge in any downward or outward direction.
- Midrail or equivalent structural members such as mesh, screens, 21" tall parapet, to withstand 150 lbs of force in downward or outward direction.
- Toe-board shall be used to prevent objects from falling, and hitting someone on a lower level.
- Posts shall be no more than 8 feet apart on center
- Intermediate members, such as balusters, when used between posts shall not be more than 19 inches apart.
- If wire rope is used as a top rail, use high-visibility flags every 6 ft.

Table 1. Guardrail Component Strength Indicators

Material	Strength (minimum criteria)	Posts (minimum criteria)	Toprail (minimum criteria)	Intermediate Rail (minimum criteria)
Wood guardrails	1,500 lb-ft/in^2 fiber (stress grade) construction lumber	2 inch × 4-inch (nominal) lumber	2 inch × 4-inch (nominal) lumber	1 inch × 6 inch (nominal) lumber
Pipe guardrails	N/A	1.5 inch diameter (schedule 40 pipe)	1.5 inch diameter (schedule 40 pipe)	1.5 inch diameter (schedule 40 pipe)
Structural steel guardrails	N/A	2 inch × 2 inch × 3/8 inch	2 inch × 2 inch × 3/8 inch	2 inch × 2 inch × 3/8 inch
Spacing	N/A	All material: no more than 8 feet apart (on centers)	N/A	N/A

N/A = not applicable.
lb-ft/in^2 = pound-foot per square-inch. Adapted from 29 CFR 1926 Subpart M, Appendix B.

B. Hole Covers + Falling Objects

A hole or gap 2" or greater in the walking surface shall be covered to prevent a worker from falling through or tripping on a hole, skylight, or opening, and prevent objects from falling through and injuring someone below. Hole covers shall overlap the hole and be able to support twice the intended load to prevent fall through. Covers shall be secured from movement and clearly marked "hole". Use of heavy plywood or steel may be an effective cover material. Never use damaged or warped material, cardboard, tarps, plastic, drywall, chicken wire or fencing. Plywood should be oriented so the grain is perpendicular to the longest edge of the hole. When working on elevated, grated floors, cover to prevent objects from falling through grates, use fire blankets as necessary during hotwork to prevent sparks falling through grates.

C. Warning Lines and Marking Systems

- Warning Line Systems
  Used on Flat or low-slope roofs to warn workers that they are approaching an unprotected roof side or edge. Warning lines shall be set at 15 feet from the edge and be constructed using a rope, wire or chain with flags every 6 ft, supported by stanchions, cones or poles. Warning lines must include a work rule: " are used in conjunction with a safety monitoring system or conventional fall protection system when workers go beyond the warning line, and there shall be a work rule: workers must not go beyond warning line unless equipped with a personal fall arrest system, or another form of fall protection.
  Note: Points of access, material handling areas, storage areas, and hoisting areas shall be connected to the work area by an access path formed by two warning lines. When not in use, the access point pathway shall be blocked with an additional warning line or equivalent barrier, or be offset so that a person cannot walk directly into the area.
- Safety Monitoring Systems
  Use a competent person dedicated to monitoring employees on low slope roofs 50 feet or less in width. Safety monitors must understand and recognize fall hazards and warn workers of unsafe activity or behavior. Irregularly shaped roofs can be divided into sub-areas of 50 feet or less in width. The safety monitor must be on the same level, be able to see all employees and be able to verbally warn employees of hazards. Use of controlled access shall be outlined in a site-specific fall protection plan.
- Controlled Access Zones
  Clearly marked "control line", designated work area where certain work may take place without conventional fall protection systems, where only authorized workers may enter. Leading edge work, overhand bricklaying, precast concrete erection and residential construction use Controlled Access Zones. Use of controlled access shall be outlined in a site-specific fall protection plan and shall include the list of names or recognizable identification for employees working in controlled access zones.

D. Fall Restraint Systems and Positioning Devices
Fall restraint systems prevent the worker from falling any distance by restricting their access to the fall hazard. The anchor points must withstand 3,000 lbs of force, or twice the maximum expected force needed to restrain the worker from exposure to the fall hazard. Positioning Devices limit free falls to two feet or less.

Fall Arrest and Fall Rescue

Fall arrest and rescue prevents injury during and after a fall by using a personal fall arrest system (PFAS), or safety nets, and having a rescue plan that can efficiently rescue a fallen victim and minimize physiological damage sustained in the fall.

A. Safety Net Systems
Are designed to catch a worker if they fall and installation and construction shall comply with all regulations and manufacturer instructions. Safety nets shall be set up as close practicable, not to exceed 30 feet below unguarded surface, and extend at least 13 feet from edge when installed 10 or more feet below unguarded surface.

B. Personal Fall Arrest Systems (PFAS)
Fall arrest systems are used to stop the fall and distribute the force of energy evenly across the body to minimize injury. Components shall be compatible to ensure effectiveness and prevent damage or failure. Inspect all components prior to use for damage or signs of

a. Full Body Harness: Harnesses shall be appropriate size, and adjusted for the wearer so it fits snugly. The D-ring shall sit between the shoulder blades. Harness webbing and hardware shall be inspected prior to use to ensure they are not damaged.

b. Lanyards: are flexible rope, wire rope or straps used to connect the harness to the anchorage point.
Deceleration Devices: serves to dissipate the energy from a fall to limit the energy and stress impact on a worker during a fall. Deceleration devices have a maximum deceleration distance of 3.5 feet. When calculating your fall distance, you must include the deceleration distance on the system to get an accurate distance.
    - Self-retracting lanyard: allows for freedom of movement by extracting or retracting to prevent slack in the line, but under slight tension, will lock the drum to arrest a fall. Never store an SRL with the line extended for a long period of time. Inspect before each use to ensure it locks up with tension.
    - Rip-stich lanyards: have extra webbing folded lengthwise and stitched into place so that when a fall occurs, the weaker stitching breaks, controlling the speed, and slowing the fall.
    - Shock-absorbing lanyards: the webbing is designed to stretch as the worker falls, controlling the speed and slowing the fall.

c. Anchorage: consists of a building structure and an anchorage device to attach the lanyard. Anchorage structures must be strong enough to support the force of a fall, or 5000 pounds per employee. Alternative: a system shall be designed under the supervision of a qualified person, installed and used as part of a complete personal fall arrest system that maintains a safety factor of at least two, and limits the maximum arresting force on an employee to 1800 pounds when using a body harness. The system shall be rigged to prevent free fall greater than 6 feet, prevent contact with any lower level, and bring an employee to a complete stop and limit maximum desceleration distance to 3.5 ft. Always follow manufacturer instructions for each anchorage device.

C. Vertical and Horizontal Lifelines
A lifeline is a flexible line connected to one or more anchorage points used to attach a PFAS system to increase movement and limiting fall distance.
Vertical Lifelines: connect to a set anchorage point while the lanyard moves with the worker. There is a clip (cable grab) on the lanyard that will engage when a worker falls to limit the fall.
Horizontal Lifelines: attach to at least two anchorage points on either side of the line. Depending on their geometry and sag angle, horizontal lifelines may be subject to greater loads than the impact load imposed by an attachment component, so sag should be minimal. Design, installation, and use shall be supervised by a qualified person, and special attention to tension should 1, Limit the distance the worker can fall (reduce the sag to limit fall distance) 2, minimize forces on the connectors at the anchorage (increase sag, reduces force on anchorage points).

D. Fall Rescue
- A fallen worker is in danger of suspension trauma that results in orthostatic intolerance. After a fall the body weight places pressure on the body harness straps, compressing the veins, and causing blood to pool in the lower extremities, reducing blood flow to the heart. If pressure is not reduced promptly the worker can lose consciousness within minutes. Once rescued, a fallen worker should sit upright against a wall with their knees at their chest, hugging their legs to prevent blood from flowing too quickly to the heart. After a half hour or so, the worker should slowly inch their legs out away from their chest to allow blood to slowly resume normal flow.Aided rescue: required when a

worker cannot perform self-rescue. Rescuers shall use required fall protection and equipment to rescue victim.

- Self-Rescue: a fallen worker minimizes suspension trauma by temporarily relieving pressure on their legs, or is capable of lowering themselves down.

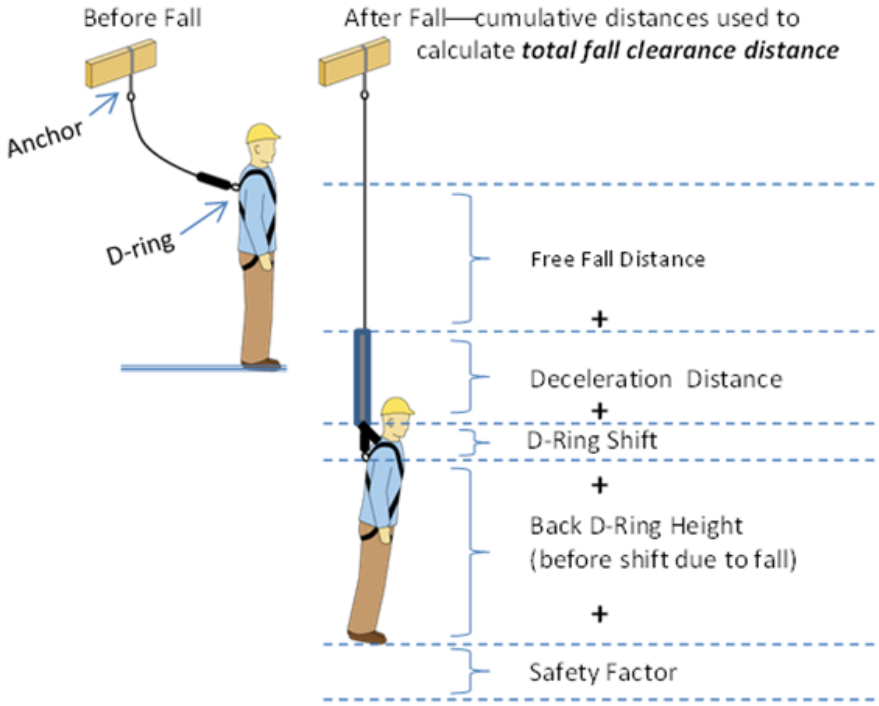
Measuring Fall Clearances

Total fall clearance is the minimum vertical distance a worker can fall without hitting a lower level during a fall. It must be calculated prior to choosing a PFAS to ensure it is effective. If fall clearance cannot be maintained, a fall restraint system may be required.

Calculate Fall Clearance:

- Free Fall Distance: Can be no more than 6 feet
  - Lanyard Length
  - Height of attachment
- Deceleration Distance: 3.5 feet max, Look on lanyard label
- Worker's height: or measure D-ring height plus D-ring shift (approx. 1 ft)
- Safety Factor: 2 ft

Assess work area to determine if there is adequate fall clearance. If not, make adjustment or use a different fall protection method.



Fall Protection Plan

A site-specific fall protection plan may be used as an alternative to conventional fall arrest systems when they are not feasible or create an additional hazard. Fall protection plans shall be developed by a qualified person and evaluated on a site by site basis with the stated purpose of prevention of injuries associated with falls. A fall protection plan shall contain:

1. Location on the job, Company Name, Date of preparation or modification of the plan, name of plan preparer, name of plan approver, and the name of plan supervisor
2. Statement of Company Policy
3. Fall protection systems to be used on the project
4. How the Fall Protection Plan is to be implemented
5. Other Fall Protection measures considered for this job
6. Enforcement
7. Accident investigation
8. Changes to the plan

The worksite shall be assessed to determine if the walking/ working surfaces have the strength and structural integrity to safely support workers. Employees are not permitted to work on surfaces that are anticipated to be unsafe until they are determined to have the strength and structural integrity for support. If a fall hazard is present appropriate fall protection methods will be developed to safely perform the task. In the event of an accident, near miss, or serious accident, an accident investigation shall be conducted.

General Industry: Walking / Working Surfaces

For some worksites, such as service work, or work on non-construction wites, employees may be required to follow guidelines for OSHA's General Industry Regulations. Fall protection is required when employees are exposed to unguarded fall hazards 4 feet or higher.

Work on Low-Slope Roofs

Temporary and infrequent tasks, such as maintenance and service work (non-construction) on flat or low slope roofs (4-12 slope or less) requires fall protection when employees are exposed to fall hazards 4 feet or greater. The type of fall protection is determined by the task's proximity to the roof edge.

For tasks performed:

A. 6 feet or less from the roof edge
   - Use conventional fall protection (guardrails, personal fall protection system, or safety net)

B. Between 6 feet and 15 feet from the roof edge
   - Conventional fall protection system; or
   - A designated area or "warning-line" system set at 6 ft from the edge

C. 15 feet or more from the roof edge
   - Continual or Frequent Tasks: Use conventional fall protection system or a designated area
   - Temporary and Infrequent Tasks: No fall protection system required but must implement and enforce a work rule: Stay 15 feet or more away from edge unless using fall protection 1910.21(b)(13)(iii)(A));

General Fall Protection Procedures

- Fall protection (guardrails, PFAS, fall restraint, or safety nets) is required for fall hazards 4 feet or greater.
- Safety rails and cables shall be secured properly to withstand 200 lbs of force.
- Employees using PFAS shall maintain 100% tie-off.

- Falling Objects: Protection from falling objects by use of hole covers and toe boards, secured to prevent material from falling through holes 1 inch or larger. Materials shall be stored away from edges to prevent falling objects.
- Holes and Openings shall be covered and secured. All floor or deck openings shall be planked over or barricaded, and deck planks secured. Elevated grated floors shall be covered to prevent material from falling through. Barricading falling object area below may also be required.
- Open steps with four or more rises shall be protected with a railing

Housekeeping: To prevent slipping and tripping hazards, good housekeeping shall be maintained, and floors shall be kept free of sharp or protruding objects, loose boards, corrosion, leaks, spills, snow and ice. Where wet processes are used, drainage shall be maintained, and false floors, platforms, mats, or other dry standing places should be provided.

*Hoist Area*s: Guardrail systems or personal fall arrest systems shall be used in hoist areas when an employee may fall six feet or more. If guardrail systems must be removed for hoisting, employees are required to use personal fall arrest systems.

Inspections: Employers shall regularly inspect walking/working surfaces to correct, repair or guard against hazardous conditions. Hazards must be guarded until corrected. Repairs involving structural integrity shall be performed or supervised by a qualified person. All surfaces must be able to support the maximum intended load.

Holes: Openings or holes 4 feet or more above the level below, including sylights, shall be covered or guardrails or PFAS shall be used to prevent falls. *Openings* including floor holes, stairways, ladderways, manholes, pits shall be protected by a guardrail on all sides, but the entrance. Temporary wall openings or chute openings less than 39 inches (99 cm) high shall be guarded.

Stairways, ladderways, + hatchways: Employees shall be protected from falling into a stairway, ladderway, or floor hole by a fixed guardrail system on all exposed sides, except at the stairway entrance. If used less than once per day and location prohibits guardrails, then hinged access door may be used. Open manholes and pit doors shall have standard railings, be protected by removable railings or be constantly attended. Hatchways and chute-floor holes shall be protected by hinged floor covers + guardrails, removeable guardrails on two sides + fixed guardrails on other exposed sides ensuring in place when not inuse, or a travel restraint system or guardrail during pass-through operations.

Dockboards: shall be capable of supporting the maximum intended load runoff protection shall be used to prevent vehicles running off the ddockboard edge, unless the employer demonstrates there is no hazard. Portable dockboards shall have handles and be secured by anchoring them in place or using equipment or deices that prevent the dockboard fro moving out of a safe position. Wheel chocks or sand shoes shall be used to prevent movement while employees are on the dockboard.

Fall protection for fixed stairways, ladder openings, hatchways, manholes, skylights, ramps, and platforms shall not be compromised. Permission for change or alteration shall be made directly to the host employer.

State + Industry Regulations

Minnesota State Regulations

SHIPS LADDERS (5207.0200)

Requirement: Employers shall replace fixed and portable ladders with ships ladders whenever possible. The angle of rise of ships ladders shall be between 50 and 60 degrees measured from the horizontal.

- Soffits: Where ladders are located one above the other, soffits shall be enclosed except where solid treads and risers are provided.
- Treads: Treads shall be uniformly spaced eight to 12 inches vertically. Tread surfaces other than steel grating shall be provided with skid resistance. Treads shall be flat steps that are a minimum of six inches wide and at least 24 inches long.
- Handrails: Handrails shall be provided on both sides of ladders and shall be placed to run parallel with stringers and be positioned 12 to 14 inches measured vertically, from the stringers. Handrail diameters shall be 1-1/4 to 1-5/8 inches outside diameter. When ships ladders serve door entrances, handrails shall continue to the door.
- Stringers: Ladder stringers shall be at least six inches in depth and permanently attached at terminations.

SHIPS LADDERS, SPECIAL REQUIREMENTS (5207.0210)

Ships ladders shall be provided in all buildings where mechanical equipment is located on the roof in order to make all equipment accessible to maintenance and inspection personnel. Ships ladders shall be placed at an angle between 50 and 60 degrees measured from the horizontal. The opening in ceilings and building roofs shall have a minimum area of nine square feet and a minimum width of two feet. No ships ladders shall be located in or pass through elevator shafts, elevator penthouses, or elevator machine rooms.

Inside a penthouse, handrails shall continue through ceiling and roof openings to a distance of 36 inches. A guardrail and intermediate rail shall be provided on all open sides with a substantial chain guard on the entrance.

WALKING, WORKING SURFACES (5207.0250)

- Labeling floor- or wall-opening covers. When floor- or wall-opening covers are used, they must be labeled, “Floor Opening—Do Not Remove,” or “Wall Opening—Do Not Remove” as applicable with lettering at least 2 inches in height.
- Displacement. Floor- or wall-opening covers must be secured against accidental displacement.
- Tripping and impaling hazards. Where employees are exposed to tripping or impaling hazards caused by projecting conduit ends, reinforcing rods, pipe ends, or similar objects, these hazards must be barricaded, guarded, or otherwise covered.
- Construction stairways. In addition to the requirements of 29 CFR 1926.501, semifinished permanent stairways or temporary stairways to a second floor are to be in place before supports or structure to the sixth floor are raised. Similarly, the supports or structure on multifloored buildings must never be more than five floors ahead of stairways.
    A. On steel frame buildings, stairways must extend to the uppermost floor that has been planked or decked. Ladders for access purposes may be used only above that point.
    B. A second means of egress remote from the prime means of egress shall be provided, for emergency use, when any multifloored structure reaches the 30-foot level or the fourth floor.
    C. Ladders which meet the requirements of Code of Federal Regulations, title 29, section 1926.450 may be used as a second means of egress.

Mechanical Code Regulations:

2015 Minnesota Mechanical Code: [B] 304.11 Guards

Guardrails shall be provided where appliances, equipment, fans or other components that require service and roof hatch openings are located within 10 feet of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches above the floor, roof or grade below. The guard shall extend not less than 30 inches beyond each end of such appliances, equipment, fans, components and roof hatch openings and the top of the guard shall be located not less than 42 inches above the elevated surface adjacent to the guard. The guard shall be constructed so as to prevent the passage of a 21-inch diameter sphere and shall comply with the loading requirements for guard specified in the International Building Code.

2015 International Mechanical Code Exception:

Guardrails are not required where permentant fall arrest/restraint anchorage connector devices that comply with ANSI/ASSE Z359.1 are affixed for use during the entire lifetime of the roof covering. The devices shall be re-evaluated for possible replacement when the entire roof covering is replaced. The devices shall be placed not more than 10 feet on center along hip and ridge lines and placed not less than 10 feet from roof edge and open sides of walking surfaces.

Training

Employee shall be trained by a competent person qualified in the following areas:

1. The nature of fall hazards in the work area;
2. The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used;
3. The use and operation of guardrail systems, personal fall arrest systems, safety net systems, controlled access zones, and other protection to be used;
4. The role of each employee in the safety monitoring system when this system is used;
5. The limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs;
6. The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection;
7. The role of employees in fall protection plans.

Documentation shall be kept and shall contain the name or other identity of the employee trained, the date(s) of the training, and the signature of the person who conducted the training or the signature of the employer. Training conducted by another employer or completed prior to the effective date of this section, the certification record should indicate the date the employer determined the prior training was adequate rather than the date of the actual training. The latest training certification should be maintained.

If there is reason to believe that any affected employee who has already been trained, does not have the understanding or skills required to recognize or minimize fall hazards, that employee must be retrained. Circumstances where retraining is required include, but are not limited to:

1. Changes in the workplace rendering previous training obsolete;
2. Changes in the types of fall protection systems or equipment to be used rendering previous training obsolete;
3. Systems or equipment indicating the employee has not retained the understanding or skill.

Fall Protection Definitions

Anchorage: A secure point of attachment for lifelines, lanyards, or deceleration devices

Authorized Person: A person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite.

Body Harness: Straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of personal fall arrest system.

Competent Person: 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.

Controlled Access Zone (CAZ): An area in which certain work may take place without the use of fall arrest systems, or safety net systems, and access to the zone is controlled.

Dangerous Equipment: Equipment, which as a result of form or function may be hazardous to employees who fall onto or into such equipment.

Deceleration Device: Any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, or automatic self-retracting lifelines/ lanyards which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.

Deceleration Distance: The additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, form the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.

Free Fall: The act of falling before a personal fall arrest system begins to apply force to arrest the fall.

Free Fall Distance: The vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/ lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/ lanyard extension before they operate and fall arrest forces occur.

Guardrail System: A barrier erected to prevent employees from falling to lower levels.

Hole: A gap or void 2 inches (5.1cm) or more in its least dimension, in a floor, roof or other walking/ working surface.

Infeasible: Impossible to perform the construction work using a conventional fall protection system or that it is technologically impossible to use any one of these systems to provide fall protection.

Lanyard: A flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting a body harness to a deceleration device, lifeline, or anchorage.

Leading Edge: The edge of a floor, roof, or formwork for a floor or other working surface which changes location as additional floor, roof, decking, or formwork sections are placed formed or constructed. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.

Lifeline: A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as means for connecting other components of a personal fall arrest system to the anchorage.

Low-Slope Roof: A roof having a slope less than or equal to 4 in 12 (vertical to horizontal)

Opening: A gap or void 30 inches (76 cm) or more high and 18 inches (48 cm) or more wide, in a wall or partition, though which employees can fall to a lower level.

Overhand Bricklaying and Related Work: The process of laying brings and masonry units such that the surface of the wall to be jointed is on the opposite side of the wall from the mason, requiring the mason to lean over the wall to complete the work. Related work includes mason tending and electrical installation incorporated into the brick wall during the overhead bricklaying process.

Personal Fall Arrest System: A system used to arrest an employee in a fall form a working level. It consists of an anchorage connectors, a body harness, and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

Positioning Device System: A body harness system rigged to allow an employee to be supported on an elevated vertical surface such as a wall and wok with both hands free while leaning.

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

Rope Grab: A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/ level locking, or both.

Roofing Work: The hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.

Safety-Monitoring System: A safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.

Self-retracting Lifeline/ Lanyard: A deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which after onset of a fall, automatically locks the drum and arrests the fall.

Steep Roof: A roof having a slope greater than 4” to 12” (vertical to horizontal)

Toe-Board: A low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.

Unprotected Sides and Edges: Any side or edge (except at entrances to points of access) of a walking/ working surface where there is no wall or guardrail system at least 39 inches (1.0 m) high.

Walking/ Working Surface: Any surface, whether horizontal or vertical on which an employee walks or works, including but not limited to, floors, roofs, ramps, bridges, runways, formwork, and concrete reinforcing steel, but not including ladders, vehicles, or trailers on which employees must be located in order to perform their job duties.

Warning Line Systems: A barrier erected on a roof to warn employees that they are approaching an approaching an unprotected roof side or edge, and which roofing work may take place without the use of guard rail, body harness, or safety net systems to protect employees in the area.

FALL PROTECTION JOBSITE CHECKLIST

Job Location:_____ **Date:**_____

FALL HAZARD IDENTIFICATION CHECKLIST

Use this checklist to help plan for fall protection control measures on the jobsite to prevent injuries related to falls and falling objects. This guidance does not supersede common sense hazard control. If exposed to imminent hazards, control measures must be taken to prevent injury.

Fall protection is required when exposed to falls 6' or greater. Employees shall be trained to identify fall hazards, and properly use and inspect fall protection equipment to prevent falls on the jobsite. Employees are responsible for anticipating and controlling fall hazards created by their work. Employees should notify site supervisors about additional hazards that may be beyond the scope.

Fall Protection Systems:

- *Guardrails: 42"(+/- 3") tall, midrail + toe kick, withstands 200lbs.*
- *Warning lines on Construction sites: Install flagged warning line 15 ft from edge around work area.*
    - *(Only for non-construction, service work that is temporary and infrequent: you may install warning line at 6 ft from fall hazard. If you are working more than 15 feet from edge of roof/fall hazards and can implement work rule to tie-off when 15 ft or closer to edge, you may be able to forego warning line. 29CFR 1910.21(b)(13)(iii)(A))*
- *Personal Fall Arrest System (fall harness, tie-off)*
    - *Full body fall harness*
    - *Retractable/ shock absorbing lanyard (connect overhead preferred)*
    - *Anchorage device rated for 5000 lbs of force*
- *Hole Covers for holes 2"+:*
    - *Support 2x anticipated load weight, secured, and labeled "HOLE"*

Systems Used on Site (Check all that apply)

- ☐ Roof Work and unguarded edges
  - Guardrails: (Parapet walls less than 39” are not considered guardrails, and additional fall protection is required.)
  - Warning Lines: Working more than 15 feet from edge, setup warning lines at 15’
  - Personal Fall Arrest Systems: Working within 15 feet from edge, use fall harness or conventional fall protection. Post signage at access point indicating “Fall Protection Required”
  - Crane Lift: Crane lift form complete
    - Construction Site:
      ___ Warning lines at 15’ ___ Guardrails ___ Personal Fall Arrest Systems
    - Service Work, temporary and infrequent (non-construction site):
      ___ Working 15’+ from edge, work rule: do not get closer than 15’
      ___ Warning lines at 6’ ___ Guardrails ___ Personal Fall Arrest Systems
      ___ Access hatch is close to edge or far from work area. Flag to guide workers towards work area and away from edge

- ☐ Hoist Area: Use guardrails and tie-off around hoist area
  - Guardrails used around hoist area with removable rail.
  - Helpers must be tied off, or stay behind guardrail or warning line (15ft).Guardrails setup around hoist area should be used around woare not present, or will be removed during hoisting operations.
  - Personal fall arrest system is setup and accessible prior to removal of guardrails.

- ☐ Hole Covers (Holes 2” or larger must be covered, secured, and marked “hole”. Prepare covers for prompt use. Inspect regularly for defects.)
  - Pipe chase covers needed
    - Location: _____ sz/qty:_____
    - Location: _____ sz/qty:_____
    - Location: _____ sz/qty:_____
  - Large hole covers:
    - Location: _____ sz/qty:_____
    - Location: _____ sz/qty:_____
  - Other hole covers.
    - Location: _____ sz/qty:_____
    - Location: _____ sz/qty:_____

- ☐ Wall Openings that are below 39” and expose employees to falls 6ft or greater, require guardrails or hole covers.
    - Location: _____ sz/qty:_____

- Location: _____ sz/qty:_____

☐ Ladder Work
  - Ladders should be type IA, or IAA, and be inspected before use.
  - Extension ladders should be secured and extend 3ft above surface.
  - Ladder access is clear and entrance is protected against falls with a z-gate or guardrail.
  - Stepladders shall be appropriate height so as not to stand on top 2 steps.
  - Ladders used near wall openings, floor openings or exposed to increase risk of fall hazards may need to take additional precautions to prevent falls, such as wearing a personal fall arrest system.

☐ Elevated work platforms (Scissor Lifts, Aerial Lifts)
  - Scissor lifts operators must be trained and familiar with lift, and must inspect before use. Keep feet on platform. Tie-off may be required if there is an increased risk of fall hazards. Tie-off overhead or to designated tie-off point.
  - Aerial lifts require aerial lift training for operators and 100% tie-off. Use SRL or restraint lanyard.

☐ Scaffolds
  - Platforms over 10 ft require fall protection:
    ___ Guardrails ___ Personal fall arrest system ___ Anchor not on scaffold
  - 4h:1w high requires bracing of structure
  - Scaffold card and daily inspections required

☐ Falling Objects
  - When working at heights prevent objects from falling and injuring people below.
    ___ Barricade ___ Tool tethers ___ Covers ___ Netting ___ Catch in Bucket

☐ Catwalks, attics, above drop ceilings, and other areas where additional precautions are required for safe access.
  - Hazards: ___Objects could fall ___ Workers could fall
  - Control Measures:
    ___ Tie-off overhead ___ Plank floor ___ Guardrails ___ Tool tethers
    ___ Barricade area below ___

☐ Walkways, Ramps: Fall hazards and slip hazards on heavy traffic walkways and ramps should be mitigated to prevent slips trips and falls.

☐ Excavations: shall be protected against fall hazards greater than 6'. Setup around perimeter to warn of hazard and prevent unauthorized access. Anything deeper than 5 ft requires sloping/trenchbox/protection
  - Trench box >6ft deep: ___ Guardrails ___ Warning lines

- Deep excavations with fall risks: ___ Guardrails ___ Warning lines
- >4ft deep requires ladder access

 Heavy Equipment exposed to fall hazards shall be physically blocked from hazard with a stop log. Spotters shall be used in busy areas. High vis vests required

Site Specific Fall Protection Plan

Overview:
NAC Mechanical & Electrical Services will be performing work that exposes employees to fall hazards six feet or greater. NAC Intends to utilize guardrails, warning line flagging, and personal fall arrest systems to protect workers from falling.

General Safety Procedures:

- Fall protection is required when exposed to falls 6 feet or greater.
- Use only designated fall protection equipment and follow manufacturer instructions for use.
- Elevated work areas are to remain clean, to prevent objects from falling below.
- If a harness or other fall protection equipment is damaged it will not be used, rather it will be replaced with one that is in good condition.
- Always be protected: continuous tie-off or 2 points of contact shall be made while transferring in and out of fall protection systems.
- All Holes 2" and greater shall be covered with heavy duty plywood, secured and marked "Hole".

Hazards:

- Working on the roof, near edges and/or other fall hazards such as holes or skylights. (6+ ft fall risk without a guardrail 39" or more (42" +/- 3") or other means of fall protection.
- Equipment means and methods: Objects falling on workers below.
- Ensuring proper assembly and maintenance of fall protection system.
- Fall risk during rigging and lifting activities.
- Safe exits in the event of emergencies.
- Prompt rescue in the event of a fall.

Hazard Control:
Engineering Controls - Physical systems and safety equipment will be prioritized on site during work to isolate hazards in the environment:

- Guardrails 42" +/- 3" tall with a midrail and a toe-kick if objects could fall and hit workers below. Guardrails must be sturdy and capable of withstanding 200 lbs in downward and outward pressure.
- Warning line system:
  - Installed at 15' from unguarded roof edge
  - Used only with Work Rule (see below)
- Hole Covers: Cover all holes with heavy duty plywood to prevent falls. Secure and mark "hole".
- Personal Fall Arrest System Anchorage: set up fall anchors ahead of time that are rated for 5000 lbs of force. Calculate the fall clearance to ensure proper placement.
- Hoist areas shall be guarded to ensure employees are protected from falls. Utilize personal fall arrest systems when removing guardrails.

Administrative Controls –Procedures and training will be developed and followed to prepare and minimize risks:

- Work Rule: All employees must be aware of and follow the site specific work rules.

- Require 100% tie off when working beyond the flag warning system set at 15 feet or closer to roof edge or other fall hazard .
- When a roof does not have a warning system installed or other fall protection means such as guardrails or safety nets, personal fall arrest systems shall be used. 100% tie off is required .
- Post signage to warn of areas requiring Personal Fall Arrest Systems/Tie-off.
- Ensure employees recognize hoist areas require tie-off.

- Installing fall protection in a safe manner.
- Review exit and rescue procedures.
- Schedule work to minimize hazard risks.
- Utilize a certified rigger to direct crane lifts and walkie talkies to help limit access near edges.

Personal Protective Equipment – physical safety equipment used for job specific tasks will block personal exposures to hazards:

- Personal Fall Arrest Systems: Harnesses, connection devices and anchorage points shall be inspected before use, and be designated for fall protection.
- During construction hard hat, safety glasses, and hi-vis vest will be worn.

Safety Procedures:

Assembling the Fall Protection System:

Fall protection shall be setup prior working on the roof. Setup guardrails according to manufacturer instructions, or, if built, ensure they meet OSHA safety standards. A warning line flagging system shall be installed at 15' from the edge. Use guardrails in areas where workers are within 15 feet of the edge. Install warning line, guardrails or combination around entire work area on unguarded roofs or around fall hazards. Face the leading edge/fall hazard and stay inside perimeter during assembly to prevent backing off an edge. Work inside the flagging does not require use of fall protection, however if workers go beyond the flagging they shall be tied off. Ensure anchorage devices are available from within the perimeter of work area.

Ensure Personal Fall Arrest Systems are planned out and are effective. Calculate the fall arrest clearance and potential swing to ensure you don't hit the ground if you fall. Stay within 15 degrees of your anchorage point to reduce swing. If you cannot meet fall clearance, utilize a fall restraint system, where workers cannot access the edge by using a retractable or connection device that does not reach the edge.

Fall Clearance Calculation

[Lanyard Length or Freefall Distance (≤6 ft)] + [Desceleration Distance (look on label of lanyard or retractable)] + [Height of worker] + [Safety Factor (≥1.5 ft)] = Distance needed to prevent hitting the ground in a fall. You need at least 17.5 ft of fall clearance with a 6 ft lanyard attached overhead.

Anchorage: Use only designated fall protection equipment in good condition, and set up according to manufacturer instructions. Ensure your anchorage is rated for 5000 lbs of force. Connect the anchorage device to a lanyard or a retractable lifeline, and connect that to a full body harness. Plan for all holes that will need to be covered, and ensure sturdy covers are available prior to making the holes.

The following general safety procedures for fall protection will be followed:

- Fall protection is required if workers can fall 6 feet or more.
- Elevated floors and work areas are to remain clean, to prevent objects from falling below.
- If a harness or other fall protection equipment is damaged it will not be used, rather it will be replaced with one that is in good condition.

- Always be protected: continuous tie-off or 2 points of contact shall be made while transferring in and out of fall protection systems.
- All Holes 2" and greater shall be covered with heavy duty plywood, secured and marked "Hole".

Equipment Means & Methods:
Only tools and equipment necessary for the task at hand shall be placed on the roof. All loose debris, tools, or equipment shall be secured from falling/ blowing off the building.

Exit Strategies:
In the event of high winds or bad weather, all elevated or roof work shall be postponed until conditions improve. If there is an emergency requiring evacuation, all work shall stop immediately and all employees shall evacuate to the designated area.

If a fall occurs, the fall victim must be rescued immediately and seek medical attention due to the risk of suspension trauma. Risk of death can occur in as little as 7 minutes, so prompt rescue is essential.

Fall Rescue Procedures:

1. Call 911.
2. Rescue fall victim. Always rescue from below when possible. Use a scissors lift when possible. If rescuing from above, all rescue personnel shall wear fall protection to prevent an additional fall.
3. If rescue is not immediate, Inform the fall victim to relieve pressure from the harness by trying to assume a sitting position if possible, pumping their legs against a wall, or using a suspension trauma relief strap. If they do not have straps, send them down something to create their own makeshift suspension trauma relief strap with a belt, rope, etc. This helps to prevent blood from pooling in the extremities and becoming toxic. Ensure they keep legs moving to prevent orthostatic shock.
4. Once rescued, get the victim into a sitting position, feet flat on the ground, hugging their knees to their chin. This prevents that toxic blood that built up in the limbs from reaching the organs too quickly. After at least half an hour the victim can slowly start to release their knee hug. This slowly introduces the blood back to the body. They must seek medical attention immediately. Not all medical responders are familiar with suspension trauma. Let them know it has likely occurred, and it is similar to .

Site Specific Procedures:

Fall Protection Help Sheet

<table>
<tr><td>Do I need fall protection</td><td>Most likely!
If you are 6 feet up without a barrier, guardrail or parapet (that is at least 39” tall), the edge is considered unguarded and you will need some sort of fall protection.
Most roofs have parapets below 39”. If pipes and other objects create a legitimate barrier, you may not need fall protection. Contact the safety coordinator with questions.</td></tr>
<tr><td>What is the easiest fall protection?</td><td>Depends on where the unit is on the roof, ease of access and ability to carry items to roof, and whether you can drill into the roof (to install anchorage)
<table>
<tr><th>Type</th><th>Pro</th><th>Con</th></tr>
<tr><td>PFAS</td><td>Easy to use
Light weight/easy to carry</td><td>Need strong enough anchor point (5000 lbs)
Roof may not allow install of anchor</td></tr>
<tr><td>Fall Restraint</td><td>Eliminates fall risk
Easy to use
Light weight/easy to carry
Anchor point (</td><td>Anchor point (3000lbs)
May need long rope + carry up
Requires proper setup of system to keep from edge</td></tr>
<tr><td>Guardrail</td><td>Eliminates fall risk
Allows for working close to edge</td><td>Heavy
Plan for length of rail
Takes time to install</td></tr>
<tr><td>Warning Line</td><td>Light weight
Easy to set up</td><td>Does not eliminate fall risk
Must rely on work rule to stay in area
Must be 15 feet + from edge, reduces work space</td></tr>
</table></td></tr>
<tr><td>How do I find an anchorage point?</td><td>1. Ask the client contact if there are existing anchors, limitations for drilling into the roof, roof type, or other large units.
2. Check Aerial view for large rooftop units
3. Locate one on day of estimate/walkthrough</td></tr>
<tr><td>Do I need an anchorage point?</td><td>If you choose to use a PFAS or Fall restraint system, then yes. They must withstand the weight listed above or have a safety factor of two (ie. To withstand double the force of a load, [the weight of person and tools/equipment] falling at x distance, with a certain length of lanyard and deceleration device).

DO USE Rooftop Units (4’x8’ and larger) that have welded attachment points for rigging.

DO NOT use these as anchorage points:
Standard Guardrails, Standard Railings, Ladders/Rungs, Scaffolding, Light fixtures, Conduit or Plumbing, Ductwork or Pipe Vents, Wiring Harnesses, Rebar, Lanyards, Vents, Fans, Roof Stacks</td></tr>
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</table>

“Anchorages used for attachment of personal fall arrest equipment shall be…capable of supporting at least 5,000 pounds (22.2 kN) per employee attached, or shall be designed, installed, and used as follows: as part of a complete personal fall arrest system which maintains a safety factor of at least two,” [29 CFR 1926.502(d)(15) and (d)(15)(i)].

HAND AND POWER TOOLS

Purpose

NAC Mechanical & Electrical Services has developed this policy to ensure the safety of employees working with hand and portable powered tools and other hand-held equipment. This program is intended to comply with the Occupational Safety and Health Administration (OSHA) Standards contained in 29 CFR 1910.241-244.

Regulatory Reference

29 CFR 1910 Subpart P - Hand and Portable Powered Tools and Other Hand-Held Equipment OSHA Publication 3080 – Hand and Power Tools

Scope

This policy applies to all NAC Mechanical & Electrical Services employees who may use hand and portable powered tools and equipment during the course of work. Employees must be able to use hand and portable powered tools and equipment safely and shall comply with manufacturer guidelines.

Responsibilities

Safety Coordinator is responsible for:

1. Ensuring that hand and portable powered tool safety measures are in place according to this program and the applicable OSHA standards;
2. Maintaining training records; and
3. Periodically evaluating program implementation.

Supervisors are responsible for:

1. Ensuring that all hand and portable powered tools and other hand held equipment used are free from defects and are working and maintained properly
2. Ensuring that tools are used in accordance with manufacturer recommendations
3. Ensuring that all affected employees have been trained
4. Ensuring that all affected employees comply with this program
5. Taking damaged tools out of service immediately if they are defective
6. Conducting periodic inspections of work areas.

Employees are responsible for:

1. Attending required training programs
2. Inspecting hand and portable powered tools and equipment for defects or possible hazards prior to use
3. Tagging any defective tools as out of service immediately
4. Reporting any defects to their supervisor immediately

All employees shall be trained in the proper use of tools prior to using hand and power tools and other hand-held equipment. Employees shall be trained in the following:

1. Recognition of the hazards associated with different types of tools and the safety precautions necessary for use
2. The PPE required during use
3. The proper use of hand and power tools and other hand-held equipment

General Safety Requirements

1. Tools and equipment shall be kept in safe condition. The following help prevent hazards associated with the use of hand and power tools:
2. Keep all tools in good condition with regular maintenance
3. Use the right tool for the job
4. Inspect each tool for damage before use
5. Never use damaged tools - take damaged tools out of service immediatel
6. Operate tools according to the manufacturers' instructions
7. Use the proper personal protective equipment (PPE)

Guards

The exposed moving parts of power tools shall be guarded. Safety guards must never be removed when a tool is being used. Belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains, or other reciprocating, rotating, or moving parts of equipment must be guarded.

Machine guards must be provided to protect the operator and others from the following:

1. Point of operation
2. In-running nip points
3. Rotating parts
4. Flying chips and sparks

Personal Protective Equipment (PPE)

Employees who use hand and power tools and are exposed to the hazards of noise, vibration, falling, flying, abrasive, and splashing objects, or to harmful dusts, fumes, mists, vapors, or gases must be provided with the appropriate personal protective equipment.

The following considerations should be evaluated at a minimum in the selection and use of PPE when using hand and portable powered tools:

1. Safety glasses or goggles must be worn at all times when using hand and powered tools
2. A face-shield may be used in addition to safety glasses or goggles to protect the face and neck
3. Composite-toe leather shoes should be worn while working with power tools to prevent injury from dropped tools
4. Hearing protection is recommended when using power tools

Before working with hand and power tools conduct an activity hazard analysis to determine if additional PPE will be needed.

Hand Tools

Hand tools are tools that are powered manually. Some examples of hand tools include anvils, axes, chisels, files, hammers, hand boring tools, planes, pliers, punches, saws, scissors, screw drivers, tin snips, and wrenches. Hazards associated with hand tools result from misuse and improper maintenance. To prevent injury, follow the guidelines listed below:

1. Hand tools shall be used for their intended purpose. For example, if a screwdriver is used as a chisel, the tip of the screwdriver may break and fly off, hitting the user or other employees
2. Inspect tools for damage prior to use
3. Hand tools shall be maintained in good condition free of damage. For example, wooden handles on tools, such as a hammer or an axe, shall be tight and free from splinters or cracks
4. Bent screwdrivers or screwdrivers with chipped edges shall be replaced

5. Always direct tools such as knives, saw blades, etc. away from aisle areas and away from other employees working in close proximity
6. Knives and scissors must be sharp; dull tools can cause more hazards than sharp ones
7. Cracked saw blades must be removed from service
8. Wrenches must not be used when jaws are sprung to the point that slippage occur
9. Impact tools such as drift pins, wedges, and chisels must be kept free of mushroomed heads
10. Iron or steel hand tools may produce sparks that can be an ignition source around flammable substances. Spark-resistant tools made of non-ferrous materials should be used where flammable gases, highly volatile liquids, and other explosive substances are stored or use
11. Keep the work area and tools clean. Dirty, greasy tools and floor may cause accidents
12. Tools shall be stored in a dry secure location
13. Carry and store tools properly. All sharp tools shall be carried and stored with the sharp edge down. Do not carry sharp tools in a pocket
14. Wear the proper personal protective equipment (PPE)

Power Tools

Power tools must be equipped with guards and safety switches. They can be hazardous when used improperly. Types of power tools are determined by their power source: electric, pneumatic, liquid fuel, hydraulic, and powder-actuated.

To prevent hazards associated with the use of power tools, workers should observe the following general precautions:

1. Read the owner's manual to understand the tool's proper applications, limitations, operation, and hazards
2. Never carry a tool by the cord or hose
3. Never yank the cord or the hose to disconnect it from the receptacle
4. Keep cords and hoses away from heat, oil, and sharp edges
5. Ensure tools are properly grounded; use Ground Fault Circuit Interrupter (GFCI) for corded tools
6. Disconnect tools when not using them, before servicing and cleaning, and when changing accessories such as blades, bits, and cutters
7. Keep all people not involved with the work at a safe distance from the work area
8. Secure work with clamps or a vise, freeing both hands to operate the tool
9. Avoid accidental starting. Do not hold fingers on the switch button while carrying a plugged-in tool
10. Maintain tools sharp and clean
11. Be sure to keep good footing and maintain good balance when operating power tools;
12. Wear proper apparel for the task. Loose clothing, ties, or jewelry can become caught in moving parts
13. Inspect tools for damage before each use. Remove all damaged portable electric tools from use and tag them: "Do Not Use"

Electric Tools

Electric tools may cause electrical burns and shocks. To prevent the user from electrocution, electric tools shall have a three-wire cord with a ground and be plugged into a grounded receptacle, be double insulated, or be powered by a low voltage isolation transformer to protect from burns and shocks. Three-wire cords contain two current carrying conductors and a grounding conductor. When an adapter is used to accommodate a two-hole receptacle, the adapter wire must be attached to a known ground. The third prong must never be removed from the plug.

Double-insulated tools are available that provide protection against electrical shock without third-wire grounding. On double insulated tools, an internal layer of protective insulation completely isolates the external housing of the tool.

The following general practices should be followed when using electric tools

1. Operate electric tools within their design limitations
2. Use gloves and appropriate safety footwear when using electric tools
3. Store electric tools in a dry place when not in use
4. Do not use electric tools in damp or wet locations unless they are approved for that purpose
5. . Keep work areas well lighted when operating electric tools
6. Ensure that cords from electric tools do not present a tripping hazard

Pneumatic Tools

Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders. Some hazards associated with pneumatic tools include noise, vibration, fatigue, and strains. Additional hazards are described below:

- The greatest hazard is being hit by one of the tool's attachments or by a fastener used with the tool. Eye protection must be worn for employees working with pneumatic tools
- Pneumatic tools must be checked to ensure that they are fastened securely to the air hose to prevent them from becoming disconnected. A short wire or positive locking device attaching the air hose to the tool must also be used and will serve as an added safeguard
- If an air hose is more than 1/2-inch in diameter, a safety excess flow valve must be installed at the source of the air supply to shut off the air automatically in case the hose breaks
- When using pneumatic tools, a safety clip or retainer must be installed to prevent attachments such as chisels on a chipping hammer from being ejected during tool operation
- Pneumatic tools that shoot nails, rivets, staples, or similar fasteners and operate at pressures more than 100 pounds per square inch, must be equipped with a special device to keep fasteners from being ejected, unless the muzzle is pressed against the work surface
- Airless spray guns that atomize paints and fluids at pressures of 1,000 pounds or more per square inch must be equipped with automatic or visible manual safety devices that will prevent pulling the trigger until the safety device is manually released
- Screens must be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers, or air drills
- Compressed air guns should never be pointed toward anyone. Workers should never "dead-end" them against themselves or anyone else

Liquid Fuel Powered Tools

Fuel-powered tools are usually operated with gasoline. The most serious hazard associated with the use of fuel-powered tools is from fuel vapors that can burn or explode and also give off dangerous exhaust fumes. Fuel must be handled, transported, and stored only in approved flammable liquid containers according to proper procedures for flammable liquids. Before refilling a fuel-powered tool tank, shut down the engine and allow it to cool to prevent accidental ignition of hazardous vapors. When a fuel-powered tool is used inside a closed area, effective ventilation and/or proper respirators such as atmosphere-supplying respirators must be utilized to avoid breathing carbon monoxide. Fire extinguishers must also be available in the area.

Hydraulic Power Tools

The fluid used in hydraulic power tools must be an approved fire-resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed. The exception to fire-resistant fluid involves all hydraulic fluids used for the insulated sections of derrick trucks, aerial lifts, and hydraulic tools that are used on or around energized lines. This hydraulic fluid shall be of the insulating type.

Operating Controls and Switches

The following hand-held power tools must be equipped with a constant-pressure switch or control that shuts off the power when pressure is released:

1. Drills
2. Tappers
3. Fastener drivers
4. Horizontal, vertical, and angle grinders with wheels more than 2 inches in diameter
5. Disc sanders with discs greater than 2 inches
6. Belt sanders
7. Reciprocating saws
8. Saber saws, scroll saws, and jigsaws with blade shanks greater than 1/4-inch wide
9. Other similar tools

These tools also may be equipped with a "lock-on" control, if it allows the worker to also shut off the control in a single motion using the same finger or fingers.

The following hand-held power tools must be equipped with a positive "on-off" control switch, a constant pressure switch, or a "lock-on" control

1. Disc sanders with discs 2 inches or less in diameter
2. Grinders with wheels 2 inches or less in diameter
3. Platen sanders, routers, planers, laminate trimmers, nibblers, shears, and scroll saws
4. Jigsaws, saber, and scroll saws with blade shanks a nominal 1/4-inch or less in diameter

The constant-pressure control switch should be regarded as the preferred device. Other hand-held power tools such as circular saws having a blade diameter greater than 2 inches, chain saws, and percussion tools with no means of holding accessories securely must be equipped with a constant-pressure switch. Powder-Actuated Tools Powder-actuated tools require special training and shall not be used unless authorized as competent by supervisor.

HEAVY MACHINERY SAFETY PROGRAM

Overview:
This Safety program addresses the operation and use of heavy equipment which will be used on jobsites. All employees who operate heavy equipment shall be trained on general heavy operation, safe work practices and company procedures for working with heavy equipment. This program will include safe work practices of the following:

- Backhoe
- Bob Cat
- Telehandler
- Snorkel Lift
- Dump Trucks
- Bull Dozers

Identified Risks
While working around or with heavy equipment NAC recognizes the following safety risks:

- Crushed by moving parts
- Falls from elevated surfaces
- General first aid exposure
- Risk of Property Damage

PPE
During use of heavy equipment personal protective equipment shall be used. At minimum safety glasses, reflective vest, hearing protection, and steel toe boots shall be required. Situational PPE shall be utilized as required:

- Hard Hat – When heavy equipment does not provide enclosed cab, if overhead lifting is required or if other jobsite conditions require one
- Dust mask – when sand, debris, demolition or other factors limit clean air quality
- Gloves – When handling materials, or working in harsh weather climates
- Fall Protection – When working above 6' within 30' of a leading edge

Working around Heavy Equipment
All employees working around heavy equipment shall be competent in basic measures needed to work alongside heavy equipment. These measures will include:

- Maintain a safe working distance and in view of those operating heavy equipment Work out
- Never stand under suspended loads or heavy equipment components
- Be familiar with hand signals to properly direct heavy equipment
- Use a flagger and highly-visible warning cones to alert oncoming traffic when working near a public roadway
- Established swing areas and blind spots before the operator works the machine.
- Never ride in or work from excavator or backhoe loader buckets.

Before Operation of Heavy Equipment:

- Read and follow the directions in the equipment operators manual
- Pay attention to safety instructions in the manual and warning labels on the equipment
- Fasten your seatbelt
- Practice with machines you are unfamiliar with before you begin to use it for its main task

- Understand how the levers and moving parts operate and what the machine is capable of
- Locate overhead and underground utility lines before beginning work.

General Safety Procedures for Heavy Equipment

- be sure that the machine is operated on a slope that the machine can handle
- Be aware of load changes when buckets are full and position them at suitable heights to keep the machine balanced when moving on elevated surfaces and in and out of trenches
- Secure unstable loads so they won't shift or fall while traveling
- Drive up and down hills, not across them
- Keep the heavy end of the loader pointed uphill. When traveling
- Carry loads close to the ground, yet high enough to clear obstacles
- Never lift loads so high or back so far that material dumps into the cab
- Operate at a speed that is appropriate for your work conditions
- Never leave the operators station when the engine is running or the lift arms are raised
- Always dig from the top of an excavation pile downward to avoid avalanches
- Don't carry tall loads near power lines
- Stay away from steep edges when operating equipment
- Use of heavy machinery in public areas should be avoided; equipment shall be trailered, or if use is necessary areas shall be barricaded and traffic signs followed

Maintaining Heavy equipment

- A daily check should be performed to make sure equipment is function correctly before use
- Any maintenance work shall be performed with the engine off, key removed, parking brake set, wheels blocked and attachments lowered or supported by an approved lift arm support
- Windows shall stay clean

Daily Equipment Checks

Before each use the following components of heavy equipment shall be inspected:
Tires – Proper tire inflation should be checked
Cab – Check side screens, roll bars before use
Safety Belt and Bar – should be checked to make sure this holds the operator in position
Grab Handles – Should be secure and allow good grip in order to climb into the machine
Steps – should be kept clean and free of mud, ice and debris to prevent falls
Attachments – Make sure attachments are mounted and fasten correctly and all pins are in place
Fluid Leaks – Check to make sure pneumatic, fuel, or other hoses are free of leaks

Safe Startup, Shutdown, & Loading Procedures of Heavy Equipment:

START UP PROCEDURES:

1. Enter only with the engine off, lift arms down and attachments on the ground
2. Face the seat with both hands on the grab bars
3. Never use the control levers as grab bars
4. Use the steps made for entering the equipment
5. Fasten your safety belt
6. Lower the safety bar if equipped
7. Make sure controls are neutral and the parking brake is set
8. Clear the area of people
9. Start the engine

10. Test all controls
    - Steering
    - Forward/ Reverse
    - Raise and lower lift arms
    - Attachment controls
    - Check brakes
    - Check horn and backup alarm if equipped

SHUTDOWN PROCEDURES:

1. Park on a level surface
2. Lower the lift arms and attachments to the ground
3. Place the controls in neutral and set the parking brake
4. Turn the engine off
5. Cycle the controls to relieve hydraulic pressure
6. Make sure the controls are locked (if equipped)
7. Remove the ignition key
8. Unbuckle the safety belt and raise the safety bar
9. Exit according to manufacturer's instructions using the steps on the loader and the grab handles
10. Block the wheels if there is a chance the loader will roll

LOADING EQUIPMENT ON TRAILERS

1. Keep bystanders at a safe distance while loading
2. Select a level surface
3. Block the wheels of the transport vehicle and the trailer
4. Use a ramp that can safely accommodate a skid steer loader
5. Back the loader up the ramp to keep the heavy end uphill. This helps prevent roll- overs.
6. Drive forward down the ramp
7. Set the parking brake, chain and block the loader so it won't move during transport

LADDERS
(1926.1053)

NAC provides ladder safety training to employees to ensure they can identify hazards related to ladder use, including: the nature of fall hazards in the work area; the correct procedures for erecting, maintaining, and disassembling fall protection systems; ladder safety and maximum intended load-carrying capacities; and the proper construction, use, placement, and care in handling of all stairways and ladders.

NAC employees shall follow these ladder safety guidelines:

- A ladder or stair way must be provided at all work points where there is a break in elevation 19 inches or greater. (A stair riser with 4 or more steps must have a railing)
- Always use 3 points of contact and face forward while climbing a ladder.
- Do not step on the top step or top cap of the ladder, and do not straddle the ladder.
- Do not walk the ladder, or attempt to adjust the ladder while you are on it.
- Do not lean beyond the centerline of your belt buckle. Avoid twisting or pushing or pulling while on the ladder.
- Ladders must have non-conductive side rails if they are used where the ladder could contact energized electrical conductors or equipment.
- Ladder shall only be used on stable and level surfaces, and shall not be used on slippery surfaces unless secured properly with slip-resistant feet or other effective means to prevent accidental movement. Ladder rungs shall be slip resistant and be free of grease and oil. Ladders must not be placed on boxes, barrels or other unstable surfaces to gain additional height.
- Ladders shall not be placed in front of doorways opening towards the ladder unless guarded or blocked.
- Ladders shall be inspected by a competent prior to use for any signs of visible defects.
    - Ladders with structural defects such as broken or missing rungs, cleats or steps; broken or split rails; or corroded components shall be removed from service by immediately tagging “DO NOT USE”, or shall be blocked. Repairs must restore ladders to original design criteria. If the ladder cannot be repaired it shall be destroyed.
    - Ladder rating capacities shall be legible and loads shall not exceed the maximum capacity.
- Portable extension (non-self-supporting) ladders shall be set on a sturdy, non-slip ground, with clear access to the top and bottom of the ladder. Ladders shall be set at a 1:4 slope, extend 3 feet beyond the landing surface, or have grab rails to extend 3 feet above the landing surface and be secured against movement while in use. Extension ladders shall have an overlap of 3 feet at the center.
- Job made ladders shall be constructed for their intended use. Cleats shall be uniformly spaced between 10 and 14 inches apart.
- Fixed ladders must be used at a pitch no greater than 90 degrees from the horizontal, measured from the back side of the ladder. Fixed ladders greater than 24 feet shall have a cage, well, ladder safety system or personal fall arrest system to protect workers from falling.

Scaffolds
(1926.451)

Scaffolds pose a risk of falling and being struck by falling objects during setup and use. Employees working on or around scaffolds and elevated work platforms shall follow all manufacturer instructions, not modify equipment in ways not approved by the manufacturer, and be trained to safely use, inspect, and identify hazards associated with their use, such as: Falls, Falling Objects, Fall Protection, Load Capacities, and Electrical Hazards.

Additional training or retraining shall occur if hazards change, the equipment changes, the work tasks or conditions change, or if an employee shows the need for further training.

- Competent Person: Scaffolding shall be inspected by a competent person prior to use and periodically throughout the work shift to ensure it is safe prior to and during use. A competent person is capable of identifying existing and predictable hazards and has the authority to take prompt corrective measures to eliminate hazards.
- Training: Scaffolding erectors must be trained by a competent person. Scaffolds shall be erected, moved, dismantled, or altered only under the supervision and direction of a competent person who is qualified and trained for such activities. Employees using scaffolding shall be trained on safe use and hazards. Only qualified and competent personnel are allowed to modify scaffolding systems.
- Scaffold Tags: The competent person shall use a tag to indicate daily inspection and that it is safe to use. Green = inspected and safe, Red = not inspected or not safe. Defective equipment shall be marked with a red tag to identify defect, and shall not be used. Employees must comply with tags.
- While working on a scaffold 10 feet or more above the ground, fall protection is required. Guardrails with including a toe board, or personal fall arrest system may be used. Ensure anchor point is effective.
- When working near overhead electrical power lines, a minimum of 10 feet of clearance must be maintained, (Clearance will increase depending on voltage).
- Scaffold must be capable of supporting at least four times the maximum load, including the weight of materials, workers and the scaffold itself. The height must not exceed four times the minimum base dimensions. Exceeding the 4:1 ratio requires additional protective measures such as securing the scaffolding to prevent tip-overs. Footings should be sound and rigid, and base plates shall be used. Always lock brakes on mobile scaffold.
- Planking should be at least 2x10's, of scaffold grade, and placed together to help keep materials and tools from falling. Choose planks that are straight grained and free of cracks, large or loose knots and other defects. Extend the planks beyond the center line of supports from 6 to 12 inches and cleat, or otherwise fasten, so the planking stays in place.
- Always use a safe means of access when climbing a scaffold, such as a fixed or portable ladder, ramp, runway or stairway, climbing on cross braces is never acceptable.
- While working on a scaffold, do not allow tools and materials to accumulate in a manner that creates a hazard. Utilize a drop zone barrier below scaffolding when possible.
- Always wear hard hats and other appropriate personal protective equipment.
- While using a mobile scaffold, be certain to lock the wheels before use. Do not ride or allow anyone to ride on scaffolding while it is being moved, unless the scaffolding is constructed of a specific alloy designed for occupied horizontal travel. All material and equipment should be

removed or secured before moving the scaffold. Do not try to move a rolling scaffold without sufficient help. Be aware of holes in floors and overhead obstructions.

651-490-9868

Ready to Use

Competent person* has inspected this scaffolding, and identified no hazards:

Inspect:

- ☐ Review labels + use according to the manufacturer's instructions.
- ☐ Supports 4x intended load. Never overload beyond rated capacity.
- ☐ Firm + stable foundation + footing with baseplates. Mudsills used on soil/ground. Wheels locked on mobile.
- ☐ Level + Plumb.
- ☐ Fully planked + secured, overlaps No gaps >1".
- ☐ ≥ 10 feet from electrical power lines
- ☐ If ≥ 4h:1w, secure or brace from collapse.
- ☐ >125 ft tall, designed by structural engineer.

Safety Reminders:

- All users shall be trained for type of scaffold!
- Assess surroundings for power lines + hazards.
- Use guardrails w/toe kick or Fall harness when ≥ 10 ft tall or gap between plank + work surface is ≥ 14inches (guardrails or fall harness – Tie-off rated for 5000 lbs force). Lock wheels on baker's scaffold.
- Do not work on platforms covered with snow, ice, or other slippery material. EXIT for lighting + high wind.
- Enter w/designated access/ ladders, not cross braces.
- Do not increase working height with ladders, buckets or blocks, etc.

DATE	Name	OK	Not OK

Display Green when

1. Inspected + deemed safe to use

2. All hazards are repaired

DANGER!

OUT OF SERVICE!

DO NOT USE

Competent person* must inspect before use.

Competent Person: _____

Phone: _____

Reason for Tag-out

Shift is Done

or

Hazard Identified

Date: _____

Describe Hazards:

Correction Required:

651-490-9868

**Competent person can ID + anticipate hazards, and has authority to make necessary changes.*

DISPLAY RED

1. After each shift, or

2. When hazards are found

Mobile Elevated Work Platforms (MEWPs)

(1926.453, ANSI A92)

Mobile Elevated Work Platforms pose a risk of falls, tip-overs, struck-by, contact with electrical power lines, and being struck by falling objects. Employees working on or around mobile elevated work platforms shall follow all manufacturer instructions, not modify equipment in ways not approved by the manufacturer, and be trained to safely use, inspect, and identify hazards associated with their use, such as: Falls, Falling Objects, Fall Protection, Load Capacities, and Electrical Hazards.

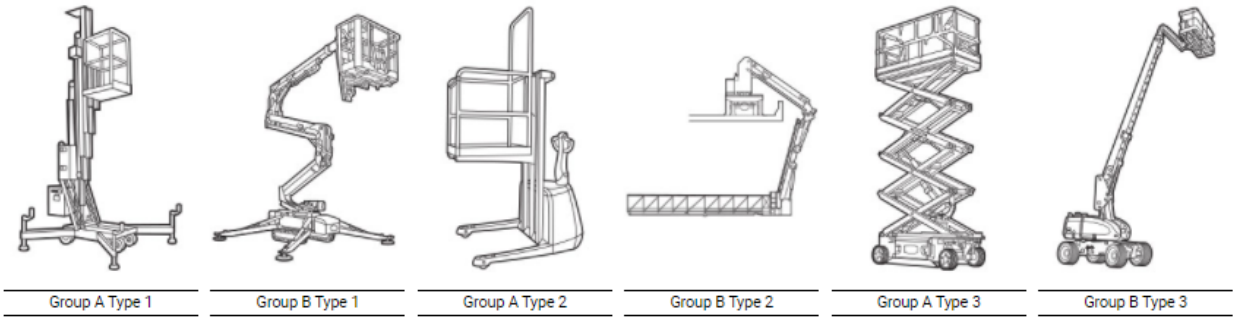
Mobile Elevating Work Platform (MEWP): are intended for moving persons, tools and material to working positions, consist of at least a work platform with controls, an extending structure and a chassis.

MEWPs are classified into two groups:

- Group A: MEWPs with platforms that move vertically but stay inside the tipping lines
- Group B: All other MEWPs, typically boom-type MEWPs where the platform extends past the machine's chassis.

Under each group, they are then classified into types:

- Type 1: Can only be driven in the stowed position
- Type 2: Can be driven elevated but is controlled from the chassis
- Type 3: Can be driven elevated but is controlled from the work platform



<u>Mobile Scaffolding and Elevated Work Platforms (Scissor Lifts + Aerial Lifts)</u>

Personnel lifts including scissors lifts, vehicle mounted aerial lifts and man boom lifts are designed to help employees reach the work area, and all manufacturer guidelines need to be followed when working on or operating lifts.

- Operators shall be trained on the safe use, operation, and inspections of elevated work platforms. Review the manufacturer's operating manual and familiarize yourself with the lift's operations prior to use. Inspect lifts before use. Do not use if fluids are leaking or if damaged.
- Lifts should be inspected annually according to manufacturer instructions. Look for the inspection sticker to identify last annual inspection.
- Inspect the area for hazards prior to operation. Look for overhead obstructions and ground hazards like holes, slopes, or debris. Take measures to eliminate or mitigate hazards.

- Do Not exceeding lifting capacities, boom limits, or basket load limits.
- Do not use devices such as ladders, stilts, or step stools to raise the employee above the guardrails. Keep feet on the platform floor as this may affect the center of gravity and expose employees to falls.
- Maintain at least ten feet distance from overhead electrical power lines.
- Maintain a view of pathway, or use a spotter when necessary, and operate lift slowly, avoid driving on inclines, and follow manufacturer's safe operational procedures.

Aerial Lifts + Elevated Work Platforms

- A personal fall arrest system is required on aerial lifts/boom lifts, and in man baskets. Mid rail chain/ gate shall be closed before operating
- Set brakes and extend outriggers on aerial lifts and elevated work platforms when required according to manufacturer instructions to prevent tip-overs.
- Man baskets used on forklifts must be authorized and baskets must be compatible with lift.
- Be aware of environments where risks of being caught-between or struck-by are present and to stay clear of moving and rotating objects.
- Boom lift should not be moved with the boom elevated.

Scissor Lift Safety

- Scissor lifts are considered "scaffolding" according to OSHA.
- Inspect your lift prior to use, and inspect the area in which you will be working including overhead obstruction, potholes or other debris that may reduce your safety. Prior to operation, employees review and test the controls to move lift up and down, forward and backwards to demonstrate operability.
- Always keep your feet on the platform of scissor lifts and follow manufacturer instructions. If guardrails cannot maintain effective fall protection, utilize personal fall arrest system to protect against falls. Never stand on the railings of a lift, or use a ladder or surface to elevate you.
- Always ensure the chain or gate his latched to prevent falls.
- Keep equipment and attachments inside the lift unless approved by the manufacturer. Ensure you balance items to keep the center of gravity even.
- Keep the lift clean to prevent tripping or falling objects.
- If working near an open edge, create a stop barrier to prevent lift from getting too close to the edge. Tie off outside of lift with fall harness for additional precautions.

SUBCONTRACTOR PRE-EVALUATION

OVERVIEW

Good communication is essential in maintaining a safe work environment for clients, employees, and subcontractor employees. NAC's Subcontractor Pre-Evaluation program establishes guidelines for subcontractors working under the supervision of NAC and aims to provide:

- A safe working environment
- Communication to improve safety and identify expectations
- Guidance on relationships with outside contractors
- Clear expectations for training requirements and hazard identification and control

PREQUALIFICATION

Depending on the jobsite and its working experience with other subcontractors, NAC may require its new subs to complete a Subcontractor Pre-evaluation Form.

The prequalification will be reviewed by NAC's and judged on lagging indicators, such as OSHA logs, TRIR, DART, and EMR rates form the past 3 years, along with subcontractor's safety program and training.

The goal of the prequalification is to ensure the subcontractor is qualified to perform work with NAC, and does not subject NAC to unacceptable risk. Subcontractors shall have the appropriate:

- Job skills and required training
- Knowledge, experience and expertise
- Equipment
- Any permits, licenses, certifications, or skilled trades people necessary to be capable of perform the work safely
- Safety performance and required training

The contractor must be willing and able to provide a current certificate of insurance for workers' compensation and general liability coverage with the contracting company.

JOBSITE REQUIREMENTS

During the contract work, NAC will establish principles for working with its subcontractors at its jobsites and ensure the following:

1. Subs will be included in kick off meetings, jobsite meetings, and safety orientations.
2. Subs will be included in toolbox talk meetings, jobsite safety evaluations, and activity hazard analysis (AHA), and safety accident / incident investigations.
3. Subs will be informed / follow specific jobsite safety procedures prior to working on the jobsite. NAC shall also make sure second tear subcontractors do the same.
4. Access to contractor work areas by unauthorized subcontractors and pedestrians will be prohibited.
5. Monitoring the subcontractor's compliance with the contract throughout the duration of the work. When evaluating contractor work during the project, any negligent or unlawful act or condition in violation of safety standards or requirements shall be identified in writing and provided to the subcontractor's designated representative and contractor's home office. If an

unsafe act, condition or violation creates an imminent danger situation or risk of serious injury, immediate steps shall be taken to stop the hazard, and report it to the subcontractor's designated representative and NAC management. Work that is in violation of regulations will not be allowed to continue.

6. Documentation of all discussions, including place, time, and names of contractor employees in attendance shall be completed.
7. Loaning or sharing of tools and equipment to outside contractors and their subcontractors shall be prohibited. The subcontractors are required to provide the necessary tools and equipment. If equipment is to be shared on the jobsite the Contractor Equipment Release Form shall be distributed prior to use.

SUBCONTRACTOR REQUIREMENTS

During the contract work, the subcontractor will be expected to:

1. Have a designated site safety contact present and attentive to the work being carried out at the jobsite.
2. Ensure that all subcontractors are abiding by the terms of this plan and the contract.
3. Provide its employees with proper PPE, including but not limited to, safety glasses, hard hat, high-visibility vest, ear plugs, respiratory protection if needed, fall protection equipment and hole-covers/falling object prevention equipment, GFCI equipped cords.
4. Provide training to its employees required based on tasks, equipment, and hazards.
5. Establish necessary safe practices to permit work under operating conditions without endangering this company's associates and property. This includes but is not limited to barricading, sign-posting, and fire watches.
6. Make sure that any equipment, chemicals, or procedures used by the contractor to perform contracted work meet all OSHA requirements including having MSDS sheets onsite.
7. Be held responsible and accountable for any losses or damages suffered as a result of contractor negligence.
8. Provide its employees with proper medical care and first-aid treatment.
9. Use only the designated entrances and be sure workers are identified with proper badge or ID credentials while working in required facilities.
10. Provide supervisors and employees who are competent and adequately trained, including training in all health and safety aspects of the work involved in the contract.
11. Provide all tools and equipment for the work, including personal protective equipment (PPE), and ensure the equipment is in proper working order and employees are instructed in its proper use.
12. Maintain good housekeeping in the workplace.
13. Notify NAC immediately of any OSHA recordable injury or illness to contractor employees or subcontractor employees occurring while on the site. Provide a copy of each incident report to the designated representative.

SUMMARY OF PROCEDURES

NAC expects all subcontractors to cooperate with host client site and NAC safety requirements. After conclusion of the contract work, the Project Manager shall complete a post-project assessment of all subcontractors' safety performance to be used for future reference, with a recommendation on whether or not to re-hire the contractor.

Subcontractor Questionnaire

Please provide the following information to qualify your safety performance.

1. Company Information

Subcontractor Name				Date	
Address					
Main Contact Name/Title		Phone		Email	
Safety Contact		Phone		Email	
Other Contact/Title		Phone		Email	
Type of Work Performed					

2. **Safety Indicator Rates:**

YEAR	EMR Rate	Fatalities	Lost Work Day Rate	Total recordable incident rate (TRIR)	Days away restricted transferred (DART)	LOST Work Day Case Rate	Avg. # of employees

Note: injury rates = (injury numbers from OSHA log x 200,000) / total # hours worked

3. Citations

Have you received any OSHA or other government citations in the past three (3) years? If so, please attach documentation with citations and a letter of explanation describing corrective actions taken.

_____**Yes** _____**No**

4. Safety Program

Does your company have a written "Safety AWAIR Program" including a mission statement, policies and procedures?

_____**Yes** _____**No**

Does your company investigate incidents, accidents and near misses?

_____**Yes** _____**No**

Does your company have a safety committee?

_____**Yes** _____**No**

Does your company conduct regular site inspections to identify and mitigate hazards?

_____**Yes** _____**No** **Frequency:** _____

Please check the written programs included in your safety program:

	Asbestos Abatement/Awareness		Lead Abatement
	Bloodborne Pathogens + First Aid/CPR		Lockout/Tagout
	Company Safety Policies/Rules		New Hire Safety Training
	Confined Space		Pre-task Hazard Analysis, JHA, AHA
	Electrical Safety Policies		Personal Protective Equipment
	Emergency Action Plans		Respiratory Protection Program
	Fall Protection Safety + Training		Scaffolding Training
	Fire Prevention/Extinguisher use		Scissor Lift and Aerial lift Training
	Forklift and Lull Training + Certification		Silica
	Hazard Communication, SDS Book, GHS		Substance Free Workplace
	Hot Work Program		Trenching and Excavation Safety Training
	Injury Investigation and Record Keeping		

Any others relevant to your work, not listed above? _____
_____
_____
_____

5. **Training:** How often do you conduct safety training for employees? _____
_____
_____

6. **Professional Staff**
Does your firm employ or use professional safety & health staff?

_____**Yes** _____**No**

Outside safety consultant used.
Contact: _____Accreditations: _____ Ph:_____

In-house safety professional on staff. # Full Time: _____ # Part Time: _____
Accreditations:

Do your foreman have "OSHA 10-hour" and/or "OSHA 30-hour"

_____**Yes** _____**No**

Are Foreman certified CPR/First Aid?

_____**Yes** _____**No**

7. **Documents:** ****Please attach additional documents as necessary.

EQUIPMENT USE RELEASE FORM

To be completed when allowing other contractors to use NAC equipment.

Date: _____

Contractor Authorized Representative: _____

Contractor Company Name: _____

Contractor Address: _____

NAC Project Manager: _____

Jobsite Name: _____

Equipment To Be Used: _____

At the request of an authorized representative of the contractor, the equipment described above will be used by NAC and the contractors' employees. NAC requires the contractor's employees to be trained in the safe use of the equipment. The contractor must provide safety equipment for their own employee's use as required for the equipment being released.

NAC makes good faith effort to ensure the safety and integrity of all equipment with regular inspections, however the equipment shall be inspected by the contractor employees before use. If defects are found, equipment shall be removed from service until repairs are made, as approved by NAC.

By signing this agreement you agree to hold harmless NAC from any and all liabilities, damages, claims, fines, or causes of actions that may come from your use of this equipment.

Accepted By:

Contractor Representative Signature: _____ Date: _____

Contractor Site Supervisor: _____ Date: _____

Contractor Representative agrees to ensure all information in this agreement is communicated with the Contractor Site Supervisor and other contractor employees who will use the equipment. All contractor employees shall be trained to use equipment, adhere to all safety requirements, and use safety equipment as required. Any damage, incidents or injuries shall be reported to NAC immediately.

TRENCHING AND EXCAVATING (1926 Subpart P)

Prior to performing any excavation work contact the Local or State one call number to locate underground utilities (call 811 before you dig, or visit gopherstateonecall.org).

Utility installations, such as sewer, telephone, fuel, electric, water, or any other underground installations that may be expected to be encountered during excavation work, shall be identified prior to opening an excavation. Once open, underground installations shall be protected, supported or removed as necessary to safeguard employees.

Employees working around trenches shall be trained on basic trench safety, heed all warnings, and shall not enter excavations without authorization and training on hazards.

Employees in an excavation or trench shall be protected from cave-ins by removal from excavation, or an adequate support or protective system. Any excavation that is five feet deep or more shall be:

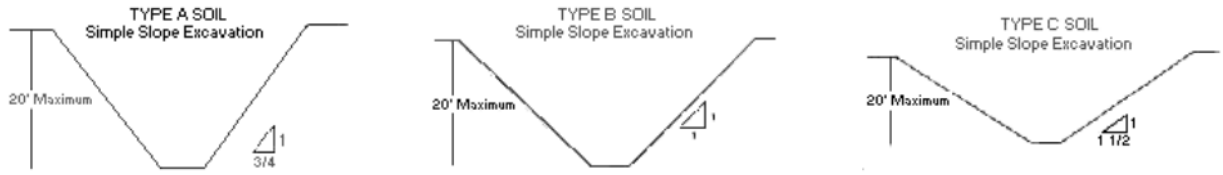
1) Properly sloped according to the soil type
2) Properly shored; and/or
3) Properly shielded (trench box), as recommended by OSHA.

Any excavation that is 20 feet or more deep shall be designed by an engineer. Never dig more than 2 feet below a trench box or support without protection.

To determine soil type, a visual and physical test of the area and soil is required to find the appropriate slope.

1. Visual test: Check the appearance of the entire site and nearby structures. Consider weather and water accumulation, crack lines or fissures, vibration, utility lines and nearby traffic.
2. Thumb Penetration Test: Slightly compress soil into a ball and attempt to push your thumb into it. If it is easy to dent and your thumb sinks past your knuckle, it is most likely type C soil. If it is difficult to insert your thumb and you make a slight mark, it is most likely type A soil.
3. Dry Strength Test/Fissure Test: Take an undisturbed chunk of dirt, does it stick together or fall apart when you attempt to break it up? If it breaks into some large clumps that do not break down further, it would be considered unfissured.
4. Plasticity test: Roll moistened soil into a thread (pencil thickness). If you dangle it, and it does not fall apart, it is considered cohesive.

SOIL SLOPE



- Keep excavated materials (spoils) a minimum of two feet from the edge of the trench. Failure to keep spoils two feet back from the edge essentially causes the top of the spoils pile to become the top of the trench, increasing your depth and therefore requires slope adjustment for the new depth.

- In trenches more than four feet deep, locate adequate means of exit. Such as ladders, or constructed steps, or ramps used solely for egress, so they can be reached in no more than 25 feet of travel from anywhere in the trench.
- Keep heavy loads of all kinds as far from the trench as possible.
- Do not allow water, rain, ground water, or surface water to accumulate in a trench, water reduces soil stability and shall be pumped out.
- Daily inspections of excavations and the adjacent areas and protective systems shall be made by a competent person prior to the start of work and as needed throughout the shift. If evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions are found; exposed employees shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.
- Never touch a piece of excavation machinery while it is in operation, and always stand in view of the machine operator and out of the way. Never stand at the edge of the excavation or under the shovel.
- In locations where oxygen deficiency or gaseous conditions are possible, the air in excavations shall be tested.
- Unattended excavations must be lighted, barricaded, and marked “danger” with signs to keep non-workers away from the trench, particularly at night.
- When excavating near traffic areas safety vests shall be worn by all employees involved.
- Full-bodied safety harness will be used for extreme conditions.
- Head protection shall be required of everyone at the job site .

Section III

Environmental, Health and PPE Programs

Environmental Programs

1. Asbestos
    a. Asbestos Hazard Concern Form
2. Lead Safe Work Practices
    a. Lead Abatement Form
    b. EPA Lead Rules
    c. Lead Renovation Notice
    d. Lead Pre-Renovation Form
    e. Lead Recordkeeping Checklist
3. Silica Exposure Control Plan
4. Waste Reduction and Recycling

Health + Personal Protective Equipment

5. Bloodborne Pathogens (BBP)
    a. BBP Exposure Incident Report
6. First Aid Injuries
    a. Emergency and First Aid Guide
    b. Heat Stress and Cold Stress
7. Hazard Communication + Right to know
8. Noise Exposure and Hearing Protection
    a. Noise + Vibration Work Permit
9. Personal Protective Equipment (PPE) + Eye Safety
    a. PPE Assessment Checklist
    b. PPE Hazard Assessment Checklist
10. Respiratory Protection Program
    a. Voluntary Use of Respiratory Protection Form

NAC
Mechanical ♦ Electrical ♦ Fabrication
Building Technology ♦ 24 Hour Service

ASBESTOS

Health Effects

Asbestos enters the body when microscopic fibers in the air are inhaled while breathing or smoking. Asbestos can also be ingested by eating food in areas containing asbestos fibers. Once in the body, asbestos becomes embedded in tissue, and cannot be removed. It is thought to physically disrupt cell function causing cancerous growths and other diseases over time. It may take up to 30 years for symptoms to arise. Symptoms of asbestos exposure include the following:

Acute (abrupt , severe symptom onset): Shortness of breath, chest or abdominal pain, or irritation of the skin and mucous membranes.

Chronic (gradual, long term symptom onset): Breathing difficulty, dry cough, broadening and thickening of the ends of the fingers, bluish discoloration of the skin and mucous membranes, Asbestosis, Lung Cancer and Mesothelioma.

General Procedures

Employees who may encounter asbestos will be trained on its locations and instructed on how to prevent exposure by using protective equipment and environmental controls. NAC will help ensure employees understand policies so they can effectively follow the policies to prevent exposure:

- Follow company rules when working in asbestos exposure areas.
  - Never work in or enter asbestos areas without proper PPE or training
- Use all personal protective equipment provided by NACs.
  - Respiratory protection is specific for asbestos and your typical respirator will not provide protection against asbestos fibers.
- Follow all rules regarding hygiene before taking breaks or after a work shift.
  - Wash hands after potential exposure and prior to eating or smoking
- Follow all company rules on where to change clothes before and after work.
  - Always remove contaminated clothing before leaving the area and dispose of according to site guidelines.
  - Never wear contaminated clothing home.
- Know what to do with PPE following completion of the job or work shift.
  - Asbestos PPE should not be stored with other PPE to prevent cross contamination.
- Understand how to clean, test, use, and maintain a PPE.

Exposure

Asbestos is a naturally occurring type of mineral that is defined by the way the rock breaks apart in fibers. There are six main types of asbestos substances that belong to either the serpentine or amphibole mineral families that produce a fiber-like material used for its resistance to heat, corrosion and chemicals. Asbestos is found in building materials such as shingles, floor tiles, cement pipes, roofing felts, insulation, ceiling tiles, fire-resistant drywall, and acoustical products. Asbestos construction work is divided into four classes:

Class I - Activities involving removal of thermal system insulation (TSI) and surfacing ACM and presumed asbestos-containing material (PACM).

Class II - Activities involving the removal of ACM which is not TSI or surfacing material. Includes, but is not limited to, removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III - Repair and maintenance operations, where ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed.

Class IV - Maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, III activities.

Asbestos is typically not a hazard to an environment if the asbestos is in good condition and it has not been modified or disturbed from its original condition. Asbestos becomes hazardous if it becomes airborne or if it contaminates drinking water or other fluids which may come in contact with the body. Some potential warning signs of asbestos exposure to an environment include:

- Debris on Surfaces
- Hanging Materials
- Dislodged Chunks

Protective Methods

If there is concern about asbestos in a work environment that may be disrupted and become hazardous, contact your supervisor and complete a Hazard Concern Form for documentation. NAC will notify the owner of the building or other responsible parties. When asbestos removal is within the scope of NAC's work, we will hire a licensed, qualified professional to conduct the abatement.

If an employee is found to be working in an environment with exposed asbestos, the following precautions should be followed:

- Exposure assessments monitoring should be conducted before entering the space
- Methods of compliance such as engineering controls and proper work practices should be obeyed
- Protective clothing and proper respirators should be warn and disposed of or sanitized when finished
- Proper housekeeping should be maintained in the environment
- Medical surveillance should be kept
- Proper disposal of asbestos should be maintained
- Record keeping should be maintained during and following the abatement

Proper documentation and notification of the exposure to asbestos ensures that the abatement and other handling operations of asbestos comply with OSHA and EPA regulations. The attached form will help insure that legal documentation of asbestos exposure will be kept and that the proper party has been notified of the exposure.

ASBESTOS HAZARD CONCERN

Issued to:_____ Date:_____

From:_____ Contact number:_____

NAC has encountered *potential asbestos containing material* in a work area and requests your cooperation in assessing this hazard.

SITUATION

REQUESTS:

If these requests cannot meet your needs please notify us by the following date:_____

OTHERWISE THE FOLLOWING PRECAUTIONS WILL BE TAKEN:

Thank you for your cooperation.

Sincerely,

Stephanie Hagen
Safety Coordinator
shagen@nac-hvac.com
651.200.3024

LEAD SAFE WORK PRACTICES

Procedures

If it has been determined that employees are exposed to lead above the action level (30 µg/m^3, 8hr TWA) on a jobsite, an initial assessment will be completed to identify exposure sources and methods of control. Exposure shall not exceed the PEL (50 µg/m^3, 8hr TWA) Evidence of lead exposure will be evaluated, such as:

- Any information, observation or calculation that indicates employee exposure to lead
- Any previous measurements of airborne lead
- Any employee complaints of symptoms attributable to lead exposure
- Objective data regarding materials, processes or operations
- Air monitoring and sampling

NAC provides training for employees who are exposed to lead on jobsites. Initial training will be provided upon hire, and annually, thereafter. Training will include the following:

- Hazard determination, including exposure assessment
- Engineering and work practice controls: Use wet cutting methods and vacuum attachments.
- Respiratory protection: follow respiratory program when required to wear respirators.
- Protective clothing and equipment: employees shall wear protective equipment including
- Housekeeping: Use wet cleaning methods and do not dry-sweep dust. Use Hepa Vacuums.
- Hygiene facilities and practices: employees shall maintain good hygiene. Wash hands and face at the end of each shift, and prior to eating, drinking, smoking, shower if able, and change into clean clothes, wash soiled clothes separately, and use wet cleaning methods to prevent cross contamination and exposure.
- Medical surveillance and provisions for medical removal: exposure
- Training
- Signs
- Recordkeeping

Health Effects

Lead enters the body when lead particles are inhaled. A significant portion of the lead inhaled or ingested gets into the blood stream and can become circulated through the body and stored in various organs and body tissues. Lead can also be ingested by eating food in areas containing Lead dust. Once lead has embedded itself into your body, it cannot be removed. Symptoms of lead exposure include the following:

Acute (short term): loss of appetite, nausea, vomiting, stomach cramps, constipation, difficulty in sleeping, fatigue, moodiness, headache, joint or muscle aches.

Chronic (long term): Permanent breathing difficulty, dry cough, and severe damage to the blood forming, nervous, urinary and reproductive systems.

Medical Surveillance 1926.62(j)

Employees exposed to lead at or above the action may undergo initial medical surveillance consisting of biological monitoring in the form of blood sampling and analysis for lead and zinc protoporphyrin levels. A medical surveillance program is available to employees exposed by the employer at or above the action level for more than 30 days in any consecutive 12 months. The Medical surveillance program provides biological monitoring at least every 2 months for the first 6 months, and every 6 months thereafter. NAC will notify employees whose blood lead levels are at or above 40 [mu]g/dl, that the program requires temporary removal with Medical Removal Protection benefits, whenever blood lead levels reach or exceed 50 ug/dl, at which point follow-up blood sampling will be provided within 2 weeks of 50 ug/dl result. Additionally, if symptoms develop that are commonly associated with lead intoxication and there is occupational exposure, employee will be provided a medical exam.

Exposure

In building construction, lead is frequently used for roofs, cornices, tank linings and electrical conduits. It is also found in plumbing applications where soldering tinplate and copper pipe joints is needed. Significant lead exposures can also arise from removing paint from surfaces previously coated with lead-based paint, such as in bridge repair, residential renovation and demolition.

Some of the following operations are examples of work processes that generate exposure to lead toxins:

- Flame-torch cutting, welding, the use of heat guns, sanding, scraping and grinding of lead painted surfaces in repair
- Reconstruction, dismantling and demolition work.
- Abrasive blasting/ drilling of structures containing lead-based paints.
- Use of torches and heat guns, and sanding, scraping and grinding lead-based paint surfaces during remodeling or abating lead-based paint.
- Maintaining process equipment or exhaust duct work
- Lead Used in Plumbing: Lead and Oakum joints are still found in cast iron pipe joints. Every effort should be made to replace with a non-toxic substitute for lead, to reduce lead exposure to the employee.

Protective Measures

Engineering Controls: Reduce employee exposure in the workplace either by removing or isolating the hazard or isolating the worker from exposure through the use of other means which include:

- Mechanical ventilation used to control lead exposure.
- Isolating areas exposed with lead partials (use poly or other containment barriers)
- The use of water while disturbing lead to limit dust from forming
- Vacuum dust particles before they can become airborne with aid of a HEPA Vacuum

Work Practice Controls: reduce the likelihood of exposure by altering the manner in which a task is performed. Some of these practices include:

- Post signage indicating the presense of lead
- Maintaining separate hygiene facilities for workers exposed to lead toxins
- Requiring proper housekeeping and clean up measures
- Rotate tasks involving lead exposure to different employees so exposure time is reduced

- Wear and maintain proper PPE such as disposable coveralls, booties, respiratory protection and eye protection. Respirators may be required when exceeding the PEL. Follow all respiratory program requirements, including completion of a medical questionnaire and a fit test
- Dispose of lead toxins in the proper way (This includes PPE clothing)

Training & Documentation

Proper documentation and notification of the exposure to lead ensures that the abatement and other handling operations of lead comply with OSHA and EPA regulations. The attached form found in section (Lead Hazard Concern Form) will help insure that legal documentation of lead exposure will be kept and that the proper party has been notified of the exposure.

Any NAC employee conducting work in an environment with lead exposure shall be certified (having taken an 8 hour EPA lead training course) or be occupied by at least one representative directing work activities in the lead exposure areas. Otherwise a certified subcontractor shall assist NAC with these work activities.

In some cases if the jobsite has a lead exposure and will be later occupied by a pregnant women or child under 6 years of age for more than 3 hours per week, then additional measures shall be taken defined by the EPA as part of the "Renovate Right Program" see the following sections of this safety manual regarding these procedures.

- EPA Lead Policies
- Lead Renovation Notice
- Lead Pre Renovation Form
- Lead Recordkeeping Checklist

Lead Used in Plumbing

Lead and Oakum joints are still found in cast iron pipe joints. Every effort should be made to replace with a non-toxic substitute for lead, to reduce lead exposure to the employee.

LEAD HAZARD CONCERN

Issued to:_____ Date:_____

From:_____ Contact number:_____

NAC Mechanical and Electrical Services has encountered lead in a work area and requests your cooperation in assessing this hazard:

SITUATION:

_____

_____

_____

_____

REQUESTS:

_____

_____

_____

_____

If these requests cannot meet your needs please notify us by the following date:_____

OTHERWISE THE FOLLOWING PRECAUTIONS WILL BE TAKEN:

_____

_____

_____

_____

Thank you for your cooperation.

Signature_____

NEW EPA LEAD POLICIES – EFFECTIVE APRIL 10TH 2010

Overview:

Anyone who is paid to perform work that disturbs lead based paint in housing and child-occupied facilities built before 1978 may be required to participate in new work guidelines set by the EPA for Lead abatement work.

What work is affected by the rules?

- Buildings built before 1978 which includes the following:
- The housing or building has been determined to have lead based surfaces and is occupied by children under the age of six or by a pregnant women.

What Work is not affected by the rules?

- Buildings built in 1978 or after or buildings built before 1978 where:
- Work consists of minor repairs that disturb less than 6 square feet of painted surfaces per room for interior activities or less than 20 square feet of painted surface for exterior activities.
- Housing has been determined free of lead-based paint by a certified inspector or risk assessor.
- Housing is a zero-bedroom dwelling (studio apartments, or dormitories)
- Housing is for the elderly or disabled and no children under six reside or are expected to reside there.
- If the owner acknowledges that the renovation firm will not be required to use work practices contained in the EPA Lead rule.

What is required by the contractor when rules do apply?

1. **Distribute a Lead Pamphlet** to the owner/ tenant before the work begins an obtain a signature conformation from the owner/ tenant or a mail receipt that the lead pamphlet has been distributed.
2. **Post Signs** in main areas describing the renovation details if the renovation is in a child occupied facility. Extra lead pamphlets should be made available either on site or referenced where the information can be obtained.
3. **Contain the work area** prior to the renovation so that no dust or debris leaves the work area while the renovation is being preformed. All objects in renovation areas should be removed or covered with plastic. Doors, windows, and duct opening should be closed and covered to prevent dust from escaping. Walls & floor should be covered in plastic extending 6' beyond the renovation area.
4. **Work practices prohibited** while working inside the renovation are include: open-flame burning or torching of lead based paint, use of machines that remove lead based paint though high speed operation unless machines use HEPA exhaust control.
5. **Contain waste** in heavy plastic bags to prevent dust and debris from escaping while stored in the renovation area and while transporting to waste bins. Make sure tools are cleaned before removing from the area.
6. **Clean the work area** until all dust and debris and residue is removed from the area. Space should be vacuumed or wiped down starting on the walls near the ceiling working towards the floor
7. **Maintain documentation**- Fill out, NAC Lead Pre Renovation Notice, NAC Lead Pre Renovation form, and NAC Lead Recordkeeping Checklist. (see forms below) Forward paper work to the NAC Safety Coordinator.

Stephanie Hagen, Safety Coordinator
1001 Labore Industrial Court, Suite B
Vadnais Heights, MN 55110

651-200-3024 *Direct*
651-280-8265 *Cell*
shagen@nac-hvac.com

Renovation Notice

Obtain your free copy of the *Renovate Right Pamphlet* by contacting NAC directly, or here:
https://www.epa.gov/sites/production/files/documents/renovaterightbrochure.pdf
Remodelar Correctamente: Guia de Practicas Acreditadas Seguras Para Trabajar Con Plomo Para

Building Location:

Renovation Activity *(e.g. electrical, plumbing)*

Location *(e.g. lobby, recreation area)*

Expected start date: _____ Expected end date: _____

Because this is an older building, built before 1978, some of the paint disturbed during renovation may contain lead. Lead Safe Work Practices will be utilized to reduce the risk of lead exposure during renovation. If you have questions or concerns, please call us at 651-200-3024.

Occupants must be notified of renovations in homes and child occupied facilities built before 1978. The EPA Lead Pamphlet shall also be provided to owners/adult representatives and occupants. This notification may be posted in common areas, or be hand delivered or sent by certified mail.

Stephanie Hagen, Safety Coordinator
1001 Labore Industrial Court, Suite B
Vadnais Heights, MN 55110

651-200-3024 *Direct*
651-280-8265 *Cell*
shagen@nac-hvac.com

Record of Renovation Notice

Tenants, owners, and owners/adult representatives of child-occupied facilities built before 1978 have been notified of the scheduled renovation, and have been provided with the *Renovate Right Pamphlet,* or given the information to obtain their free copy of the pamphlet.

https://www.epa.gov/sites/production/files/documents/renovaterightbrochure.pdf

Project Location

Address

*Owner of building:*_____ *Number of dwelling units:* ____

Owner received Renovate Right Pamphlet? Yes No

Notification Delivery Method

- *Hand delivered*
- *Delivered to mailboxes*
- *Certified Mail*
- *Posted in common areas*

_____ _____

Name of person delivering/posting *Delivery Date*

_____

Signature

Stephanie Hagen, Safety Coordinator
1001 Labore Industrial Court, Suite B
Vadnais Heights, MN 55110

651-200-3024 *Direct*
651-280-8265 *Cell*
shagen@nac-hvac.com

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Building Location:

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Project Location

Address

*Owner of building:*_____ *Number of dwelling units:* ☐

Owner received Renovate Right Pamphlet? ☐ Yes ☐ No

Notification Delivery Method

- ☐ *Hand delivered*
- ☐ *Delivered to mailboxes*
- ☐ *Certified Mail*
- ☐ *Posted in common areas*

_____ _____

Name of person delivering/posting *Delivery Date*

_____

Signature

Lead Pre Renovation Form

To document compliance requirements of the Federal Lead-Based Paint Renovation, Repair and Painting Program after April 2010.

Occupant Conformation

Pamphlet Receipt

- ☐ I have received a copy of the lead hazard information pamphlet informing me of the potential risk of lead hazard exposure from renovation activity to be performed in my dwelling unit. I received this pamphlet before the work began.

Owner-occupant Opt-out Acknowledgment

- ☐ (A) I confirm that I own and live in this property, that no child under the age of 6 resides here, that no pregnant women resides here, and that this property is not a child-occupied facility.

Note: A child resides in the primary residence of his or her custodial parents, legal guardians, foster parents, or informal caretaker if the child lives and sleeps most of the at the caretaker's residence.
Note: A child-occupied facility is pre – 1978 building visited regularly by the same child under 6 years of age, on at least two different days within any week, for at least 3 hours each day, provided that the visits total at least 60 hours annually.

If Box A is checked, check either Box B or Box C, but not both.

- ☐ (B) I request that the renovation firm use the lead-safe work practices required by EPA's lead-Based Paint Renovation, Repair, & Painting Rule; or
- ☐ (C) I understand that the firm performing the renovation will not be required to use the lead-safe work practices required by EPA's Lead-Based Paint Renovation, Repair and Painting Rule.

_____

Printed Name of Owner-occupant

_____ _____

Signature of Owner-occupant | Signature Date

Renovator's Self Certification Option (for tenant-occupied dwellings only)

Instructions to Renovator: if the lead hazard information pamphlet was delivered but a tenant signature was not obtainable, you may check the appropriate box below.

- ☐ **Declined** – I certify that I have made a good faith effort to deliver the lead hazard information pamphlet at the rental dwelling unit listed below at the date and time indicated and that the occupant declined to sign the confirmation of receipt. I further certify that I have left a copy of the pamphlet at the unit with the occupant.
- ☐ **Unavailable for signature** – I certify that I have made a good faith effort to deliver the lead hazard information pamphlet to the rental dwelling unit listed below and that the occupant was unavailable to sign the confirmation of receipt. I further certify that I have left a copy of the pamphlet at the unit by sliding it under the door or by (fill in how pamphlet was left). _____

_____ _____

Printed Name of Person Certifying Delivery | Attempted Delivery Date

_____

Signature of Person Certifying Lead Pamphlet Delivery

_____

Unit Address

Lead Recordkeeping Checklist

Name of Firm:_____

Date and Location of Renovation:_____

Brief Description of Renovation:_____

Name of Assigned Renovator:_____

Name(s) of Trained Worker(s), if used:_____

Name of Dust Sampling Technician,
Inspector, or Risk Assessor, if used:_____

___ Copies of renovator & dust sampling technician qualifications (training certificates, certifications) on file.
___ Certified renovator provided training to workers on (check all that apply):

- ___ Posting warning signs
- ___ Maintaining containment
- ___ Waste handling
- ___ Setting up plastic containment barriers
- ___ Avoiding spread of dust to adjacent areas
- ___ Post-renovation cleaning
- ___ Test kits used by certified renovator to determine whether lead was present on components affected by renovation (identify kits used and describe sampling locations and results):

_____

____ Warning Signs posted at entrance to work area.
____ Work area contained to prevent spread of dust and debris

- ____ All objects in the work area removed or covered (interiors)
- ____ HVAC ducts in the work area closed and covered (interiors)
- ____ Windows in the work area closed (Interiors)
- ____ Windows in and within 20 feet of the work area closed (exteriors)
- ____ Doors in the work area closed and sealed (interiors)
- ____ Doors in and within 20 feet of the work area closed and sealed (exteriors)
- ____ Doors that must be used in the work area covered to allow passage but prevent spread of dust
- ____ Floors in the work area covered with taped-down plastic (interiors)
- ____ Ground covered by plastic extending 10 feet from work area—plastic anchored to building and weighed down by heavy objects (exteriors)
- ____ If necessary, vertical containment installed to prevent migration of dust and debris to adjacent property (exteriors)

____ Waste contained on-site and while being transported off-site.
____ Work site properly cleaned after renovation

- ____ All chips and debris picked up, protective sheeting misted, folded dirty side inward, and taped for removal
- ____ Work area surfaces and objects cleaned using HEPA vacuum and/or wet clothes or mops (interiors)

____ Certified renovator performed post-renovation cleaning verification (describe results, including the number of wet and dry cloths used):_____

_____

- ____ If dust clearance testing was preformed instead, attach a copy of report

____ I certify under penalty of law that the above information is true and complete.

_____ _____

Name and title Date

SILICA

Scope of the Silica Standard

The Construction Silica Standard seeks to reduce workers exposure to crystalline silica to below the *permissible exposure limit (PEL)* of 50µg/m³ for an 8 hour time weighted average (TWA). NAC will use engineering controls + work practices using dust collection, wet cutting methods and work procedures to reduce employee exposure. This standard covers occupational exposures to respirable crystalline silica with exception listed below:

Exposure that remains below the action level (25µg/m³) over an 8-hour TWA for the foreseeable future.

Incidental Tasks: exposure to silica involving the use of tools that generate silica dust during incidental tasks throughout a job. Incidental tasks are not within the scope of this standard as the exposure will result in an exposure below the action level. Employers are not required to develop objective data to support an exception to the standard.
(*Example: occasionally drilling holes into silica containing materials, where it is an incidental part of your job task. However, if you are core drilling many holes throughout the day without engineering controls, this would most likely put you over the Action Level and be within the scope of the silica standard, and you must comply with control measures.)*

NAC performs many tasks, which may be considered "incidental" putting employees below the Action Level and therefore not be within the scope of this standard, however NAC employees should work to control dust when reasonably feasible during incidental tasks to ensure exposure is "As Low As Reasonably Allowable" contributing to a safe and healthy work environment for all.

Health Risks

Silica is the one of the most common minerals on earth and is found in sand, dirt and rocks, along with many manufactured materials like concrete. Silica particles become respirable when workers chip, cut, drill, crush or grind objects that contain crystalline silica. These very small particles of silica, respirable crystalline silica (RCS), get stuck in the small alveolar sacks where oxygen is exchanged in the lungs and cause inflammatory response in the tissue, which can lead to lung disease. Exposure has been linked to lung disease, silicosis, COPD and kidney disease.

Exposure accumulates over time. A worker may develop silicosis from exposure, depending on the concentration of silica dust and the duration of the exposure:

- Chronic Silicosis: Develops after 10 or more years of exposure to crystalline silica and relatively low concentrations.
- Accelerated Silicosis: Develops 5 to 10 years after initial exposure to crystalline silica at high concentrations.
- Acute Silicosis: Develops within weeks or 4 to 5 years after exposure to very high concentrations of crystalline silica.

(Note: all dust does not necessarily contain RCS, however the PEL of 50 micrograms per cubic meter is slightly smaller than a strand of hair, so determining concentration of RCS within dust can only be accurately achieved by using industrial hygiene sampling methods.)

Respirators: NAC employees who are required to wear a respirator shall comply with the respiratory program and shall:

1. Complete a respiratory medical questionnaire
2. Participate in annual fit testing to ensure their respirators fit properly and effectively protect themselves
3. Be clean shaven when required to get a proper fit
4. Identify the amount of days required to wear a mask

Medical Surveillance + Exams: Employees who are required to wear a respirator for *30 or more days per year to protect against silica exposure* are considered highly exposed. NAC offers medical examination within 30 days after this initial work assignment, unless you have received an exam that meets the requirement within the last 3 years. NAC will offer medical surveillance every 3 years thereafter. Contact NAC's Safety Coordinator to schedule an exam.

NAC will provide the Physician (PLHCP) conducting the medical exam with the Construction Silica Standard, and a description of employee's job description and tasks

Exams must be conducted by a Physician or licensed health care professional (PLHCP) and include:

1. Medical and work history
2. Physical exam, with emphasis on the respiratory system
3. A chest x-ray interpreted by NIOSH-certified B Reader
4. Pulmonary function test administered by a spirometry technician with current NIOSH approved certificate
5. Test for latent tuberculosis (initial test only)
6. Other tests as deemed appropriate by PLHCP

How to Comply with this Standard

There are three options for complying with this standard.

Option 1: Follow Table 1.
Option 2: Work Practices based on Objective Data (Table developed by NAC).
Option 3: Conduct Air Monitoring Surveillance.

NAC has conducted risk assessments of job tasks and will use Option 1 and Option 2 by implementing engineering controls [Wet Dust Suppression (WDS) + Local Exhaust Ventilation (LEV)], and work procedures to reduce silica exposure to below the PEL. For non-incidental tasks that are listed in Table 1, you must follow procedures as written and wear a respirator when indicated. For anything other than what is in Table 1, you must follow the work procedures described in Table 1A, developed by NAC. These procedures are based on objective data indicating their effectiveness in reducing RCS exposure to acceptable limits. Deviating from these procedures will require NAC to conduct air monitoring surveillance program (Option 3) to determine if we are below the action level.

Air Monitoring Surveillance Program:
Following the sampling methods according to ACGIH's established standards for measuring Respirable Crystalline Silica in the breathing zone of workers, NAC will conduct air-monitoring surveillance when Option 1 and 2 do not apply.

Initial Results + Follow Up Requirements:

1. Below the action level (25) - No additional monitoring required.
2. Above the action level, but below the PEL (50) - Monitor again within 6 months
3. Above the PEL – Monitor again within 3 months

Note: No additional monitoring is required after two subsequent monitoring results (excluding initial result) taken 7 or more days apart are below the action level. If results are above action level or PEL, repeat steps above. If conditions change you may need to resume monitoring.

Tasks

Tasks conducted on NAC Projects may expose workers to silica dust. NAC employees may be exposed while they or others create airborne dust from using tools on material containing silica, such as concrete and masonry. NAC employees shall follow the guidelines in the table below (or Table 1) to control dust in order to reduce exposure to respirable crystalline silica. Employees shall follow all manufacturer requirements for using tools and controls, and ensure tools are in good working condition. When engaged in incidental tasks that are reasonably anticipated to cause exposure levels below the PEL, NAC employees are exempt from these controls, however employees should

consider following these controls if jobsite conditions warrant greater precaution. Frequent inspections shall be conducted to ensure control measures are effective.

The following activities may be sources of exposure for NAC employees:

- *Sweeping*
- *Excavating and Truck Loading activities*
- *Demolition Work*
- *Hammer Drilling*
- *Core Drilling + Saw-cutting (NAC uses wet cutting methods to reduce silica exposure)*

Option 1 - TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS
WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection + APF	
		≤ 4 hours	> 4 hours
(ii) Handheld power saws (any blade diameter)	Use saw equipped with integrated water delivery system that continuously feeds water to the blade. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. – When used outdoors. – When used indoors or in an enclosed area.	None APF 10	APF 10 APF 10
(vi) Rig-mounted core saws or drills	Use tool equipped with integrated water delivery system that supplies water to cutting surface Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.	None	None
(vii) Handheld and stand-mounted drills (including impact and rotary hammer drills)	Use drill equipped with commercially available shroud or cowling with dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. Use a HEPA-filtered vacuum when cleaning holes.	None	None
(x) Jackhammers and handheld powered chipping tools	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact. – When used outdoors. – When used indoors or in an enclosed area. OR Use tool equipped with commercially available shroud and dust collection system. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. – When used outdoors. – When used indoors or in an enclosed area.	None APF 10 None APF 10	APF 10 APF 10 APF 10 APF 10
(xviii) Heavy equipment and utility vehicles for tasks such as grading and excavating but not including: demolishing, abrading, or fracturing silica-containing materials	Apply water and/or dust suppressants as necessary to minimize dust emissions. OR When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.	None	None

When implementing the control measures specified in Table 1, each employer shall:

1. For tasks performed indoors or in enclosed areas, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust;
2. For tasks performed using wet methods, apply water at flow rates sufficient to minimize release of visible dust;

For a complete list of Table 1 and the silica standard, please visit: https://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=1270

	Option 2: NAC Table of Controls	
TASK	**Hazard Description**	**CONTROL METHOD**
Restricting Access + Containment 	Job sites are large with many trades working adjacent to eachother. One person may be creating dust that affects everyone around them. Use containment and restriction control methods to reduce exposure to adjacent workers.	1. Coordinate with Superintendent and other contractors on-site to ID work areas where silica exposure will occur and create a containment plan for each phase of the project to reduce exposure for all employees. 2. Create containment area and post signs. (*Note: Enclosing in plastic will reduce ventilation and may increase exposure to those in containment area, ventilate as needed)* The foreman/competent person shall regularly evaluate the work area to ensure containment and restrictions are effective. 3. Employees shall maintain a safe distance from dust clouds generated by work activities and reposition themselves to prevent exposure.
Housekeeping + Sweeping 	Visible dust is displace when employees use a broom to sweep the floor. Use engineering controls while creating dust to contain it immediately and then use control methods listed to reduce dust while sweeping and cleaning	1. Use sweeping compound or wet down dust prior to sweeping. Do not dry sweep dust, do not use compressed air for cleaning. 2. Use a vacuum equipped with a HEPA filter. If using a wet-vac ensure you use the proper filter (foam filters for wet, paper filters for dry). To replace the vacuum bag, make sure you limit dust exposure by following manufacturer guidelines and have a heavy-duty plastic bag to use for disposal when necessary. Replace filters when necessary. 3. Clean dust as you go throughout the day to prevent cross contamination
Hammer drilling (anchor drill) 	Dust is created while drilling into concrete, exposing employees to silica dust. Use integrated ventilation to prevent silica dust from entering the air.	1. Use vacuum collection system to contain dust. Some drills have a built in vacuum mechanism, however others may require attachments with a separate vacuum. 2. Use HEPA Vacuum to clean holes if remnant dust is left
Core Drilling 	Wet core drilling produces a slurry containing silica dust. Cleaning up the area and preventing the slurry from drying is important to preventing exposure.	1. Wet Core drilling: use integrated water delivery to control dust and protect the blade 2. Dry-Core drilling: use a commercially available shroud to contain the dust at the source 3. Clean holes with HEPA vacuum if necessary, use wet-vac to clean up slurry and dispose of where it will not create an additional hazard.

Jackhammers, Concrete Chipping and Demolition 	Jackhammers and chippers release significant amounts of dust into the air. Use control methods and PPE as noted to reduce exposure	1. Use wet method to suppress dust at the source 2. Use vacuum collection system attached to drill to contain dust at the source. *Note: with engineering controls during indoor use and outdoor use greater than 4 hours per day requires an APF 10 dust mask. If you are using outdoors, less than 4 hours a day, no respiratory protection is needed.*
Angle Grinder 	Angle grinders used on material containing silica create dust when not equipped with local exhaust ventilation.	1. Use shroud attachment with HEPA vacuum to capture dust at the source 2. Clean area when done with HEPA vacuum
Power Saw + cutting through walls 	Power saws used to cut through silica containing material create dust when not equipped with engineering controls.	1. Use integrated water delivery system whenever possible. 2. Use dust collection method at the source whenever possible 3. Contain the area and ventilate to reduce spread of dust and exposure to others in the area. *Note: with engineering controls during indoor use and outdoor use greater than 4 hours per day requires an APF 10 dust mask. If you are using outdoors, less than 4 hours a day, no respiratory protection is needed.*
Excavation and dusty jobsites 	Movement of soil through excavation and travel by vehicles and heavy machinery on jobsites cause dust from soil to become airborne, contributing to a dusty jobsite, and increasing silica exposure.	1. Wet surface or use dust suppressants or tackifiers to prevent airborne dust. 2. Or, ensure drivers of excavators sit in enclosed cab and others are not in the area. 3. Schedule tasks that create dust when others will not be working in the area Monitor space. 4. Use barriers and fencing to contain dust 5. Create designated walking paths to help reduce area requiring maintenance.

Remember to always position yourself upwind from the source of exposure. If the wind shifts, adjust your position so that dust blows away from your breathing zone. Use fans and ventilation to help control dust at the breathing zone.

NAC Waste Reduction and Recycling Plan

Overview

NAC Mechanical & Electrical Services will maintain the deconstruction process by participating in a waste reduction and recycling plan. This plan will involve active participation by NAC field workers, subcontractors the architect and the owner. The following principles will be encompassed in this plan:

Training & Awareness

Workers onsite will be aware that NAC will be participating in a waste reduction and recycling program and will understand how to identify and distinguish waste items from recyclables. Workers will be instructed on the proper methods of separating and salvageable items from waste and will be aware of staging areas where debris will be managed. Workers will maintain proper housekeeping at the source of the deconstruction as well as around the staging areas.

Staging

A designated waste area will be staged in a predefined location where waste and recyclables can be easily transported. The staging site be barricaded from the public and provide coverage if needed to prevent contamination. Materials will be managed by the use of dumpsters, bins or fencing to keep a well defined location for the materials to be removed. Signs will be posted in areas and on bins indicating material separation.

Materials

The following materials have been considered part of deconstruction process by the mechanical contractor and will be salvaged, maintained, or disposed of at the discretion of the building owner:

- Clean Copper
- Mixed Copper & Brass
- Clean Steel
- Scrap Steel
- Heating & Cooling Coils
- Wiring
- Mechanical Equipment
- Light Bulbs
- Mercury Thermostats
- Asbestos Materials
- Lead Based Finishes
- Batteries
- Electronic Devices
- Refrigerant
- Glycol
- Cardboard & Paper
- Wood
- PCV

Disposal

As bins or staging areas are filled, deconstruction debris will be removed from the site in a timely fashion. Waste or recyclables will be removed from the site by the recycling or waste company. As soon as a storage bin is removed from the site the area will be cleaned and another bin will take its place if needed.

Documentation

As bins, waste, and equipment is taken to be disposed, written documentation will be provided by NAC, the waste management company, or the recycling company. Documentation will consist of confirmation that the debris has been disposed of properly, what unit (tons, sq yds, qty, etc.) have been hauled away, and any charges or credits from recycling or disposing for the debris. Additional documentation will be kept upon request such as schedules of items removed, millage of equipment transported to its ending location & inspection of refurbished items to be used again in the project.

Spill Prevention + Response

NAC strives to maintain a safe work environment for all of our employees. Each employee is responsible for following company rules to reduce risk and help prevent work related injuries. NAC does not store large quantities of chemicals, however employees may encounter stored chemicals at client facilities. When NAC employees are working on client sites, they shall also follow the client requirements to maintain safety and prevent spills.

All chemicals shall be stored properly according to manufacturer instructions to minimize the potential for spills. All employees working with chemicals shall be trained on the proper spill prevention and response procedures to minimize the harmful effects of spills. Spill response kits shall be available and be adequate based on anticipated spills. Employees shall maintain good housekeeping to reduce the risk and magnitude of spills, and if a spill occurs or is anticipated, employees shall notify their supervisor and safety. All spills shall be communicated with NAC management, facility/client management, and appropriate regulatory body, as required by law.

To protect the community and the environment, NAC employees shall prevent the release of chemicals in stormwater systems. Slope, drainage, watershed and chemical environmental toxicity and hazards must be considered in containment and spill response plans.

If A Spill Occurs

1. **Observe** the safety precautions associated with the spilled material. **Stop** the source of the spill, if you can do so safely.
2. **Call 911** if fire or public safety hazards are created.
3. **Contain** the spilled material. Dirt, sand, or any semi-impermeable material may be used to create a containment structure to prevent the material from flowing.
4. **Report** the spill to the Minnesota Duty Officer at (651) 649-5451 or (800) 422-0798 any time, day or night.
5. **Clean up** the spilled material and dispose of the wastes properly. With the exception of used oil, waste generated from petroleum spills that have been reported and cleaned up immediately are exempt from Minnesota's Hazardous Waste Rules. Waste generated from used oil spills must be sent to a facility for energy recovery.

BLOODBORNE PATHOGENS EXPOSURE CONTROL PLAN

SECTION 1

A. PURPOSE

The purpose of this plan is to limit occupational exposure to blood and other potentially infectious materials, as any exposure could result in transmission of blood borne pathogens which may lead to disease or death. This plan includes exposure determination, methods of compliance, engineering work practice control, personal protective equipment, housekeeping, Hepatitis B Virus (HBV), vaccination post-exposure evaluation and follow-up information, training and record keeping that, coupled with employee education, will help reduce on-the-job risks for all employees exposed to blood or other body fluids.

B. EXPOSURE DETERMINATION

OSHA requires employers to perform an exposure determination concerning which employees may incur occupational exposure to blood or other potentially infectious materials. The exposure determination is made without regard to the use of personal protective equipment. The following job classifications in which some employees have occupational exposure because they have received training in First Aid and/or CPR or are responsible for housekeeping, including:

- Any volunteer employee who is designated as first aid and/or CPR responder. The task and procedures associated with this Job Class are as follows:
  - Cardiopulmonary resuscitation
  - First Aid for choking victim
  - Treatment of injury
  - Wound care
  - First Aid for stokes or seizures
  - Cleaning and decontaminating an area after exposure to blood or other potentially infectious material

SECTION 2

GENERAL PROGRAM MANAGEMENT

A. RESPONSIBLE PERSONS

1. Safety Coordinator

This person will be responsible for the overall management and support of the Bloodborne Pathogens Exposure Control Plan (BPPECP). Activities will include, but not be limited to:

- Overall responsibility for implementing the BBPECP
- Development of additional related policies as needed
- Revisions and updating of plans as necessary
- Staying up to date with changes of legal requirements concerning bloodborne pathogens

2. CPR/ First Aid Responders and Housekeeping Staff

- Knowing which tasks they perform are potentially hazardous for bloodborne pathogen exposure
- Attending the blood borne pathogen training session
- Using all work practice controls

B. AVAILABILITY OF THE EXPOSURE CONTROL PLAN

The BPECP is available to all employees at any time. Employees will be advised of this availability during their training session. Employees will also be informed of the BPECP through the Employee Handbook.

SECTION 3

A. METHOD OF COMPLIANCE

Universal precautions will be observed at this facility in order to prevent contact with blood and other potentially infectious material. All blood or other infectious material will be considered infectious regardless of the perceived status of the source individual.

B. ENGINEERING WORK PRACTICE CONTROLS AND PPE

Hand washing facilities are readily accessible to employees who incur exposure to blood or other potentially infectious material. Hand washing facilities are located within the bathrooms.

Engineering and work practice controls will be utilized to eliminate or minimize exposure to company employees where occupational exposure remains after insulation of these controls, personal protective equipment shall also be utilized.

The following engineering controls will be utilized:

- Disposable latex/vinyl gloves shall be worn where it is reasonable anticipated that employees will have hand contact with blood, non-intact skin, mucous membranes or other potentially infectious material.

- Microshields with one way valves will be required to be used of blood or other infectious materials can reasonably be anticipated.

- The protective equipment will be considered appropriate only if it does not permit blood or other potentially infectious materials to pass through or reach the employees clothing skin, mouth or other mucous membranes under normal conditions of use and for the duration of the time which the protective equipment will be used. Personal protective equipment (PPE) is readily accessible to each employee listed in the job classification. The PPE will be kept in first aid kits located in marked sites around the facility and other designated locations. The housekeeping staff will keep the appropriate PPE in a visible location in their storage rooms.

- After the removal of the personal protective gloves the employees wash their hands and any another potentially contaminated skin area immediately or as soon as feasible with soap water.

- PPE Accessibility – All personal protective equipment used at this facility will be provided without cost to employees and the appropriate size is readily accessible at the work site.

- PPE Use – The coordinator shall oversee that the employee used the appropriate PPE unless the supervisor shows that the employee temporarily declined the use PPE under rare and extraordinary circumstances where use of PPE posed an increased and immediate hazard to the injured employee. Such circumstances shall be investigated and documented to determine whether changes should be made to prevent future occurrences.

C. HOUSEKEEPING

The coordinator will follow approved disposal methods for handling regulated waste which has been used in an exposure incident. The coordinator will follow local procedures for disposal.
Regulated waste refers to the following categories of waste which require special handling, at a minimum:

- Liquid or semi-liquid blood or other potentially infectious materials;
- Items contaminated with blood or other potentially infectious materials and which would release substances in a liquid state if compressed
- Items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling
- Any contamination of equipment surfaces shall be cleaned and disinfected using a 1:10 Bleach Solution:
  Hard surfaces – 1:10 bleach solution
  Carpeted surfaces – Absorbent bleach material (i.e. Zep Chlor-retain)
- All other non-regulated waste shall be disposed of in a lined waste container.

D. LAUNDRY

Any protective clothing that is contaminated with blood or other potentially infectious materials will be handled as little as possible. Such laundry will be placed in appropriately marked bags at the location where it easily used. Such laundry will not be sorted or rinsed in the area of use. The laundry service will take the appropriate measures to handle these items.

SECTION 4

A. POST EXPOSURE EVALUATION & FOLLOW-UP

All exposure incidents shall be reported, investigated and documented. When an employee incurs an exposure incident, it shall be reported to their supervisor, who will forward the information to the Safety Coordinator or Safety Clerk before the end of the workday.

All employees who experience an exposure will be offered a confidential post-exposure evaluation and follow-up in accordance with OSHA standards at no charge to the employee.

Following a report of an exposure incident, the exposed employee shall immediately receive a confidential medical evaluation and follow-up. Cost of testing and counseling will be borne by NAC. The follow up will include at less the following elements:

1. Documentation of the route of exposure, and the circumstances under which the exposure incident occur.
2. Identification and documentation of the source individual, unless it can be established that identification is not feasible or prohibited by state or local law.
3. The source individual's blood shall be tested as soon as feasible and after consent is obtained in order to determine HBV and Human Immunodeficiency Virus (HIV) infectivity. If consent cannot be obtained when the source individual's consent is not required by law, the source individual's blood if available shall be tested and the results documented.
4. When the source individual is already known to be infected with HBV or HIV, testing for the source individual's known HBV or HIV status need not be repeated.
5. Results of the source individual's testing shall be made available to the exposed employee, and the employee shall be informed of applicable laws and regulations concerning disclosure of the identify and infectious status of the source individual.

The supervisor evaluating an employee after an exposure incident shall ensure that the health care professional responsible for the employee's Hepatitis B vaccination is provided the flowing information:

- Written documentation of the route of exposure and circumstances under which the exposure occurred(see attached exposure incident report **page 8**)
- Results of the source individual's blood testing, if available
- All medical records relevant to the appropriate treatment of the employee, including vaccination status.

The Safety Clerk shall obtain and provide the employee with copy of the evaluating healthcare professional's written opinion within fifteen days of the completion of the evaluation.

The health care professional's written opinion for HBV vaccination shall be limited to whether HBV vaccination is indicated for an employee, and if the employee has received such vaccination. The health care professional's written opinion for post exposure follow-up shall be limited to the following information:

- A statement that the employee has been told about any medical conditions resulting from exposure to blood or other potentially infectious materials which require further evaluation or treatment.
- A statement that the employee has been informed of the result of the evaluation.
- All other findings and diagnosis shall remain confidential

B. INFROMATION AND TRAINING

The Safety Coordinator shall ensure that training is provide at the time of the initial assignment to the task where occupational exposure may occur, and that it shall be repeated within twelve (12) Months of the previous training. Training shall be tailored to the education and language level of the employee, and offered during the normal work shift. The training will be interactive and cover the following:

1. A copy of the standard and an explanation of its contents;
2. A discussion of the epidemiology and symptoms of bloodborne diseases;
3. An explanation of the modes of a transmission of bloodborne pathogens
4. An explanation of NAC Mechanical & Electrical Services Bloodborne Pathogen Exposure Control Plan and a method for obtaining a copy;
5. The recognition of tasks that may involve exposure
6. An explanation of the use and limitations of methods to reduce exposure, for example : engineering controls, work practices, and personal protective equipment;
7. Information on the types, use , location, removal handling, decontamination and disposal of PPE's;
8. An explanation of the basis and selection of PPE's;
9. Information on Hepatitis B vaccination, including efficacy, safety, method of administration, benefits, and that it will be offered free of charge;
10. Information on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials;
11. An explanation of the procedures to follow if an exposure incident occurs, including the method of reporting and medical follow up;
12. Information on the evaluation and follow-up required after an employee exposure incident.

The person conducting the training shall be knowledgeable in the subject matter.

Employees who have received training on bloodborne pathogens in the twelve months preceding the effective date of this policy shall only receive training in provisions of the policy that were not covered. Additional training shall be provided to employees when there are any changes of tasks or procedures affecting the employee's occupational exposure.

C. RECORDKEEPING

Training Records – The coordinators responsible for maintenance the following training records. The records will be kept in NAC Mechanical & Electrical Services' office.

The Training records shall be maintained for three years from the date of training. The following information shall be documented:

1. The dates of the training sessions;
2. An outline describing the material presented;
3. The names and qualifications of persons conducting the training;
4. The names and job titles of all personal attending the training sessions.

Availability – All employee records shall be made available to the Assistant Secretary of Labor for the Occupational Safety and Health Administration and the Director of the National Institute for Occupational Safety and Health upon request.

Medical Records – The Safety Manager / Coordinator is responsible for maintaining medical records as indicated below these records shall be kept in the HR or Safety Manager/ Coordinator's office.

Medical records shall be maintained in accordance with OSHA Standard 29 CFR 1910.20 These records shall be kept confidential, and must be maintained for at least the duration of employment plus thirty years. These records shall include the following:

1. The name and social security number of the employee;
2. A copy of the employee's HBV vaccination status, including the dates of vaccination or a declaration statement indicating they choose not to be vaccinated;
3. A copy of **all legally accessible results** of examinations, medical testing, and follow-up procedures;
4. A copy of the information provided to the health care professional, including a description of the employee's duties as they relate to the exposure incident, and documentation of the routes of exposure and circumstances of the exposure.

D. EVALUATION AND REVIEW

The Safety Coordinator is responsible for annually reviewing this program and its effectiveness and for updating this program as needed.

BBP Exposure Incident Report

To be filled out at initial BBP exposure incident by First Aid Responder or Supervisor. All employees exposed to another's body fluids are encouraged to seek medical treatment within 24 hours to undergo evaluation and possible vaccinations. Return this form to the Safety Coordinator.

Employee/Patient Name			
Date of Exposure		Time of Exposure	
Location of Exposure			
Route of Exposure			
Sharp exposure injury log: Brand/Type			
Source Patient's Antibody Status (if known)		Consent to take Blood Sample?	Yes No
		Consent to Test Blood Sample?	Yes No
Supervisor's Name		When Notified?	
Was this information given to a medical director/consultant?	Yes No		
Synopsis of Incident			

BBP Exposure Follow-up Form

To be filled out by physician and upon return to safety coordinator, filed in restricted employee files.

Employee Name			
Date/Time of Exposure		Date Reported	
Employee's description of Exposure			
Route of Exposure			
Contact Source:			
Contact Source Known?	Yes No	Chart Reviewed?	Yes No
Lab Results:			
HBsAG	STD	HIV	HBV
Patient Information			
Patient's Health File Reviewed?	Yes No	Lab Tests Ordered?	Yes No
		Lab Test Results:	
Vaccinations offered/recommended:			
ISG	Hep B Immune Globulin	Hep B	Diptheria/Tetanus
Other			
If Declining Vaccination: By declining testing and evaluation, I hereby waive liability against NAC and its agents.			

Patient's Signature:		Date
Physician Information		
Location of Evaluation		
Physician's Comments		
Location of evaluation		
Physician's Signature:		Date
Referred to infectious disease physician?	Yes No Name:	
Appointment Recommendations		

First Aid Injuries

Procedures

First aid is the first response to an injury or a life threatening medical emergency. It is crucial that employees understand the basic information relating to first aid response and treatment if an injury occurs. The following procedures will be addressed in the NAC First Aid Training Program:

- General Procedures
- CPR
- Clearing an Airway Obstruction "choking"
- Anaphylactic Shock
- Broken bone
- Bleeding control

General Procedures

In the absence of medical assistance that is reasonably accessible in terms of time and distance to the worksite, a person who has a valid certificate in first aid shall be available to perform first aid.

Valid certificate of first aid training must be obtained from American Red Cross, National Safety Council or equal training that can be verified by documented evidence.

Employees shall use the best available means to transport an injured victim to the nearest physician or hospital. If employee needs assistance in locating the nearest hospital/ physician they should contact the Safety Clerk or Safety Coordinator. If it is an emergency, call 911.

Upon noticing a person that is injured or who is unresponsive and may need help, employees should be aware of their own safety before they respond to the victim. Some of the following guidelines should be carried out before approaching a victim:

- Assess the situation and make sure the environment is safe for entry: free from obstructions, electrical shock, or harmful gasses
- Proper protective equipment (PPE) should be used to protect the responder from pathogens and other harmful environmental exposures
- Call 911 and have someone go for help
- Locate a first aid kit and AED if available: (First Aid kits are kept in jobsite gang boxes & NAC Fleet Vehicles)
    - First aid kits shall consist of appropriate items to be adequate for the environment in which they will be used.
    - Contents of first aid kits shall be periodically assessed to ensure availability and adequate first aid supplies
- Obtain the NAC Safety Manual and use the proper safety procedures as a reference

CPR Procedures

CPR is a process that is used to provide oxygen to the brain, heart and other vital organs. CPR is used on an unresponsive person with no breathing. The following procedures instruct employees on how to tell whether a person needs CPR and how to follow up with procedures for conducting this method or taking other precautions:

Upon seeing a person that looks like they are having medical problems where CPR might be necessary first take these precautions before risking your own safety:

1. Assess the situation: Be aware of the environment, make sure there are not any hazards present where the victim is laying. If you are unsure of your safety do not approach the victim and call 911 for assistance.

2. If the conditions are safe attempt to wake the victim. Do this by briskly rubbing your knuckles against the victim's sternum. If the victim does not wake call 911 and proceed to step three. If the victim wakes, moans, or moves, then CPR is not necessary at this time. Call 911 if the victim is confused or not able to speak.

3. *Begin rescue breathing*. Open the victim's airway using the head-tilt, chin-lift method. Put your ear to the victim's open mouth:
    a. look for chest movement
    b. listen for air flowing through the mouth or nose
    c. feel for air on your cheek

    If there is no breathing, pinch the victim's nose; make a seal over the victim's mouth with yours. Use a CPR mask if available. Give the victim a breath big enough to make the chest rise. Let the chest fall, then repeat the rescue breath once more.

4. *Begin chest compressions*. Place the heel of your hand in the middle of the victim's chest. Put your other hand on top of the first with your fingers interlaced. Keep your arms straight, directly above the sternum to reduce fatigue. Compress the chest about 1-1/2 to 2 inches (4-5 cm) above the peak of the rib cage. Allow the chest to completely recoil before the next compression. Compress the chest at a rate equal to 100/minute (to the beat of the song *Stayin' Alive* by the BeeGees). Perform 30 compressions at this rate.

5. *Repeat 2 Rescue breaths*. Open the airway with head-tilt, chin-lift again. This time, go directly to rescue breaths without checking for breathing again. Give one breath, making sure the chest rises and falls, then give another.

6. *Perform 30 more chest compressions*. Repeat steps 5 and 6 for about two minutes.

7. *Stop compressions and recheck victim for breathing*. If the victim is not breathing, continue chest compressions and rescue breaths.

8. Keep going until help arrives.

<u>Tips for CPR</u>

- If you have access to an automated external defibrillator (AED), attach it to the victim after approximately one minute of CPR (chest compressions and rescue breaths). (Keep in mind an AED is located in the main hallway outside of the lunch room at NAC headquarters). Follow the instructions for the AED. AED's detect a pulse, and will not shock if a pulse is detected. Remember not to touch the body when a shock is about to occur.

- Chest compressions are extremely important. If you are not comfortable giving rescue breaths, still perform chest compressions!

- It's normal to feel pops and snaps when you first begin chest compressions - DON'T STOP! You aren't going to make the victim any worse. Cardiac arrest is as bad as it gets.

- When performing chest compressions, do not let your hands bounce. Let the chest fully recoil, but keep the heel of your hand in contact with the sternum at all times

Clearing an Airway Obstruction "Choking"

When the airway is obstructed or choking occurs a person's air passage from their mouth to their lungs is not able to pull in oxygen to their lungs and can cause the person to suffocate because oxygen is not flowing to their brain. If someone might be choking the following precautions should be taken:

1. If someone is choking the person may be coughing vigorously, they may hold their hands on their throat, or will display a change in completion in their face.
2. If a person is exhibiting these signs they might be choking. If you think they are choking you can ask them if they are. If they are able to speak to you they have a partial obstruction and it is best to let the person continue coughing until the obstruction is dislodged as in step 3. If the person cannot respond but nods their head that they are choking the person may have a full obstruction and abdominal thrust should be given described in step 4.
3. When a person has a partial obstruction of their airway they can still breathe but not fully, do not attempt to give the person water because it could cause the object to become fully obstructed. Instead have the person continue coughing until the obstruction is clear. If this does not work proceed to step 4
4. When the airway is fully blocked the obstruction needs to be cleared by abdominal thrusts. This method consists of pushing just above the stomach in order to force the obstruction out the mouth.
5. Lean the person forward slightly and stand be behind the victim and make a fist and cup it with one hand whiling linking your other hand around the persons stomach
6. Once your hands are grasping together place them just below the center of the rib cage.
7. Make a quick, hard movement inward and upward until the obstruction is clear otherwise:
8. **If the person loses consciousness** gently lay him or her flat on their back on the floor. To clear the airway, kneel next to the person and put the heel of your hand against the middle of the abdomen, just below the ribs. Place your other hand on top and press inward and upward five times with both hands. If the airway clears and the person is still unresponsive, begin CPR.

Anaphylactic Shock

Anaphylactic shock is an allergenic reaction to the body after being exposed to a substance like bee sting venom or other toxin which may cause tissues to swell, shortness of breath or nausea.

If this happens to an employee who knows they are allergenic they may carry an epi-pen. If so instruct them to use this pen and have someone go for help or call 911. If the person does not have a history of

allergenic reactions also call for assistance and find help. After an anaphylactic reaction the most important thing is to get help fast.

Broken Bone

When extreme force is applied to the body a bone break or sprain can occur. When a bone is broken there is a separation between the bones themselves. When a sprain happens, tenants surrounding the bone can become stretched or torn. When a bone is broken or joint is sprained the following symptoms are exhibited:

- pain
- swelling
- bruising
- deformation
- exposure of the bone

1. Make sure the victim is in a safe location. It is more important to worry about the rescuer and victim's ongoing safety than to worry about a broken bone. Follow universal precautions and wear personal protective equipment if you have it.
2. Check ABC's. Make sure the victim has an **A**irway, is **B**reathing, and has **C**irculation. Broken arms can be very distracting injuries. Most of the time, however, they look worse than they are.
3. Control bleeding.
4. Look for other injuries. If a victim shows signs of injury to the head, necks, or back, DO NOT move the victim.
5. Cover any broken skin with sterile dressings. If needed, the wound can be rinsed try to use sterile water or saline solution.
6. If an ambulance is responding, have the victim remain still and wait for the ambulance. If an ambulance is unavailable, it may be necessary to splint the broken bone. Be sure to immobilize the joints (elbow, wrist, shoulder, etc.) above and below the break. Do not wrap the injury too tight.
7. Put ice on the break to reduce swelling. Put a sheet or towel between the ice and the skin to prevent frostbite. Leave ice on for 15 minutes, then remove ice for 15 minutes.

Tips for Breaks and Sprains

- Remember, DO NOT move a victim with suspected head, neck, or back injuries unless it is to keep rescuers or victim safe.
- DO NOT straighten a broken arm or change its position unless the victim's hand (on the arm with the break) is cold, blue, numb, or paralyzed. Only attempt to return a deformed arm to the anatomical position.
- Call 911 for a leg broken above the knee, a broken hip, a broken pelvis, a neck or back injury, or a head injury. It is still acceptable to summon an ambulance for a broken arm, but call on the ambulance agency's non-emergency line.
- If splinting the broken arm, make a sling to support the arm's weight and wrap a swath around the victim's torso to immobilize the broken arm.

Bleeding Control

Bleeding can be either internally or externally and should receive immediate attention to prevent the risk of infection, the spread of blood borne pathogens and the risk of shock. When dealing with the following type of blood related injuries administer these precautions:

External Bleeding: Stop external bleeding by adding direct pressure on the wound. Use gauss or cloth to block the wound. Continue to apply direct pressure and add more gauss dressings over the soaked

ones if they become saturated with blood. If bleeding still continues elevate the wound high above the location of the heart. If bleeding will still not stop then locate a pressure point on the inside of the wrist for lower hand injuries, on the inside arm near the arm pit for upper arm injuries and on the inside of the thy near the grown muscle for leg wounds. Continue to use all of these methods until bleeding stops.

Internal Bleeding: If internal bleeding is suspected bruising or blood induced from vomiting or waste excretion may be present. To treat internal bleeding it is best to monitor the status of the injury it may be a good idea to add a cold pack or ice to any bruising or swelling, if the problem becomes more serious call 911.

Hygiene: Employees shall maintain good hygiene, and follow the precautionary principal to prevent exposure to bloodborne pathogens during first aid. Always wash hands thoroughly after. Emergency eyewash equipment must be readily available for employees to use.

Injury and First Aid Reporting Procedures

Clinic:

ER:

Report All Injuries + Incidents

Minor Injury (first aid only)

1. Treat Injury and notify supervisor.
2. Notify the office or safety coordinator with Injury Details.

Clinic Visit/ Urgent Care vs. Emergency Room

3. If medical attention is required: Take to nearest clinic or Urgent Care.
   (Note: MOH clinics and urgent care is often faster than Emergency Rooms).
   a. **MOH or Urgent Care:** Muscle injuries, debris in eye, non-severe cuts/abrasions.
   b. **ER:** Severe Injuries needing immediate attention.
4. Drive injured person if objects in eye, excessive bleeding, or exposure to chemicals, etc.

Severe/ Life-threatening Injuries

(Employee is unconscious, cannot be moved, or is bleeding profusely)

1. Call 911 for an ambulance.
2. Get help from trained first aid provider
3. Stay with injured employee until help arrives.
4. Accompany injured to hospital and contact management and safety with updates.

Minnesota Occupational Health (MOH) Clinics

8am - 5pm | 651-968-5300

- St. Paul: 1661 St Anthony Ave #2 55104
- Blaine: 10230 Baltimore St. #300 55449
- Eagan: 1400 Corporate Center Curve # 200 55121

Injury Details

(Report Injury - FROI + Incident Investigation)
Contact Safety Coordinator

Injured employee: _____
Phone #: _____
Trade: _____DOB_____
Injury Date _____Injury Time_____
Shift start time:_____
Description of how the injury occurred:

Injured body part: _____
_____
Tools/equipment involved:
_____
_____
Injury Location:

Hospital/clinic name (if applicable):

Your name: _____Date:_____
Foreman:_____
Project Manager:_____

**Return any doctor release forms or bills to the office.*

Safety Coordinator
Stephanie Hagen: 651.280.8265
shagen@nac-hvac.com

Vice President/Safety Clerk
Julie Krueger: 651-255-3532
jkrueger@nac-hvac.com

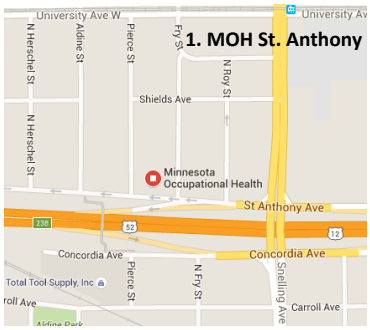
**If there is reasonable suspicion that an injury resulted from the use of drugs or alcohol, a drug and alcohol test may be required. Contact the office or safety coordinator for details.*

NAC Approved Clinic: Minnesota Occupational Health Clinic

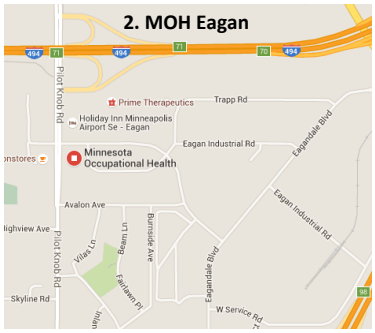
(After hours injury care is available at OrthoQUICK in Woodbury, Vadnais Heights, and Eagan. Open 7 days a week, 10 a.m. – 8 p.m. Appointments: 651-968-5201. OrthoQUICK: 651-968-5806.)

MN Occupational Health: M-F 8am - 5pm 651-968-5300

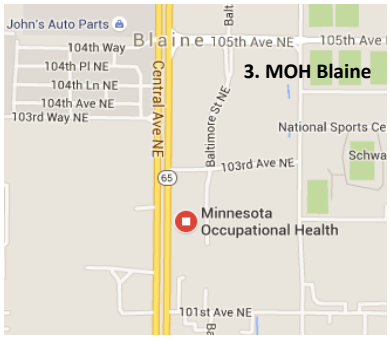
1. St Paul, MN 55104
   1661 St Anthony Ave #2



2. Eagan, MN 55121
   1400 Corporate Center Curve #200



3. Blaine, MN 55449
   10230 Baltimore St. #300



For questions about going to another clinic, contact the safety coordinator.

If it is a life-threatening emergency, seek care immediately at the closest healthcare facility.

Nearest Clinic Map

PROCEDURE FOLLOWING AN ACCIDENT OR INCIDENT

(*Excerpt from AWAIR Safety Program Summary)*

Steps to Report an Injury or Incident

- Employee reports accident to foreman/supervisor
- Mitigate the results of the incident
    - Provide medical attention/first aid to injured employee (call office for clinic information)
    - Identify damage and correct any immediate hazard that remains.
- Supervisor/foreman conducts preliminary investigation to include:
    - Describe accident sequence (cause, accident, injury
    - Causes associated with the incident
    - People involved
    - Tools, equipment and PPE involved
    - Work practices involved
    - Identify possible workplace violations
    - Identify possible corrective actions
- Supervisor/foreman reports incident to Safety Coordinator/ Safety Clerk
- If injury occurs, Safety Coordinator/Safety Clerk completes First Report of Injury (FROI- see section 1c of AWAIR program), and Safety Clerk finalizes FROI and sends to Insurance Company
- Supervisor/foreman works with Safety Coordinator to complete NAC Accident/ Incident Investigation Form.
- Safety Coordinator finalizes Accident/ Incident Investigation Form.
- Foremen and Safety Coordinator work together to implement corrective action
- Incident reports are reviewed at the monthly safety committee meeting and are kept on file.

HEAT STRESS

Hazards

Hot temperatures can increase a person's core temperature, causing heat illness, heat stroke, organ failure and even death. Working in hot temperatures creates a high risk for heat illnesses, and adjustments may be required to ensure workers can prevent heat related illnesses.

Procedures

Employees shall have access to potable drinking water

- Employees should drink water frequently to stay hydrated, at least 4 cups per hour on hot days. With excess sweating, we may lose electrolytes and need to replace them with an electrolyte drink like Gatorade, in order to absorb water.
- Lack of electrolytes can cause muscle cramps associated with heat stress.

Employees shall have access to shade or a break area protected from the sun.

- Hot temperatures may require a change in work schedules, moving heavy work to earlier in the day when its cooler or establish a work/rest cycle to ensure workers take enough brakes. Other physical factors of the work should be considered prior to performing a task.
- Allow new or returning workers to gradually increase workloads to help them acclimate to the heat and/or humidity.
- Personal factors should be taken into consideration when assigning people to certain tasks.
- Workers should wear sunscreen to avoid sunburn. For some people, sunburn can occur in as little as 15 minutes with a UV index of 7, 8 or 9. Sunburn prevents the cooling effect of evaporation, increasing risk of heat stress. Use fans, air flow, and mist to increase evaporative effect.

Supervisors shall be trained to identify the risk and signs of heat stress and illness, and understand the emergency response procedures required for heat illness emergencies. Supervisors will be trained in preventing heat related illnesses prior to supervising employees.

Signs of Heat Illness: muscle cramps, excessive sweating, dizzy or lightheaded, cool/pale/clammy skin

- If someone shows signs of heat stress or illness, get them to a cool place immediately, use a cool compress on the neck, armpits and groin to cool their core temperature, and give them water or electrolyte fluids to drink.

Signs of Heat Stress: hot, dry skin (not sweating), rapid shortness of breath, confusion, seizures, or non-responsiveness.

- Call 911 immediately! Get them to a cool place and get their core temperature to cool using cold packs on their neck, armpits and groin, and head. They likely have heat stroke, which can cause organ damage or death. Stay with them until help arrives.

COLD STRESS

Hazards

Hypothermia and Cold Stress are cold weather injury that results in the decrease of core body temperature due to exposure to cold environments. If the core body temperature falls to 96 degrees Fahrenheit, this indicates the onset of hypothermia. At this point if the body temperature continues to fall, the result may be slurred speech, uncontrollable shivering, lack of coordination, and memory loss. If the core body temperature drops to 85 degrees Fahrenheit, the injured person may fall into a deep coma and at 78 degrees Fahrenheit the individual may die.

Procedures

Body heat retention is the number one way to avoid cold weather injuries. The following prevention tips are key during cold weather exposure:

- ❑ Wear dry, layered clothing, covering all body areas, including the head.
- ❑ Take frequent breaks; the cold increases the chances for exhaustion.
- ❑ Stay Hydrated, this increases blood volume which prevents frostbite.
- ❑ Avoid alcohol, sedatives, and nicotine.
- ❑ Keep clothing dry.
- ❑ Keep blankets readily accessible.

If someone has frostbite and hypothermia, treatment of the hypothermia should occur first. Hypothermia should be treated medically. If medical treatment is not immediately available, the following steps should be taken:

1. Take the injured person indoors immediately.
2. Remove cold, wet clothing, and replace it with warm, dry clothing.
3. Avoid rapid re-warming of the victim with hot water or massaging, if performed improperly, this could damage skin tissue. Instead use blankets and a warm environment to slowly warm up the victim.
4. Do not allow the person to drink alcohol, caffeine, take any drugs, or nicotine products.
5. If the person is not breathing or does not have a pulse, call for emergency medical assistance. If you are properly trained to perform (CPR), administer this technique and continue until medical assistance arrives or instructs you otherwise.
6. If the victim is unconscious and needs to be moved, immobilize the neck.

HAZARD COMMUNICATION
MINNESOTA RIGHT TO KNOW PROGRAM

NAC has developed a written program to establish procedures for working with and handling hazardous chemical substances. This program shall be implemented and maintained at each worksite. The program supports compliance with the Minnesota Occupational Safety and Health Administration (MNOSHA) Right to Know Standard and the Globally Harmonized System (GHS) for labeling of chemicals. This program applies to all affected company employees. The following program outlines the steps that will help accomplish these objectives.

The Right to Know Program Contents:

1. Inventory
2. Container Labeling
3. Safety Data Sheets (SDS)
4. Employee Training
5. Multi-employer Jobsites
6. Non-routine Tasks
7. Noise
8. Carbon Monoxide
9. Welding
10. Solvents
11. Compressed Gas Cylinders
12. Acids & Alkalis
13. Summary

1. INVENTORY

Chemical inventory lists are found in each of the SDS books, and online. The Purchaser, the Warehouse Manager and all other employees that receive new chemicals are responsible for updating the list with new chemicals.

2. CONTAINER LABELING

It is NAC's policy that no original manufacturer container of hazardous substance will be released for use until properly labeled with GHS compliant label.

The Warehouse Manager, foremen and supervisors are responsible for ensuring proper labeling of all containers, including secondary containers to help ensure that employees are aware of the hazardous materials used, stored or transferred in the workplace. No labels shall be defaced or removed.

Employees are responsible for labeling chemicals they transfer into secondary containers. Short term, single user, single shift chemical containers are exempt from the GHS labeling requirement, however, labeling is recommended. If any chemical containers have missing or damaged labels, a replacement label shall be used to communicate the hazards in the container. The Safety Coordinator or Purchaser will provide these GHS compliant labels.

Container labels, and other forms of warning must be in English, be legible and prominently displayed or available, and have the following information:

- Chemical name/product identifier and codes
- Appropriate hazard warnings
    - Signal word: “Warning” or “Danger”
    - Pictograms to visually communicate the hazard
    - Hazard Statements
    - Precautionary Statements
- Manufacturer information: name + contact info

3. SAFETY DATA SHEETS (SDS)

SDS books contain a list of hazardous substances employees may be exposed to along with their corresponding Safety Data Sheets. The SDS Book can be found on NAC’s website, in the warehouse and on various jobsites.

All chemical users (employees) are responsible for obtaining SDS for new chemicals and maintaining the SDS inventory list for their jobsite. Employees should notify the Safety Coordinator of new chemicals and provide the SDS for uploading to the digital SDS Book. The Safety Coordinator will also review all new datasheets for significant health and safety information and provide hazard awareness training for affected employees. The SDS book is alphabetized by product name and updated annually.

If an SDS is missing or incomplete a new SDS will be requested from the manufacturer or supplier. If a SDS is not available or new hazardous substance(s) in use does not have a SDS, the Safety Coordinator shall be notified to obtain a new SDS.

4. EMPLOYEE INFORMATION AND TRAINING

Employees are expected to complete an annual health and safety training set up by the Safety Coordinator for information and training. New employees will be shown where the SDS books are kept, how to use SDS’s, what hazardous substances they may be exposed to, and how to work safely with the substances. All NAC employees speak and understand English. If any future employees require hazard communication in a language other than English, NAC will provide translations into their native language. SDS will be reviewed to ensure that the new employee knows where to find the information they might need or want.

Training shall include the following:

- An overview of the requirements contained in the Right To Know Regulation, including their rights under the regulation.
- Location and availability of the Written Right To Know Program and SDS.
- How to reduce or prevent exposure to these hazardous substances through usage of engineering controls, work practices, and personal protective equipment
- How to read labels and review SDS to obtain appropriate hazard information

Affected employees will be informed when new hazardous substances are introduced. Chemicals in unlabeled pipes shall be identified prior to performing tasks on pipes. Employees should contact the manager of the area for such information. The Safety Coordinator will review the above items as they relate to the new material in your work area.

5. MULTI-EMPLOYER JOBSITES

For jobsites located away from NAC’s main headquarters. NAC employees shall consult with the facility owner to identify and familiarize themselves with any chemicals they may be exposed to onsite. This

includes locating the facility's SDS book and using appropriate PPE as necessary. If NAC employees will be transferring additional chemicals to the jobsite, NAC's SDS book shall be made available to anyone in that facility. If new chemicals are presented, but are not listed in the company SDS book, contact the Safety Coordinator with the chemical name and the SDS will be added.

Subcontractors working with NAC they will be required to keep a current file of SDS sheets available onsite.

6. NON-ROUTINE TASKS INVOLVING HAZARDOUS SUBSTANCES

Periodically employees are required to perform hazardous non-routine tasks, prior to starting work on such projects each affected employee will be given information by Safety Coordinator about hazards to which they may be exposed during such an activity.

This information will include chemical name, specific hazards, safety controls and required personal protective equipment.

7. NOISE

NAC is not aware of having exceeded OSHA's 85 dba TWA action level (average daily dose allowed), however, hearing protection is available for employee. The hearing protectors are intended to provide employee comfort during cutting of sheet metal and other materials. For more information see NAC's hearing protection policy.

8. CARBON MONOXIDE

Carbon Monoxide is a colorless, odorless, and tasteless gas that will cause headache, nausea, dizziness, etc" if an overexposure condition exists.

Carbon Monoxide is produced during hot work, welding operations or while working inside enclosed spaces. To ensure that carbon monoxide levels do not exceed 35 ppm PEL set by OSHA, **NAC** will perform air monitoring at least quarterly in areas where carbon monoxide exposure is an ongoing concern for employees. Records of air monitoring results will be maintained. If there is anticipated risk of carbon monoxide exposure, NAC will monitor the air and use fresh air ventilators and smoke eaters when needed to minimize exposure.

9. WELDING On occasion, arc welding is performed for repairs of shop tools and equipment. Welders know the hazards from ultra violet radiation, and wear appropriate eye protection and clothing. Employees in adjacent work areas are instructed to never look at the arc weld. More specific safety procedures are described in the Welding and Cutting program.

10. SOLVENTS

Solvents are a class of liquids used to dissolve other solid materials. They may be found in many areas and contained in many solutions. Solvents should be used with caution.

Solvents include the following:

- Aliphatic hydrocarbons (butane, hexane) Hexane, for example, is found in rubber cement.
- Aromatic hydrocarbons (xylene, toluene) These solvents are present in many paints.
- Chlorinated hydrocarbons (trichloroethane, methylene chloride, perchlor) These are often used in metal cleaning. They may also be found in paint thinners.
- Fluorinated hydrocarbons (freons)

PROPERTIES OF SOLVENTS

- Many solvents are flammable.
- In general, solvents evaporate quickly.
- Evaporation speeds with heat
- When exposed to flame, chlorinated hydrocarbons can decompose generating hydrogen chloride and phosgene,

HEALTH EFFECTS

1. Skin sensitization and disorders: Repeated skin contact can cause lacerations or dermatitis as well as dry skin to the point of cracking and bleeding. Solvents should never be used to wash or clean skin. Some solvents can be absorbed both through impact and open skin, particular attention should be paid to contact with these materials. This information is found in the Safety Data Sheet.

2. Eye injury: Solvent vapors can irritate the eyes. Direct splashing of the liquid into the eyes may cause serious burns.

3. Inhalation: Solvents act as central nervous system depressants; general symptoms include headache, dizziness, and nausea. Extreme overexposure situations could lead to unconsciousness, solvent vapors can also act as respiratory itinerants. Chronic overexposure to some solvents may cause permanent injury to the liver or kidneys, or other internal systems.

11. PRECAUTIONS / CAUTIONS

- Wear solvent resistant gloves to prevent repeated or prolonged skin contact.
- In operations where the liquid could splash into the eyes, chemical goggles or a face shield should be worn. In case of eye contact, FLUSH THE EYES WITH WATER FOR AT LEAST 15 MINUTES while holding the eyelids open.
- In operations where the liquid could splash onto skin, appropriate protective clothing, such as a solvent resistant apron, should be worn.
- If skin contact should occur, FLUSH the area thoroughly for at least 15 minutes. Remove contaminated clothing.
- Personal hygiene is very important wash thoroughly. Apply hand cream as needed to prevent drying of skin.
- In situations where a respirator is required, be sure to wear the proper respirator. It should protect you against organic vapors.
- In case of a spill or leak, AVOID contact with the material. WEAR a respirator to prevent overexposure during cleanup operations. ATTEMPT to stop the spread of the material PROTECT the water supply. REMOVE all ignition sources.

12. STRONG ACIDS & ALKALIS

Acids are chemically active materials. They are not flammable, but they can react with other chemicals, as in the case of a leak, or spill, and cause a fire, explosion, or the generation of a toxic gas. They may be found in both solid and liquid forms. NEVER POUR WATER INTO ACID. If acid and water must be mixed, acid must be poured slowly into the water.

Strong alkalis are found in caustic cleaning agents. They also come in both liquid and solid forms.

HEALTH EFFECTS

1. Both categories of chemicals are skin and eye irritants Depending on the concentration, reactions can range from irritation to severe burns blindness can result from eye contact.
2. The vapors or mists from acids are extremely irritating to the respiratory tract.
3. Inhalation of mist or dust of a strong alkali may cause irritation, dizziness, and/or injury to the respiratory tract.

PRECAUTIONS/ CONTROLS

1. Rubber or plastic gloves are required when using a concentrated solution.
2. Apron or other appropriate garments should be used depending on the extent of exposure.
3. Wear goggles or face shield during pouring or mixing, or if there is a chance of splashing
4. Use only in a well-ventilated area and avoid inhaling vapors or dusts

13. SUMMARY

NAC recognizes the need for a Written Right to Know Program. If anyone has questions or suggestions about this plan contact the Safety Coordinator. The plan will be reviewed by the Warehouse Manager and Safety Coordinator to help ensure that the policies are carried out and that the plan is effective.

Companywide SDS books shall be updated yearly by the Safety Coordinator. Individual SDS books stored in company vehicles or on jobsites shall be updated continuously by the chemical users (Employees). Each user must keep a copy of the SDS sheet for any new chemicals they purchase or use.

NOISE AND HEARING CONSERVATION

Purpose

Feasible engineering or administrate controls shall be utilized to protect all employees against sound levels at or above the action level of an eight hour time-weighted average (TWA) of 85 dBA or, equivalently, a dose of 50 percent. [1910.95(c)(1)] The Action level implies a

- All hearing protection devices must attenuate sound to 90 dBA or less. (If an employee has experienced a standard threshold shift (STS), hearing protection must attenuate at or below the action level of 85 dBA).

For Construction sites exceeding the PEL listed in the table below requires protection through feasible administrative or engineering controls. PPE shall be provided and worn when other control measures fail to reduce levels to be at or below what is shown in the table below. [29 CFR 1926.52]

PERMISSIBLE NOISE EXPOSURES	
Duration per day, hours	Sound Level/ dBA slow response
8	90
6	92
4	95
3	97
2	100
1.5	102
1	105
0.5	110
0.5 or less	115

- If there is concern for high noise levels at an employee worksite, audiometric testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace noise before. If it is determined that monitoring is required, noise measurements must integrate all continuous, intermittent, and impulsive noise levels from 80 to 130 dBA. [29 CFR 1910.95(d)(2)(i)]

Procedures

When engineering or administrative controls fail to reduce sound levels within these limits ear protection devices shall be provided and used.

In all cases where the sound levels exceed these values a continuing, effective hearing conservation program will be used and will include the following elements:

- Monitoring employee noise exposures annually or when exposure changes including: establishing audiometric testing to all employees whose exposures equal or exceed an 8 hour time weighted average action level of 85 decibels.

- Within 6 months of an employee's first exposure at or above the action level a valid baseline audiogram shall be established against which future audiograms can be compared.

- Using engineering, work practice and administrative controls, and personal protective equipment.

- Fitting each overexposed employee with appropriate hearing protectors specific to their individual noise environments.

- Training employees in the effects of noise and protection measures.
- Explaining procedures for preventing further hearing loss.
- Record Keeping.

Guidelines

- Ear plugs will be available at all times and provided to employees at no cost.
- If exposed to loud noises while working ear plugs must be worn
- If ear plugs become dirty or lost, employees are expected to use a new pair
- Ear protection supplies shall be stored in gang boxes at jobsites, service vehicles, and an inventory shall be stored at NAC warehouse shop

- If a threshold shift occurs, use of hearing protection shall be reevaluated and if necessary a medical evaluation shall be scheduled.

Training/ Documentation

- Training will happen on an annual basis and be updated consistent to changes in PPE and work practices.

- Copies of the noise exposure procedures will be available for all employees to access on NAC's safety website and hard copies will be available to view at worksites kept in the company safety manual.

- If a standard threshold shift occurs any employees affected will be notified in writing within 21 days of the determination.

- All training, Employee Exposure, and audiometric testing records will be kept on file.

Noise and Vibration Work Permit

Job Name:_____ Contract Number:_____

PART I: SCOPE OF WORK:

Start Date:_____ Start Time:_____ Stop Date:_____ Stop Time:_____

If work is ongoing specify details:_____

_____

Building Location:_____ Floor:_____ Room Number:_____

Description of work and area affected:_____

_____

_____

_____

If other companies are involved please describe:_____

_____

Does this affect the area below? Description: _____
Does this affect the area above? Description: _____
Does this affect neighboring areas? Description: _____

Requester/ Title:_____ Date:_____

PART II: RISK ASSESSMENT:

(1) How will the risks be controlled:_____

_____

_____

(2) Describe safe work practices to be followed:_____

_____

_____

(3) Describe personal protective equipment used:_____

_____

_____

PART III: APPROVAL(S) TO PERFORM THE WORK:

_____ _____

Facilities Manager Facilities Engineer

_____ _____

Other specify: (_____) Person performing the work

Note: Once the work is complete, forward this form to NAC Project Manager for review and retention.

PERSONAL PROTECTIVE EQUIPMENT PROGRAM

I. Purpose

The objective of the Personal Protective Equipment (PPE) Program is to protect employees from the risk of injury by creating a barrier against workplace hazards. Personal protective equipment is not a substitute for good engineering or administrative controls, or good work practices, but should be used in conjunction with these controls to ensure the safety and health of employees. Personal protective equipment that is provided shall be used and maintained reduce the risk of occupational injury/ or illness.

II. Scope

This program addresses only minimum requirements of eye, face, head, foot, hand and/ or dermal protection. Separate programs exist for respiratory and hearing protection, since the need for participation in these programs is established through industrial hygiene monitoring.

III. Hazard Assessment and Equipment Selection

NAC will conduct inspections of all workplaces to determine the need for PPE and to help select the proper PPE for each task performed to protect employees and ensure compliance with Occupational Safety and Health Administration (OSHA) Personal Protective Equipment standards, as found in 29 CFR 1910.132 through 1910.138.

NAC Management and supervisors, will evaluate each work area to identify sources of hazards to determine the suitability of PPE to protect against impact, penetration, compression, chemical, heat, dust, electrical sources, material handling, and light radiation. New or additional PPE will be selected by management, supervisors, and employees that ensures the level of protection is adequate for the identified hazards. Adequate protection against the highest level of each of the hazards will be provided or recommended for purchase.

IV. Responsibilities

Management is responsible for the development, implementation, and administration of Personal Protective Equipment Program. This includes:

- Conducting workplace hazard assessments to determine the presence of hazards that necessitate the use of PPE.
- Conducting periodic workplace reassessments as requested by supervisors and/ or as determined by management.
- Maintaining records of hazard assessments that are signed/certified.
- Providing training and technical assistance to supervisors on the proper use, care , and cleaning of PPE.
- Providing guidance to the supervisor for the selection and purchase of approved PPE
- Periodically reevaluating the suitability of previously selected PPE
- Reviewing, updating, and evaluating the overall effectiveness of the PPE program.

Supervisors have the primary responsibility for implementation of the PPE program in their work area. This involves:

- Providing appropriate PPE and making it available to employees

- Ensuring employees are trained on the proper use, care and cleaning of PPE
- Maintaining records on PPE assignments and training
- Supervising staff to ensure the PPE program elements are followed and the employees properly use and care for PPE
- Seeking assistance from management to evaluate hazards
- Notify management when new hazards are introduced or when processes are added or changed
- Ensuring defective or damaged equipment is immediately replaced.

Employees, as users, are responsible for following the requirements of the PPE Program. This involves:

- Wearing the PPE as required
- Attending required training sessions
- Informing the supervisor of the need to repair or replace PPE
- Employee owned PPE will only be permitted if it has been approved by the Foremen/ Safety Coordinator and it must be adequately maintained and sanitized.
- Employees shall conduct hazard assessments to ensure PPE that is signed/certified by the person completing the assessment.

V. Protective Devices

All PPE will be of safe
design, constructed for the work to be performed, and will be maintained in a sanitary and reliable condition. Only those items of protective clothing and equipment that meet ANSI (American National Standards Institute) or NIOSH (National Institute of Safety & Health) standards will be produced or accepted for use. Newly purchased PPE must conform to the updated ANSI standards which have been incorporated into the OSHA PPE regulations, found in 29 CFR 1910.132 though 1910.138

Careful consideration will be given to comfort and fit in order to ensure the PPE will be used. Protective devices are generally available in a variety of sizes. Care will be taken to ensure the right size is selected.

Eye and Face Protection

Eye protection will be mandatory for employees, visitors, and contractors in all situations and environments that involve hazards to the eyes. Eye protection shall be specific to the hazards, meet ANSI Z87.1 Standards, kept clean and maintained for use. Employees who wear prescription lenses will be provided safety glasses to fit over their personal glasses.

Suitable protection such as face shields and goggles will be used when employees are exposed to hazards from flying particles, molten metal, acids or caustic liquids, chemical liquids, gases or vapors, bioaerosols, or potentially injurious light radiation.

- In all operations where striking and struck tools are used, grinding, buffing, scratch brushes or where the cutting action of a tool causes particles to fly, eye protection and a face shield must be worn by the user of the tool and by others who may be exposed to flying particles.
- Wearers of contact lenses must also wear appropriate eye and face protection devices in hazardous environments. Wearers of prescription safety glasses must wear side protectors

when hazards are present, and must be approved by supervisors to ensure they meet required standards.

- Side protectors will be used when there is a hazard from flying objects.
- Goggles and face shields will be used when there is a hazard form chemical splash
- Face shields must be worn over primary eye protection (safety glasses or goggles)
- For those employees who wear prescription lenses, eye protectors will either incorporate the prescription in the design or will fit properly over the prescription lenses.
- Protectors will be marked to identify the manufacturer.
- Equipment fitted with appropriate filter lenses will be used to protect against light radiation. Tinted or shaded lenses are not filter lenses unless they are marked or identify as such. Failure to use proper filter lenses can result in permanent vision loss.

Emergency eyewash facilities, meeting the requirements of ANSI Z358.1, will be provided in all areas where the eyes of an employee will be exposed to corrosive materials. All emergency eyewash facilities will be readily available, and located where they are easily accessible in an emergency. If there is not space for eye washes, disposable eye wash bottles will be kept onsite inside the first aid kit. All plumbed eyewashes must be run on a weekly basis to ensure contaminants are removed.

ALL EMPLOYEES SHALL KNOW:

- Location of the eyewash stations, sinks, and lens cleaning stations and how to use them
- What to do in an eye emergency until help arrives
- Name of the person who is trained in first aid

First Aid Procedures for Eye Injuries

Small particles, specks or dust

- Don't rub the eye. Hold eye open and flush with water at nearest eyewash station. You can also try pulling upper lid out and down over lower lid, causing the eye to tear and particle to wash out. Seek medical help to flush out if necessary.

Blow to the eye

- Apply a cold compress for 15 minutes in order to reduce pain and swelling. Have a doctor examine they eye as soon as possible to make sure there is no internal injury.

Chemical Splash

- Flush immediately with water at nearest eyewash station or shower for at least 15 minutes. Do not rub or squeeze eye shut. Seek medical attention immediately.

Object embedded in eye

- Do not try to remove the object. Cover both eyes to help prevent movement of injured eye. If object is large and protruding, cover it with a paper cup or something similar. Seek medical attention.

Light burns

- Symptoms include redness, swelling, light sensitivity and a gritty feeling in the eyes. Symptoms may not be apparent until 3-12 hours after injury. Keep eyes closed and seek medical attention immediately.

<u>Head Protection</u>

Head protection will be furnished to, and used by all employees and contractors engaged in construction work, and in all work areas identified as required during the hazard assessment of that

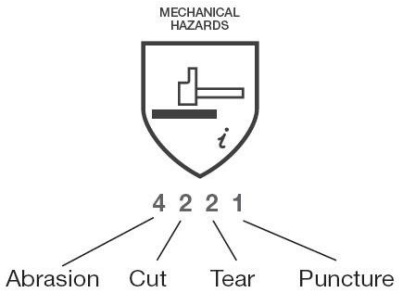
particular work area. Head protection will be worn when hazards from falling or fixed objects or electrical shock are present.

Foot Protection

Safety shoes will be worn where identified as required during the hazard assessment of each particular work area.

- Safety shoes or boots, with impact protection, are required to be worn in work areas where carrying or handling materials such as packages, parts, or heavy loads, which could be dropped and for other activities where objects might fall onto the fleet.
- Safety shoes or boots, with compression protection, are required to be worn for work activities involving skid trucks (manual materials handling cars) or other activities in which materials or equipment could potentially roll over the feet of an employee.
- Safety shoes or boots, with puncture protection, are required where sharp objects such as nails, wire tacks, screws, large staples or scrap metal can be steeped on by employees.

Hand Protection



Suitable gloves shall be worn when hazards from chemicals, cuts/lacerations, abrasions, punctures, burns, biological, or harmful temperature extremes are present. Glove selection will be based on performance characteristics of the gloves, conditions, duration of use, and hazards present. Hand protection shall meet ANSI or EN standards and be appropriate for the hazards. For example: ANSI standards cut levels are represented by "A#" in a shield. A2 cut level is appropriate for general material handling and construction work. Higher levels such as A4 are better suited for frequent handling of very sharp objects or situations with greater risk of cuts. Gloves also lists a four digit number that corresponds with EN protection levels (see image to the right). The second number indicates cut resistance level. EN cut level of 2 (shown) is equivalent to ANSI cut level of A1.

In selecting gloves for use during chemical exposure the first consideration will be the exact nature of substances encountered. Instructions and warning labels found on chemical containers and/ or Safety Data Sheets (SDS) shall be read prior to working with any chemical.

Cleaning and Maintenance

All PPE will be kept clean and properly maintained. Cleaning is particularly important for eye and face protection, where dirty or fogged lenses could impair vision. PPE should be inspected, cleaned and maintained at regular intervals so the PPE provides the necessary protection. Personal protective equipment should not be shared between employees until it has been properly cleaned and sanitized.

Training

Any employee who is required to wear PPE will receive training in proper use and care of the PPE. Initial training will be from instructional materials provided with the employees and supervisors as needed. Training will include, but not necessarily be limited to, the following subjects:

- When it is necessary for PPE to be worn
- What PPE is necessary

- How to properly don, doff, adjust and wear PPE
- The limitations of PPE
- The proper care, maintenance, useful life, and disposal of the PPE

After the completion of the training employees will be required to demonstrate they understand the components of the Personal Protective Equipment Program, and how to use PPE properly. Retraining will be required whenever there is evidence of a lack of use, improper use, insufficient skills or understanding by an employee. Retraining will also be required when changes in the workplace make prior training obsolete, or when the type of PPE changes. Employees shall be trained in inspecting PPE, and any PPE found damaged or defective SHALL NOT be used

Record Keeping

Written records will be kept with the names of the persons trained, the types of training provided, and the dates when training occurred. Training records will be maintained for each employee a minimum of 3 years.

An evaluation using the following NAC forms will be carried out when necessary to aid in the selection of PPE:

- PPE Assessment Checklist Form
- PPE Certification of Hazard Assessment Form

PPE ASSESSMENT CHECKLIST

NAC MECHANICAL & ELECTRICAL SERVICES Date:_____

Complete if employees are subjected to eye, head, hand, foot and/ or dermal exposure.

General Policies

O Yes O No Has a workplace survey been conducted to determine which PPE items are Necessary?
O Yes O No Is this survey documented?
O Yes O No Is all protective equipment maintained in a sanitary condition and ready to use?
O Yes O No Have employees been trained and tested on how and when to use PPE items?
O Yes O No Are temporary or rotated shift employees, vendors, and visitors advised on the use of PPE items?
O Yes O No Are these same groups required to wear PPE while in the work area?
O Yes O No Has Material Safety Data Sheet information been surveyed for required PPE usage?
O Yes O No Are employee training records maintained accurately and kept up to date?

Use and Disposal

O Yes O No Are procedures in place for decontamination/ disposal of PPE items?
O Yes O No Are PPE items for reorder verified for the same level of protection when there is a change in manufacture?
O Yes O No Is the compatibility of replacement parts (such as respirator cartridges) also verified?
O Yes O No Are procedures in place for cleaning up hazardous materials?

Vision Protection

O Yes O No Are protective goggles, glasses, and face shields provided and worn if there is any danger for flying particles or corrosive materials?
O Yes O No Are approved safety glasses required to be worn when there is a risk of eye injuries, such as punctures, abrasions, contusions, or burns?
O Yes O No Are employees who use corrective lenses required to wear approved prescription safety glasses with goggles and face shield?

Apparel

O Yes O No Are protective gloves, aprons, shields, or other precautions provided wherever there is a danger employees could be cut or exposed to corrosive, hazards, or infectious materials?
O Yes O No Are eye facilities and quick drench shower within any work area where employees are exposed to invasive materials?
O Yes O No Are hard hats inspected periodically for damage to the suspension system and the shell?
O Yes O No Are employees who work in identified areas required wearing protective footwear?

Respirators, Hearing Protections

O Yes O No Are approved respirators provided for regular or emergency use where needed?
O Yes O No Is protection provided against occupation noise exposure when required?
O Yes O No Is hearing testing also provided?

PPE Certification of Hazard Assessment Form

Location: _____ Date: _____
Specific Task Performed at this Location: _____
Analysis Conducted By: _____

I. Overhead Hazards

Hazards to consider include:

- Suspended loads that could fall
- Overhead beams or loads that could be hit against
- Energized wires or equipment that could be hit against
- Employees work at elevated site who could drop object on others below
- Sharp objects or corners at head level

Hazard Identified: _____

_____

Head Protection O Yes O No
If yes, what type?

O Type G (General) Impact & penetration resistance, low voltage exposure, proof-tested at 2,200 volts

O Type e (Electrical) Impact & penetration resistance, high voltage exposure, proof-tested at 20,000 volts

O Type C (Conductive) Impact & penetration resistance, no electrical exposure

II. Eyes and Face Hazards

Hazards to consider include:

- Chemical splashes
- Smoke & fumes
- Lasers/ optical radiation
- Projectiles
- Dust
- Welding operations
- Bioaerosols

Hazards Identified: _____

_____

Eye Protection O Yes O No
Safety Glasses O Yes O No
Face Shields O Yes O No

III. Hand Hazards

Hazards to consider include:

- Chemicals
- Temperature extremes
- Exposed electrical
- Material handling
- Sharp edges, splinters
- Biological agents
- Sharp tools, machine parts

Hazards identified: _____

_____

Hand Protection O Yes O No
Gloves O Yes O No
O Chemical resistant
O Temperature resident
O Abrasion resistant
O Other (Explain): _____

IV. Foot Hazards

Hazards to consider include:

- Heavy materials handled by employees
- Exposed electrical wires
- Wet conditions
- Sharp edges or points (puncture risks)
- Unusually slippery conditions
- Construction/ demolitions

Hazards Identified:_____

_____

Foot Protection O Yes O No
Safety Shoes O Yes O No
Types:
O Toe Protection
O Metatarsal protection
O Puncture resistant
O Electrical insulation
O Other (Explain): _____

V. Other identified safety and/ or health hazards:

Hazards Identified	Recommended protection
_____	_____
_____	_____
_____	_____
_____	_____

I certify that the above inspection was performed to the best of my knowledge and ability, based on the hazards present on this day.

_____

NAC MECHANICAL & ELECTRICAL SERVICES

DATE:_____

RESPIRATORY PROTECTION PROGRAM

Respiratory hazards in the workplace will be controlled whenever possible using engineering, work practice, or administrative controls. If these controls are not feasible or do not provide sufficient protection, employees may need to utilize respiratory protection.

Voluntary use of disposable filtering face piece respirators (dust masks) is permitted when use does not pose an additional hazard. Voluntary use of filtering face piece respirators does not require a medical examination prior to use. Voluntary use of respirators other than filtering face pieces do require medical testing to ensure the user is capable of wearing the respirator. Voluntary use of these other respirators do not require fit testing or a shaved face, however both are encouraged to ensure a tight fit that will help achieve the maximum protection factor. All disposable respirators must be disposed of at the end of each use or according to manufacturer's instructions.

Mandatory Respirator use may be necessary while working in environments with the following respiratory exposures:

- Harmful dusts (lead, silica, and other heavy metals)
- Fumes and smokes (welding fumes)
- Gases and vapors (chemical exposures)
- Oxygen deficiency (oxidation, displacement, and consumption)

Mandatory use respirators require Medical evaluation, fit testing, and a clean shaven face prior to respirator use, regardless of the type.

Respirator requirements are as follows for all NAC employees using respirators:

1. Prior to issuing respirators, the work environment must first be assessed to determine if there is a need for respiratory protection. Employees should consult with NAC Safety Coordinator to determine what type of respirator is suitable for their work environment.
2. If the use of respiratory protection is required, employees must complete the medical evaluation prior to fit test. Employees shall be trained prior to using a respirator. This will be convenient for the employee, arranged through NAC Safety Coordinator, provided at no cost to the employee, be confidential, and performed by a (PLHCP). All respirators will also be provided by NAC at no cost.
3. Employees who are required to use respirators must also complete the training and be fit tested, Qualitative (QLFT)/ Quantitative (QNFT), before initial use of new respirators and annually thereafter.

Employees will be trained and familiar with the specific respirator types which they will be using. NIOSH certified respirators will be selected based on the hazards some of which may include:

- *Air-Purifying Respirators (APR)* which clean the air breathed using filters, cartridges, or canisters
  APRs include half face, full face, N95, and PAPR respirators.
- *Atmosphere Supplying Respirators* which supply the user with breathing air from a source independent of the ambient atmosphere.
- *Supplied Air Respirators (SAR) and Self Contained Breathing Apparatus (SCBA)* which are examples of atmosphere supplying respirators.

Employees are not permitted to enter atmospheres that are considered Imminently Dangerous to Life and Health (IDLH). IDLH conditions required SCBAs or SARs to supply safe breathing air. Employees shall not use SCBAs or SARs unless they are authorized, medically evaluated, and fit tested. They must also be trained on the safe use of SARs/SCBAs, rescue procedures, and any other situations requiring the use of SARs/SCBAs.

After training, employees will be aware of and follow these respirator requirements:

- Respirators must always be inspected prior to donning. The inspection should check for missing or worn respirator parts.
- For air-purifying respirators, the proper cartridge or filter must be selected based on the hazards found at the workplace.
- Respirator users must don the respirator properly and verify a good fit by performing positive and negative user seal checks each time the respirator is donned.
- Respirator users must know the limitations of their respirator and stay clean shaven and avoid any other obstructions to the respirator seal area
- Employees may not share respirators and must only use the respirator for which they have been fitted. Respirators shall be kept clean and sanitary and be stored in a clean, safe place.
- Employees are required to leave the exposure area to wash/ change cartridges, or if they detect a break-through or resistance in their respirator.

Voluntary Use of Respiratory Protection Form

Voluntary use of filtering face piece respirator is permitted when use does not pose an additional hazard. Voluntary use of filtered face pieces does not require a medical examination prior to use. Voluntary use of respirators other than filtered face pieces require medical questionnaire to ensure the user is capable of wearing the respirator. All disposable respirators must be disposed of at the end of each use according to manufacturer's directions. Please read excerpt from OSHA's Appendix D, regarding voluntary use of respirators.

> ***Appendix D to Sec. 1910.134 (Mandatory) Information for Employees Using Respirators When Not Required Under the Standard***
>
> *Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.*
>
> **You should do the following:**
>
> 1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
> 2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
> 3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
> 4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

Use of filtered face piece respirators provides protection against nuisance particulates (e.g., fiberglass, sheet rock dust, sawdust, dirt, pollen, animal dander). These will not provide protection from any chemical vapors such as those associated with spray paints or solvents. Work perform that may involve airborne asbestos fibers, silica dust, or lead dust should be reviewed by EHS before the project proceeds.

To use a respirator voluntarily, you agree to follow the guidelines for using voluntary respiratory protection. Should you volunteer to use anything besides a filtering face piece respirator, you agree to undergo a confidential medical questionnaire/evaluation to ensure you are able to use the respirator, as well as a fit test to ensure the respirator fits properly

Section IV

Hazardous Energy Safety

IV. Hazardous Energy Safety

1. Confined Space
    a. Tripod Setup, Gas Monitor, Confined Space Reminders
    b. Confined Space Entry Permit
2. Electrical Safety
    a. GFCI Test Form
    b. Energized Electrical Work Permit
3. Hot work
    a. Hot Work Permit
4. Welding + Cutting
5. Line Break
    a. Service Interruption Form
    b. Gas Meter Procedure
6. Lockout/Tagout (LOTO)
    a. NAC LOTO Tags
    b. Lockout Procedures for Refrigeration Piping

NAC
Mechanical ♦ Electrical ♦ Fabrication
Building Technology ♦ 24 Hour Service

CONFINED SPACE ENTRY

OVERVIEW

The main purpose of all confined space entry standards is to protect the people working in confined spaces where toxic, explosive, and asphyxiating atmospheres may exist. NAC has developed the following general safety policies for working in confined spaces. These procedures are reviewed annually and revised as necessary. These procedures outline confined space safety as a whole and specific safety policies for various jobs will be developed prior to entering each confined space.

DEFINITIONS

A *confined space* is any area that is large enough to enter and work in, is not meant for continuous occupancy, and has a limited means of entry or exit.

A *permit required confined space* is a confined space that has one or more of the following characteristics: contains or has the potential to contain a hazardous atmosphere, contains material that has potential to engulf an entrant, has an entrapment hazard (internal configuration that could trap or asphyxiate by inwardly converging walls or slopes downward and tapers to a smaller cross section), or contains any other recognized serious safety or health hazard. A "permit-required" confined space requires a *permit* to be completed prior to entry. Confined spaces include, but are not limited to: storage vessels, furnaces, railroad tank cars, manholes, bulk material hoppers, shafts, some tunnels, and boilers.

Host employer -is the employer that owns or manages the property where the construction work is taking place. They shall communicate with all the parties involved and coordinate responsibilities prior to entry. They must provide the controlling contractor with information about location of each known permit space, hazards, and precautions used historically by any other contractor or entrant for safe entry.

Controlling Contractor -is the employer that has overall responsibility for construction at the worksite. They shall obtain information from the host and provide host employer's information about the space's previous entries to entry employers or any other entity at the worksite whose activities could foreseeably result in a hazard in the permit space.

Entry Employer -means any employer who decides that an employee it directs will enter a permit space. They must receive information about the entry space prior to entry and ensure coordination between controlling contractor and any other entrants or other affected employees that may result in hazards in the space.

AUTHORIZED POSITIONS

Attendant - defined as those trained and designated to monitor the Entrant at all time. The confined space attendant is a very important duty. Communication with those inside must be maintained at all times. This shall be accomplished through the use of 2 way radios or video monitoring, or other effective means. NAC's company policy is that the attendant must never leave their position while on duty, unless another, equally trained attendant can stand in.

If there is a situation where the attendant is monitoring more than one confined space, special procedures shall be developed prior to the work that will ensure the attendant is capable to respond to emergencies in one or more permit spaces they are monitoring.

Responsibilities:

- Monitoring authorized entrants in the confined space at all times and continuously maintain an accurate count of attendance and means of identifying authorized entrants.
- Assessing activities and conditions inside and outside the space to determine safety for entrants to remain in the space.
- Being familiar with hazard(s) in the confined space and the behavioral effects of the hazard(s)
- Staying in contact with entrants and making sure they are not experiencing negative effects
- Ordering entrants out of the confined space if deemed necessary or when attendant cannot effectively and safely perform all of the duties required
- Summoning rescuers without leaving the attendant position
- Identifying authorized entrants in order to prevent unauthorized entry
- Performing non-entry rescues
- Staying in position and not attempting any entry of the confined space, space should any rescue situation occur (unless trained on a specific rescue plan) and replacement attendant is present
- Not performing any other duties that might divert attention away from monitoring and protecting the safety of the authorized entrants of the confines space

Entrants – defined as those trained & authorized to work in the confined space, and monitored by the Attendant. They must be familiar with and understand hazards and their warning signs, symptoms and effects, properly use required equipment, communicate with the attendant, and exit the space immediately when required.

Entry Supervisors – will designate tasks, roles, and training related to confined spaces, and must be familiar with hazards, warning signs, symptoms and effects of exposure. They shall:

- Verify permit is complete, tests have been conducted and procedures and equipment specified by the permit are in place before signing permit and allowing entry to begin
- Ensure all hazards are eliminated or controlled prior to entry and all equipment is properly used and procedures are in place.
- Ensure all safe conditions are maintained during entry, cancel or suspend the permit if necessary, and remove unauthorized entrants.
- Verify rescue services are available at the time of entry, means of summoning rescues are operable, and that they are notified if the rescue services become unavailable.
- Determines that when transfer of entry operation responsibility occurs, acceptable entry conditions are maintained and are consistent with the terms of the permit and hazards in the space.

TRAINING

Training will be specific to the confined space that is to be entered and duration will depend on the complexity of the entry and work. NAC requires training for entrants, attendants, and rescue teams, as well as any subcontractors or others affected by the entry. Training shall be documented include the following subjects:

1. Know each person's role and responsibilities and the hazards faced for each role.
2. Anticipate the hazards present in the space and know how to control them.
3. Understand the signs, symptoms, and the consequences of exposure to hazards.
4. Know when to evacuate the space.
5. Know how to use any needed equipment, and inspect before use.

6. Know how to communicate with attendants and the rescue team.
7. Know the procedures involved with the rescue plan: self rescue, non-entry rescue, or entry rescue by outside services.
8. Understand how to fill out the confined space permit, and complete the permit.

POLICY

A confined space is any area that is large enough to enter and work in, is not meant for continuous occupancy, and has a limited means of entry or exit. If at least **1 of the 4** following conditions exists in the confined space, it is considered a *Permit Required* confined space:

1. Contains or has the potential to contain a **hazardous atmosphere.**
2. Contains a material that has the potential for **engulfing** an entrant.
3. Has an internal configuration such that the entrant could be **trapped** or **asphyxiated.**
4. Contains any other recognized **serious safety or health hazard.**

NAC employees are prohibited from entering a *permit-required confined space* until all employees involved are trained, a rescue plan is developed, hazards are eliminated, air is tested and confirmed safe, a confined space entry permit is issued and signed by the entry supervisor and the attendant is in place outside the entrance. All entrants shall wear 4-gas monitors or have other equally effective means of measuring real-time atmospheric conditions in the space to help alert workers of changes in conditions, and prompt self-rescue procedures. All subcontractors shall also follow NAC's policies on confined space entry. Rescue services must be on-site when conditions immediately dangerous to life or health (IDLH) exist within an occupied confined space.

Non-permit Required Confined Space Entry: confined spaces that do not contain or have the potential for hazardous conditions as listed above, shall not be entered until evaluated by a competent person and confirmed that no hazards are present or anticipated due to work. To confirm no hazards are present, assess the risk potential based on present or anticipated conditions or activity in or around the space that may pose risk. It is always advisable to document your assessment. Use a 4-gas monitor to test the air if there is a potential for atmospheric hazards, such as for enclosed spaces without fresh-air ventilation.

Reclassified Entry : Permit Required Spaces can be reclassified to non-permit required confined spaces when a competent person determines

1. All hazards are confirmed eliminated or isolated without need to enter space.
2. The space shall pose no actual or potential atmospheric hazard or other hazard,
3. Testing/inspection during entry determines effective hazard elimination or isolation, and self-rescue can be achieved if hazards do arise.
4. Forced air ventilation does not constitute elimination or isolation of atmospheric hazard
5. Documentation (using a permit), ensuring that all hazards are eliminated, including the date, location, and signature of reclassifying person.
6. If hazards arise within a permit space that has been reclassified, employees shall evacuate, reevaluate the space. Hazards shall be eliminated prior to re-entry (temporary suspension of permit), or space shall be reclassified as a "permit-required" confined space (cancel permit + complete new permit).

Modified Entry: Permit Required Spaces can be entered under a modified entry when a competent person determines the following items are followed.

1. All physical hazards are confirmed eliminated or isolated without need to enter space.
2. Atmospheric hazard potential can be effectively controlled by mechanical ventilation.
3. Self-Rescue can be achieved. Warning systems are in place and provide ample time for safe exit. Suspension or termination may be necessary if unanticipated hazards arise.
4. Test air before and after purging space, and use continuous air monitoring during entry with continuous mechanical ventilation. Self-rescue plan must be discussed and in place
5. Documentation (use a permit or use historic data): Complete the permit on initial entry, clearly identify modified entry, and post for duration of modified entry.
   Note: If obtaining data to document effectiveness of controls upon initial entry, treat as traditional Permit-Required CS for first entry. Historic data may be used if conditions are comparable, and approved by competent person.

Permit Required Confined Space Entry: Hazards are present in a confined space that could seriously injure or harm an entrant, and requires a permit to be completed, and steps taken to make the space safe to enter prior to entry. An attendant is required to be in place to monitor the entry, and a rescue plan must be established and discussed with all employees. .

1. All physical hazards shall be controlled to make safe for entry.
2. Atmospheric hazards are controlled, but may still pose a potential risk. If required to use respirators, res
3. Set up non-entry rescue equipment, or if using outside entry-rescue contractor, ensure rescuers are available for prompt rescue or on-site. Verify hazards are controlled and make safe. Suspension or termination may be necessary if unanticipated hazards arise.
4. Test the air before entering the space, and wear 4-gas monitor prior to entry. Using mechanical ventilation will help reduce the risk of hazardous atmosphere.
5. Documentation (use a CS Permit): Complete the permit before entry each day. If hazards arise, permit must be suspended temporarily or terminated. Hazards shall be eliminated prior to re-entry.

RESCUE PLAN

A rescue plan is required prior to entering a confined space. Using 4-gas monitors as a warning system to prompt self-rescue is the primary rescue method. NAC recognizes that additional rescue is necessary in the event of an emergency. Non-entry rescue is the preferred backup rescue method, however in the event that is not possible due to configuration of the space, supervisors must notify local rescue services prior to entry in the event that they are not available, or need to respond to a local emergency. NAC employees shall not conduct entry rescue unless they have had confined space rescue training and have the proper equipment to safely enter the space. The rescue plan shall be trained and rehearsed prior to entry.

Prior to the rescue plan, exit points will be examined, routes for a rescue team to reach the victim will looked at, and a plan will be developed outlining the steps required for the rescue team to reach a victim safely in fastest and safest method possible.

Thing to consider: Will a rescue team needs to be onsite during the confined space entry? If not onsite how will a rescue team be notified and how long will it take for them to arrive? What steps should be taken by the attendant in the meantime before the rescue team arrives onsite.

CONFINED SPACE ENTRY PERMIT

Prior to entering a confined space, NAC employees will fill out a confined space permit provided by NAC or by the client at their request. The confined space permit will address the following information:

1. Identification of the space
2. Purpose of the entry
3. Date and duration of the permit
4. List of authorized entrants
5. Names of current attendants and entry supervisor
6. List of hazards in the permit space
7. List of measured to isolate permit space and eliminate or control hazards
8. Explanation of acceptable entry conditions
9. Results to test, including initials
10. Rescue and emergency services and means to summon such services
11. Communication plan for entrants and attendants
12. List of required equipment (i.e. respirators, communication systems, lighting, alarms)
13. Any additional permits required (i.e. hot work, lock-out / tag-out)
14. Any other necessary information, as required

If work is stopped or interrupted by a change in conditions, the original permit must be suspended, and all employees must exit the space until conditions are restored to that on the original permit. If they cannot be restored, the permit must be canceled and a new permit issued following the standard procedures above.

CONFINED SPACE GENERAL PROCEDURES

1. Non-permit required confined spaces shall be treated as a permit required space on the first entrance to document conditions, hazards and controls.
2. Signs shall be posted at each entrance: “Danger! Confined Space” to prevent unauthorized entry
3. All employees involved in the confined space entry shall be trained on procedures, roles/responsibilities, hazards, and rescue procedures.
4. The attendant shall be stationed outside the permit space during entry, and shall not leave or enter space unless replaced by another, trained attendant. The attendant shall monitor the entrants entering and exiting the space and their safety during entry, potential hazards, order evacuations, and initiate rescue procedures.
5. The entrant shall communicate with the attendant. The entrant has the right to exit the confined space at any time if they do not feel safe. The entrant has the right to refuse entry for any reason. The entrant is required to evacuate if the attendant orders evacuation.
6. The confined space shall be evacuated as quickly as possible whenever hazardous conditions arise, when ordered by attendant or entrant, or alerted by alarm or warning systems.
7. The entry supervisor must verify that all conditions and procedures are met before they sign the permit allowing work to begin.

8. If multiple employers are working in the same confined space, they must communicate and coordinate entry to give priority to entrant's safety. They shall complete separate permits, unless otherwise approved.
9. PPE: Employees must wear all necessary personal protective equipment and follow permit procedures every time they enter the confined space.
    a. Employees required to wear a respirator shall have passed a medical test approving the safe use of respiratory equipment and be fit tested.
    b. Employees entering the confined space shall wear a fall harness with a life-line and retrieval system when fall hazards are present and/or non-entry rescue may be performed.
    c. Some conditions may require specific safety PPE such as respirators, fire retardant clothing, protective coveralls, or rubber steel-toed boots.
10. All hazards shall be identified by a competent person and eliminated:
    a. Test the atmosphere inside the confined space prior to entry, before each shift change and after each work interruption to ensure the following ranges: oxygen 19.5% to 22.0%, hydrogen sulfide 0%, and explosive vapors 0%. Continuous monitoring using a 4-gas monitor shall be used as a means of alerting for self-rescue. Use ventilation to ensure at least 6 air changes per hour.
    b. Ensure all electrical power has been locked out and tagged out, and all process lines, including sewer and drain connections have been discontinued or otherwise plugged.
    c. Lock out and tag out all power driven and agitating equipment serving the confined space.
    d. Fall hazards shall be mitigated with guardrails at openings or fall harnesses as needed.
    e. Explosion proof lighting inside the confined space shall be provided including battery operated or GFCI protected sources.
    f. Hazards adjacent to the space must be eliminated if they could harm employees. If located near vehicle traffic, pathways shall be blocked and a flagging person shall be utilized.

If a new hazard is created or job duties change, the plan shall be revised and additional training shall take place. In the event of changes from entry conditions listed on the permit or unexpected events arise, a suspension of the permit is allowed. The space must be returned to the conditions listed on the permit prior to re-entering after a suspension. If that is not possible, the permit must be canceled.

Tripod Setup

1. Lay tripod flat on ground. Remove all 6 pins: 3 pins on tripod head, one on each leg

PARTS LIST

- ✓ 4-Gas Detector
- ✓ Bump Gas Cylinder w/straw
- ✓ Bump gas hose, bracket
- ✓ Charger
- ✓ Pump type: tubes & weight

pins

head v

nit to

escue mode) to connect the pulley to attachment point on tripod

O_2 (Oxygen)	**19.5% - 23.5%**	levels out of range will alarm
H_2S (Hydrogen Sulfide)	**0 ppm**	10ppm – 20ppm
CO (Carbon Monoxide)	**0-35 ppm**	20ppm – 200ppm
LEL (Methane)	**0%** -10%	10% - 50% | "Lower Explosive Limit"

   1. Pull out the pin (knurled plunger) at base of handle and
   2. Lift Handle base, then release pin to allow free movement of crank arm
- Engage crank (rescue mode)
   1. Pull out pin (knurled plunger) and
   2. Pop handle base back into place.

6. Attach work winch (suspension/lowering) to the inside of one of the unused tripod legs.
   - Connect winch pulley to other attachment point on tripod head.

4-Gas Monitor

RESULTS & TROUBLE SHOOTING

- All sensors should read and alarms sound during bump test = ready to use.
- If one or more alarms do not sound = turn off, turn on in fresh air, and re-test.
- Do Not Use and Contact NAC Safety if:
  - Alarms don't sound on re-test
  - If overexposed to gas (OL)
  - Gas monitor is dropped in water or damaged
  - Calibration due

INSTRUCTIONS: BUMP TEST – test daily before use.

1. In fresh air, turn on gas monitor by holding down the front button.
2. Wait for gas monitor to cycle through showing the Range, TWA, and STEL. It will then auto zero sensors.
   a. The pump model BW Max XTII will ask you to plug the pump outlet with your finger to ensure it is working.
3. Bump Test:
   -Install straw into gas cylinder nozzle
   a. Connect test tube to gas monitor, and tubing to bump gas cylinder straw.
   -Release a short burst of bump gas (1-2 secs).
   -Alarms will sound, read levels displayed to ensure they work.
4. Test Space: test before and after ventilation.
5. If atmosphere is safe, clip monitor near your breathing zone and enter space. Keep monitor "ON"
6. To turn off the monitor, hold front button for 3 seconds.

Pump model: Allow 1 sec/ft of tubing to read levels. Remove tube and place protective plastic filter in pump outlet and wear near breathing zone).

Confined Space Entry Reminders:

NAC employees are prohibited from entering a permit required confined space (PRCS) until safe conditions are verified, a CS permit is completed and signed by the entry. Independent subcontractors must also follow confined space protocol.

NOTE: If work is stopped/interrupted by a change in condition, original permit must be canceled. To resume work, a new permit must be issued.

Ventilation *Purge Time Guide (purge =7 air change/min)*

90° Bend	Output	500 ft3	1000 ft3	2500 ft3	10,000 ft3
None	1275 CFM	5 min	6 min	18 min	57 min
1	661 CFM	6 min	11 min	37 min	110 min
2	582 CFM	7 min	12 min	45 min	120 min

Note: Ensure fan is pulling from a fresh air source

ROLES: All employees involved must be trained.

Entrants

- Vertical Entries: Must wear safety body harness with lifeline for rapid exit or rescue.
- May leave the CS at any time when feeling unsafe. Exit quickly when ordered by alarm, warning signs, & prohibited conditions.
- Shall be medically tested when required to wear respirators.

Attendants

- Monitor CS at entry point, know hazards, and communicate with entrant.
- Notify rescuers.
- Do not enter CS.

Supervisor

- Location supervisor/person most knowledgeable about area, job and hazards.
- Verify all conditions and procedures are met before signing CS Permit.

Reminders:

- Test atmosphere before each shift change and after each work interruption.
- All LOTO is done: electrical power, process lines, mechanical, power driven and agitating equipment, hydraulics, etc.
- Block off area and post signs. If near traffic, use a flagger.
- If multiple employers are working in the same CS, each company must fill out a separate CS Permit and coordinate work to reduce interference.
- Wear PPE and follow procedures when in and around the CS.
- Ventilating the space with fans or smoke eaters
- Wearing proper personal protective equipment
- Good housekeeping in pathways, exits and entry ways
- Use cordless tools and head lamps when possible to minimize tripping hazards and fires. Use explosion proof lighting and battery operated or GFCI protected sources.

NAC CONFINED SPACE ENTRY PERMIT

Fill out permit prior to entering a Permit Required Confined Space or to reclassify or verify other entry. Post at Entrance during entry.

1 CS Details

Jobsite _____

CS location _____

Type of Space: ☐ Tunnel ☐ Attic ☐ Chase ☐ Shaft
☐ Boiler ☐ Manhole ☐ Tank ☐ Pit
☐ Other: _____

Work to be performed:

Potential Hazards:	yes	**CONTROL METHODS:**
Known Atmospheric Hazards		**Use continuous mechanical ventilation**
Potential Atmospheric Hazards		**Continuous monitoring: 4-gas monitor**
Created Atmospheric Hazards		**Other:**
Engulfment/Drowning		**Isolate + early warning w/evacuation**
Entrapment, Converging walls		**Block, isolate, other**
Explosion Hazard/Oxygen Rich		**Mech vent and no sparking equip**
Fire Hazard/Hot Work		**Smoke eaters, mech vent, extinguisher**
Electrical Hazard		**LOTO, PPE, tests, Live Elect. Permit**
Mechanical Hazard		**LOTO and guard**
How will you make it safe to enter?		

Initial Confined Space Classification*:

	Permit-Required Entry *(Attendant + Rescue plan)*
	Alternate Entry *(Continuous Mech. Ventilation)*
	Non-Permit CS *(Evaluate and Verify Safe)*

All people involved in the CS entry must be trained

Entrant _____
Entrant _____
Attendant _____
Attendant _____
Supervisor _____

Site Contact: _____

2 Rescue Plan

Required for all Permit Rquired Confined Space (PRCS) entries.

☐ Self Rescue: *Use 4-gas monitor and continuous mechanical ventilation for Alternate Entry. Ensure enough time to safely exit.*

☐ Non-Entry Rescue: For *all PRCS (Note: Mechanical retrieval device (tripod) required if vertical entry 5 feet deep)*
___ Tripod ___ Other - Describe: _____

☐ Entry-Rescue: *Approval Required. Be trained in confined space rescue. Attendant present, call 911, test air, ensure safe prior to entry.*

☐ Emergency Rescue: *Call 911. If space is difficult to access in an emergency, call local the fire dept prior to entry.*

Describe Rescue Plan

3 Test Air

Vent + Purge **Periodic Testing**

Setup Fans to pull from fresh air. Bump test monitors in fresh air prior to use to ensure sensors work. Test, purge, test.

4-Gas Monitor #: _____ Bump Test Time: _____ Initials: _____

4-gases measured	**Prior to Vent**	**After Vent**	_____	_____	_____
H2S <10 ppm					
CO <35 ppm					
LEL < 10 %					
Oxygen-O_2 19.5 % - 23.5 %					

Ventillation Purge Time Guide (purge =7 air change/min)

90° Bend	Output	500 ft3	1000 ft3	2500 ft3	10,000 ft3
None	1275 CFM	5 min	6 min	18 min	57 min
1	661 CFM	6 min	11 min	37 min	110 min
2	582 CFM	7 min	12 min	45 min	120 min

H2S= Hydrogen Sulfide, CO= Carbon monoxide (STEL is 200ppm max 15 min, 35ppm is TWA), LEL = Lower Explosive Limit (methane, propane, hydrogen, etc.)

4 Supervisor Signature

Permit Date _____ ***Start***

Entry Time _____

Supervisor Signature _____

Completion Time: _____ ***Stop***

Permit Suspension? _____ *out* _____ *in*

Permit Canceled? _____

Reason:

5 Notes

_____ Verified safe to *Reclassify* as Non-PRCS

Reclassification Duration:

*Return to the Safety Department when complete. (**Retain for 1 year**).*

ELECTRICAL SAFETY
(1926.403-405 and NFPA 70E)

Electrical regulations distinguish between “qualified” and “unqualified” persons. Only “qualified” persons can work directly with exposed energized parts including testing, troubleshooting, and voltage measuring. “Qualified” workers must be trained and familiar with the procedures in this program.

Employees who maintain and repair electrical components must be trained on hazards and be instructed on using engineering and administrative controls, and personal protective equipment to protect them from electrical hazards. Employees who work around electricity will have general electrical safety training on hazard identification and control measures to safely perform their work.

NAC Employees shall conduct a risk assessment and discuss the job task, hazards and controls prior to starting work, and utilize an energized electrical work permit and other electrical safety planning documents as needed. Employees shall advise the host employer of unique hazards presented by work tasks, unanticipated hazards, and any measures needed to correct hazards.

Outline:

1. Arc Flash and Arc Blast Safety
2. Establish and Verify an Electrically Safe Work Condition
3. Energized Work and Energized Electrical Work Permit
4. Training
5. Select and use PPE
6. Approach Distances
7. Planning for Electrical Safety
8. GFCI

1. Arc Flash + Arc Blast Safety

All NAC employees working on or near energized equipment that exposes them to electrical hazards shall take all precautions to reduce the risks of shock and arc flash/blast, including engineering controls, administrative controls and wearing proper PPE for the hazards. Always read labels and consider other alerts that will warn you of potential hazards, such as signs of poor maintenance or impending failure.

An Arc Flash is an undesired electric discharge of ionizing gas that travels through the air releasing an electric arc of plasma 4 times hotter than the surface of the sun. Arc flashes will cause severe burns and severe injury from the heat and projectile molten metal. An electrically safe work condition shall be created in accordance with NFPA 70E. Workers shall utilize PPE based on the electrical hazard assessment. Arc blast is the supersonic shockwave produced by the arc, causing a rapid expansion of gasses and conductive material, which creates projectile molten metal and shrapnel, can throw a person across a room from the pressure, and can cause hearing loss and severe injury. Arc Flash and Blast can cause life altering injuries and death.

Engineering Controls: Whenever possible, NAC will work with clients to help reduced risk of electrical hazards through design to make their systems safer. Always shut down equipment to

isolate the energy. Never work on energized equipment without prior approval, proper risk assessment, and appropriate PPE to prevent electrical shock and arc flash burns. Use Lockout / Tagout procedures to ensure energy is properly isolated.

Administrative Controls: Some Critical systems may not allow shutdown, as is the case with some hospitals. If equipment cannot be effectively isolated, employees shall use the Energized Electrical Work Permit to help plan for such work and relay the risk of the tasks requested to clients. Employees shall wear PPE appropriate for the anticipated hazard, stand off to the side of a panel when opening or throwing a switch, and mark off perimeters so unqualified workers do not cross the boundaries.

Personal Protective Equipment: Arc flash and Electrical PPE shall be worn to protect against arc flash and electric shock. PPE category shall be determined based on hazard risk assessment, and PPE shall be inspected before use. Employees are responsible for ensuring their arc flash gloves are up to date (testing is required every 6 months, or within a year of the test date if never been used.) See section 5 below.

2. Establish and Verify an Electrically Safe Work Condition in accordance with NFPA 70E

(130.2) Electrically safe work condition: Energized electrical conductors and circuit parts operating at *50 volts or greater shall be put into an electrically safe working condition* before employee performs work within the limited approach boundary, or interaction with equipment has increases the likelihood of an arc flash hazard injury.

1. Determine all possible sources of electrical supply to specific equipment. Check applicable up to date drawings, diagrams, and identification tags after properly interrupting the load current, open the disconnected device(s) for each source.
2. Wherever possible, visually verify all blades of disconnected devices are fully open or that drawout-type circuit breakers are withdrawn to the fully disconnected position.
3. Release stored electrical energy.
4. Release or block stored mechanical energy.
5. Apply lockout/tagout device in accordance with a documented and established procedure.
6. Use an adequately rated portable test instrument to test each phase conductor or circuit part to verify it is de-energized. Test each phase conductor or circuit part both phase-to-phase and phase-to-ground. Before and after each test, determine that the test instrument is operating satisfactorily through verification on any known voltage source.
7. Where possibility of induced voltages or stored electrical energy exists, ground the phase conductors or circuit parts before touching them. Where it could be reasonably anticipated that conductors or circuit parts being de-energized could contact other exposed energized conductors or circuit parts, apply temporary protective grounding equipment: placed to prevent shock hazard exposure, have appropriate capacity to clear the fault and have a low enough impedence for immediate operation of protective devices.

3. Energized Work and Energized Electrical Work Permits:

NFPA 70E (130.2(A)) Energized Work will be permitted where it can be demonstrated that de-energizing introduces additional hazards or increased risk, or if a the task to be performed is infeasible in a de-energized state due to equipment design or operational limitations. An Energized Electrical work permit shall be used to plan for and document safe work methods.

- **Example of Additional hazards or Increased Risk**: interruption of life-support equipment, deactivation of emergency alarm systems, and shutdown of hazardous location ventilation equipment.
- **Example of Infeasibility:** diagnostics and testing (startup or troubleshooting) of electrical circuits that can only be performed with the circuit energized and work on circuits that form an integral part of a continuous process that would otherwise need to be completely shut down in order to permit work on one circuit or piece of equipment.
- **Energized Electrical Work Permit:** shall be completed prior to working on energized equipment to ensure task is documented and can be done safely. The permit shall consist of:
    1. Description of circuit and equipment worked on and their location.
    2. Description of work being performed.
    3. Justification for why work must be performed in energized conditions.
    4. Description of safe work practices to be employed.
    5. Results of *Shock Risk Assessment*: Voltage exposure risk, Limited approach boundary, Restricted approach boundary, PPE and other equipment to safely perform task to protect against shock hazard.
    6. Results of *Arc Flash Risk Assessment*: Available incident energy at working distance. PPE required to protect against arc flash hazard, and the Arc flash boundary.
    7. Means to restrict access of unqualified persons
    8. Documented evidence of job briefing including job discussion of job-specific hazards.
    9. Approval for energized work.

    Work Permit exemptions: testing, troubleshooting or voltage measuring; the restricted approach boundary is not crossed; Thermography, ultrasound, visual inspections; the restricted approach boundary; Access to and egress from an area with energized equipment if no work is performed; and General housekeeping and miscellaneous non-electrical tasks.

4. Training

All NAC employees shall be trained to recognize and anticipate electrical hazards. Qualified workers shall maintain all industry training, licensure, and safety certifications including NFPA 70E. NAC will provides general safety training and job specific training. Employees shall understand these principles in order to perform their job safely:

- How to identify and avoid electrical hazards to which they are exposed to or working around.
- The need to assess the worksite for hazards by using an arc flash risk assessment.
- How to distinguish exposed “live” parts from other parts of electrical equipment.
- How to identify potential hazards, and understand specific hazards associated with electrical energy.
- How to determine nominal voltages of parts.
- How to determine clearance distances.
- Perform an annual audit of field work.
- Retraining will be required when a gap in knowledge is evident or need is indicated by employees. Retraining may also be required as industry standards change.

<u>Environments</u>

All NAC employees must not work on or near live parts of electrical circuits, unless they are protected by at least one of the following means:

- De-energizing and grounding the parts.
- Guarding the part by insulation.
- Any other effective means (Electrical personal protective equipment).

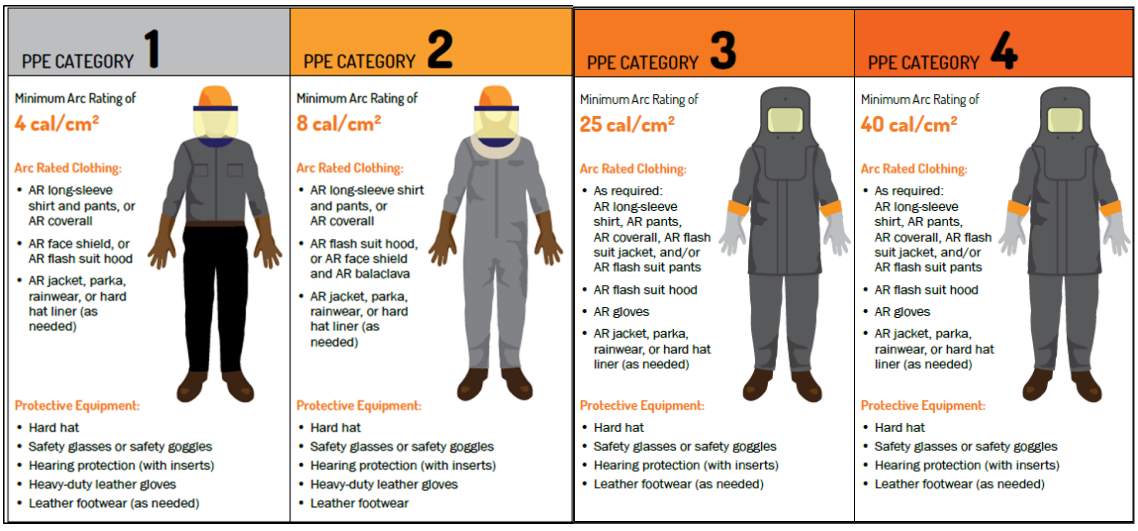
5. Selecting & Using PPE

All NAC employees working around electrical equipment will be prohibited from wearing conductive apparel and accessories, unless if these items are rendered non-conductive by covering, wrapping or other insulating means. When necessary NAC will issue proper arc flash rated protective clothing. Affected employees shall wear AR, FR or natural material clothing underneath Arc Flash Suits to prevent synthetic materials from melting to the skin. All insulating tools, PPE, and other equipment must be inspected prior to use each day, and immediately after any incident. Ensure all test instruments are verified to be in proper working order before and after an absence of voltage test.

Arc Flash PPE: Employees will be required to wear protective PPE while working on energized electrical equipment greater than 50V in accordance with NFPA 70E. PPE must be inspected before use. An electrical hazard assessment shall be completed, and Arc Flash labels on equipment must be consulted to determine arc flash PPE rating. In the case that labels are not available, NEC and current NFPA 70E standards must be consulted to determine the appropriate Arc Flash Protection Factor. Employees must also consider the condition that the equipment is in. If equipment has had poor maintenance history or shows signs of defect, damage, or impending failure, greater precautions shall be taken, and Arc Flash PPE may need to increase in protection factor.

NAC provides Arc Flash Suits and gloves, however the qualified electricians using equipment must determine the category of PPE required based on the hazard assessment. We commonly have Category 2, 8 cal/cm2 and Category 4, 43 cal/cm2 suits available. Any task requiring greater than Category 4, 40 cal/cm2, is not safe to work on live, and shut down is required.

Layering of Arc Flash Clothing will likely increase the overall ATPV Rating of your arc flash system, however layers should be tested to gather accurate arc flash protection of the combined layers. Adding the calorie ratings together doesn't necessarily give an accurate representation of the protection factor. Lookup the *Arc Flash Layering Data* for your brand, and see Annex M in NFPA 70E 2018. Ensure all AR and FR PPE is washed according to manufacturer's laundering instructions, and do NOT use bleach, oxyclean, fabric softeners, or starch on AR or FR clothing. Arc Flash/insulated (rubber) gloves shall be returned to NAC for re-testing every 6 months.



6. Approach Distances for Qualified Employees

Only qualified employees shall be permitted to approach energized electrical parts. Qualified employees who enter Limited Approach Boundary must be trained to assess the hazards, conduct a risk assessment prior to work, select and wear appropriate PPE and be insulated from all conductive objects. No unqualified person shall go beyond the Limited Approach Boundary unless escorted by qualified person and informed of hazards. Only qualified persons may enter the Restricted Approach Boundary, and shall be insulated or guarded from exposed energized parts. No conductive material shall be taken into the Restricted Approach Boundary.

See excerpt from NFPA 70E-2015:

Approach Boundaries to Energized Electrical Conductors Table (Data from 2015 Editions of NFPA 70E Table 130.4 (D)(a) and CSA Z462 Table 1A)

(1) Nominal System Voltage Range, Phase to Phase	(2) Limited Approach Boundary – Exposed Movable Conductor		(3) Limited Approach Boundary – Exposed Fixed Circuit Part		(4) Restricted Approach Boundary – Includes Inadvertent Movement Adder	
Less than 50	Not Specified		Not Specified		Not Specified	
50 to 150	10 ft 0 in.	3.0 m	3 ft 6in	1.0 m	Avoid Contact	
151 to 750	10 ft 0 in.	3.0 m	3 ft 6in.	1.0 m	1 ft 0 in.	0.3 m
751 to 15 kV	10 ft 0 in.	3.0 m	5 ft 0 in.	1.5 m	2 ft 2 in.	0.7 m

7. Planning for Electrical Safety

Take Safety Precautions to ensure that tasks are planned properly and work is conducted safely. Electrical hazards can cause burns, shocks and electrocution or death. By taking the following precautions the risks can be minimized:

Prevent Electrocution and Shock

- Assume that all overhead wires are energized at lethal voltages. Never assume that a wire is safe to touch even if it is down or appears to be insulated.
- Never touch a fallen overhead power line. Call the electric utility company to report them.
- If an overhead wire falls across your vehicle while you are driving, stay inside the vehicle and continue to drive away from the line. If the engine stalls, do not leave your vehicle. Warn people not to touch the vehicle or the wire. Call or ask someone to call the local electric utility company and emergency services.
- Employees and mechanical equipment must stay at least 10 feet away from overhead power lines. If the voltage is more than 50,000 volts, the clearance must be increased by 4 inches for each additional 10,000 volts.

- If working at heights or handling long objects, such as pipe, survey the area before starting work for the presence of overhead wires, and maintain clearances.
- Use of metal ladders is prohibited in areas where the
- ladder or the person using the ladder could come in contact with energized parts of equipment, fixtures or circuit conductors. Portable ladders must have non-conductive side rails.
- Always call 811 before you dig. Hand dig within 2 feet of either side of utility location. In work areas where the exact location of underground electrical power lines is unknown, employees using jack hammers bars or other hand tools that may contact the lines must be protected by insulating gloves, aprons, or other protection that will provide equivalent electrical protection.
- Have qualified electrician inspect electrical equipment that has gotten wet before energizing.
- Never operate electrical equipment while you are standing in the water.

Temporary Electrical

- All portable electrical tools and equipment should be a grounded or double insulated type.
- Use GFCIs. GFCIs shall be inspected and documented on a GFCI record sheet found in the Safety Program. Defective GFCIs shall be taken out of service and replaced by a qualified electrician.
- Extension cords shall have grounded conductors/ insulation in good condition without splices and be of heavy-duty construction grade.
- Extension cords shall be protected and kept clear of work areas and walkways to prevent trips or damage.
- Ground fault circuit interrupters should be installed on each temporary 15 or 20 ampere, 120 volt AC circuit at locations where construction, demolition, modifications, altercations or excavations are being performed.
- All temporary lighting shall be placed above 8 feet if assembled with wire nuts. Temporary lighting below 8 feet shall have connections placed inside a junction box. All temporary wiring shall be separated from any metal parts by insulated shielding or plastic clips.
- Any live parts of electrical equipment operating at 50 Volts or more must be guarded against damage or accidental or contact by doors, cabinets or other forms of enclosures.
- Do not hang cords directly on sharp objects or sharp metal where cords could become damaged. Tie from below.
- Maintain UL listing of equipment by following directions.

Maintenance and Tasks

- Installation work should be in compliance with the National Electrical Code Standards, OSHA standards, building codes and local ordinances. This work should be performed by a qualified and fully licensed electrician.
- Assume all wires are energized until verified and confirmed de-energized.
- When electrical equipment or lines are to be serviced, maintained or adjusted, necessary switches should be opened to disengage power, and locked-out.
- Start and end electrical equipment with switch in “OFF” position. Do not leave the switch in the “ON” position and use the plug to turn the equipment ON and OFF.
- Set up barriers to prevent unauthorized access. Barriers or other means of guarding must be used to ensure that workspace or electrical equipment will not be used as a passageway during periods of when energized parts of equipment is exposed.
- Exposed wiring and cords with frayed or deteriorated insulation should be replaced. Repairs must be completed by a qualified electrician and meet UL standards for the item.

- All cord, cable and raceway connections should be intact and secured. All unused opening in electrical enclosures and fittings closed with appropriate covers, plugs, or plates. Electrical enclosures such as switches, receptacles, or junction boxes should be provided with tight fitting covers or plates.
- No employees shall enter spaces containing exposed energized parts unless illumination is provided that enables work to be conducted safely. *Energized work requires Work Permit*
- Electrical installations in hazardous dust or vapor areas should meet the National Electrical Code (NEC) for hazardous locations Class l, Division 1.

8. Ground Fault Circuit Interrupters

Equipment, tools and cord sets provided will be designed to protect employees from electrical shock and to prevent fire.

Equipment and tools

Note: Portable equipment which is "double insulated" and endorsed by a nationally recognized testing facility need not have a grounding conductor, but is subject to the inspection requirements of this section.

Tools and equipment subject to inspection and testing include:

- Portable Electrical Tools such as grinders, drills and stapling guns
- Stationary tools such as table saws, drill presses, and jig saws
- Portable electrical extension cords
- Portable and Temporary lighting systems and cords

Receptacles shall be of the grounding type and their contacts shall be grounded by connection to the equipment grounding conductor of the circuit supplying that receptacle in accordance with the NEC.

Visual inspections

Visual inspection of tools and equipment are required prior to each use, and shall include:

- General condition
- Plugs and caps, and presence of ground prong
- Electrical cord sets
- External defects, and missing parts

Defective tools shall be tagged, taken out of service and placed in a secured location until they are repaired or destroyed.

Testing

The following tests shall be performed on all applicable equipment:

- Equipment grounding conductors shall be tested for continuity and shall be electrically continuous.
- Receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductor
- The equipment-grounding conductor shall be connected to its terminal

Required tests should be performed as indicated below:

- Before first use
- Before being returned to service following any repairs
- Before being used, after any incident that can be reasonably suspected to have caused damage (for example, when a cord set is run over)
- At intervals not to exceed 3 months
- Test equipment must be evaluated for proper operation immediately before and after tests are conducted.

Removal from service

Any equipment failing any test shall be taken out of service, shall be tagged with a "Danger, Do Not Use" tag, secured and destroyed, or repaired by a qualified person.

Ground Fault Circuit Interrupters (GFCI's)

Ground Fault Circuit Interrupters (GFCI's) shall be used on receptacles >15 amps up to and including 30 amps for tool and equipment used in construction applications and potentially wet environments (either indoors or outdoors). Receptacles of temporary wiring systems and portable generators shall be protected with a GFCI.

The minimum requirements relative to the use of Ground Fault Circuit Interrupters are:

- Prior to use, and periodically thereafter, verify that the GFCI is in good working order. (e.g., Plug the GFCI in to an outlet, plug a power tool or light in to the GFCI, hit the "test" button and verify that it interrupts current flow). Periodically re-test the GFCI to ensure continued effectiveness.
- Remove from service any GFCI that has insufficient load capacity, is damaged or is ineffective for any reason. Affix a "Danger, Do Not Use" tag and store the GFCI in a secure location until it can be replaced or repaired. Destroy and discard any GFCI that cannot be repaired or re-used.
- Train employees in the provisions of this section as related to safe us of GFCIs. This training should include:
    - Double insulated tools
    - Defective cords and plugs
    - Heavy moisture, and wet conditions
    - Operation, selection, and use of GFCI's

1001 Labore Industrial Court, Suite B Vadnais Heights, MN 5511
Phone: (651) 490-9868 service@nac-hvac.com

MONTHLY GROUND FAULT TEST RECORD

TEST DAILY

(RECORD MONTHLY)

Directions: Test all turtle box outlets daily before use.
1. Apply power to GFCI. Green power indicator appears.
2. Press Test Button. Green power indicator disappears.
3. Press Reset Button again for use.

Do NOT use if test fails. Notify Supervisor.

Record tests monthly with a permanent marker.

M/D/Y	INITIAL

M/D/Y	INITIAL

It is NAC's policy to test and visually inspect all temporary service GFCI recepticals/breakers daily. Document inspections monthly by filling out this sheet.
Questions? Contact NAC's Safety Coordinator.

1001 Labore Industrial Court, Suite B Vadnais Heights, MN 55110
Phone: (651) 490-9868 service@nac-hvac.com

MONTHLY GROUND FAULT TEST RECORD

TEST DAILY

(RECORD MONTHLY)

Directions: Test all turtle box outlets before use.
1. Apply power to GFCI. Green power indicator appears.
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Record tests monthly with a permanent marker.

M/D/Y	INITIAL

M/D/Y	INITIAL

It is NAC's policy to test and visually inspect all temporary service GFCI recepticals/breakers daily. Document inspections monthly by filling out this sheet.
Questions? Contact NAC's Safety Coordinator.

ENERGIZED ELECTRICAL WORK PERMIT

Job Name/Location:_____

Job Number:_____

PART I: Client REQUEST:

(1) Description of work requested: _____

_____

_____

(2) Reason that work must be done live and shutdown is not feasible:_____

_____

_____

Performing work on live equipment creates a risk of severe injury and damage to equipment. NAC qualified electricians will perform work safely according to risk assessment using safe work practices and PPE as determined by the task and equipment, however the risk of injury and equipment failure is still possible. *Infeasibility is determined due to additional hazard or increased risk, or design and/or operational limits, not financial infeasibility.*

☐ The client has been informed of the risks of working on electrical equipment without shutting down, and accepts the risk.

Client Contact: _____ Date informed:_____

NAC Employee Completing Form:_____

Comments:_____

_____

PART II: Electrician *DOING* THE WORK:

NAC Electrician performing the work:_____

☐ NAC Electricians have been informed about the details of project and safe work practices.

Arc Flash PPE required: _____

_____

List any additional hazards and Safe Work Practices and control measures:_____

_____

_____

Can task be done safely with control methods? ☐ Yes ☐ No

(If No, return to requester. Do not perform work until safe methods are developed)

Complete form, inform client, and retain form for recordkeeping.

SAMPLE JOB BRIEFING AND PLANNING CHECKLIST

Job Number: _____ Circuit/equipment/job location: _____

Identify

- ❑ Hazards
- ❑ Voltage levels involved
- ❑ Skills required
- ❑ Any "foreign" (secondary source) voltage source
- ❑ Any unusual work conditions
- ❑ Number of people needed to do the job
- ❑ Shock protection boundaries
- ❑ Available incident energy
- ❑ Potential for arc flash (Conduct an arc flash risk assessment.)
- ❑ Arc flash boundary
- ❑ Any evidence of impending failure

Ask

- ❑ Can the equipment be de-energized? _____
- ❑ Are backfeeds of the circuits to be worked on possible? _____
- ❑ Is an energized electrical work permit required? _____
- ❑ Is a standby person required? _____
- ❑ Is the equipment properly installed and maintained? _____

Check

- ❑ Job plans
- ❑ Single-line diagrams and vendor prints
- ❑ Status board
- ❑ Information on plant and vendor resources is up to date
- ❑ Safety procedures
- ❑ Vendor information
- ❑ Individuals are familiar with the facility

Know

- ❑ What the job is _____
- ❑ Who is in charge _____
- ❑ Who else needs to know — Communicate! _____

Think

- ❑ About the unexpected event . . . What if?
- ❑ Lock — Tag — Test — Try
- ❑ Test for voltage — FIRST
- ❑ Use the right tools and equipment, including PPE
- ❑ Install and remove temporary protective grounding equipment
- ❑ Install barriers and barricades
- ❑ What else? _____

Prepare for an emergency

- ❑ Is the standby person CPR/AED trained? _____
- ❑ Is the required emergency equipment available? Where is it? _____
- ❑ Where is the nearest telephone? _____
- ❑ Where is the fire alarm? _____
- ❑ Is confined space rescue available? _____
- ❑ What is the exact work location? _____
- ❑ How is the equipment shut off in an emergency? _____
- ❑ Are the emergency telephone numbers known? _____
- ❑ Where is the fire extinguisher? _____
- ❑ Are radio communications available? _____
- ❑ Is an AED available? _____

NFPA 70E

ENERGIZED ELECTRICAL WORK PERMIT

PART I: TO BE COMPLETED BY THE REQUESTER: Job/Work Order Number

(1) Description of circuit/equipment/job location:

(2) Description of work to be done:

(3) Justification of why the circuit/equipment cannot be de-energized or the work deferred until the next scheduled outage:

Requester/Title Date

PART II: TO BE COMPLETED BY THE ELECTRICALLY QUALIFIED PERSONS DOING THE WORK:

Check when complete

(1) Detailed job description procedure to be used in performing the above detailed work: ❑

(2) Description of the safe work practices to be employed: ❑

(3) Results of the shock risk assessment: ❑

(a) Voltage to which personnel will be exposed ❑

(b) Limited approach boundary ❑

(c) Restricted approach boundary ❑

(d) Necessary shock, personal, and other protective equipment to safely perform assigned task ❑

(4) Results of the arc flash risk assessment: ❑

(a) Available incident energy at the working distance or arc flash PPE category ❑

(b) Necessary arc flash personal and other protective equipment to safely perform the assigned task ❑

(c) Arc flash boundary ❑

(5) Means employed to restrict the access of unqualified persons from the work area: ❑

(6) Evidence of completion of a job briefing, including discussion of any job-related hazards: ❑

(7) Do you agree the above-described work can be done safely? ❑ Yes ❑ No (If no, return to requester.)

Electrically Qualified Person(s) Date

Electrically Qualified Person(s) Date

PART III: APPROVAL(S) TO PERFORM THE WORK WHILE ELECTRICALLY ENERGIZED:

Manager Maintenance/Engineering Manager

Safety Manager Electrically Knowledgeable Person

Site Contact Manager Date

Note: Once the work is complete, forward this form to the site Safety Department for review and retention.

NFPA 70E

PROCEDURE TO ESTABLISH AN ELECTRICALLY SAFE WORK CONDITION

Job Number: _____ Circuit/equipment/job location: _____

	Step	Procedure	NFPA 70E section	OSHA 29 CFR section	Comments
❑	1.	Determine all possible sources of electrical supply to the specific equipment. Check applicable up-to-date drawings, diagrams, and identification tags.	120.5(1)	1910.333(b)(2)(ii)(A)	
❑	2.	After properly interrupting the load current, open the disconnecting device(s) for each source.	120.5(2)	1910.333(b)(2)(ii)(B)	
❑	3.	Wherever possible, visually verify that all blades of the disconnecting devices are fully open or that drawout-type circuit breakers are withdrawn to the fully disconnected position.	120.5(3)		
❑	4.	Release stored electrical energy.	120.5(4)	1910.333(b)(2)(ii)(C)	
❑	5.	Release or block stored mechanical energy.	120.5(5)	1910.333(b)(2)(ii)(D)	
❑	6.	Apply lockout/tagout devices in accordance with a documented and established procedure.	120.5(6)	1910.333(b)(2)(iii)(A)	
❑	7.	Use an adequately rated portable test instrument to test each phase conductor or circuit part to verify it is de-energized.	120.5(7)	1910.333(b)(2)(iv)	
❑	7a.	An adequately rated permanently mounted listed test device is permitted to be used to verify the absence of voltage of the conductors or circuit parts at the work location.	120.5(7) Exception No. 1		
❑	7b.	On electrical systems over 1000 volts, noncontact test instruments are permitted to be used to test each phase conductor.	120.5(7) Exception No. 2		
❑	7c.	Before and after each test, determine that the test instrument is operating satisfactorily through verification on any known voltage source.	120.5(7)		
❑	8.	Where the possibility of induced voltages or stored electrical energy exists, ground the phase conductors or circuit parts before touching them. Where it could be reasonably anticipated that the conductors or circuit parts being de-energized could contact other exposed energized conductors or circuit parts, apply temporary protective grounding equipment.	120.5(8)	1910.333(b)(2) 1910.333(c)(3)(ii)(C)	

NFPA 70E

HOT WORK

Procedures

All NAC employees who work with equipment that produces a spark or an open flame, or a process that generates excessive heat, or anyone left in charge of oxygen or fuel-gas supply equipment including distribution pipe, shall be trained and qualified to use such equipment: cutting, welding, arc welding and other hot work processes. They shall also be trained on the proper procedures for minimizing the risk of fire through the Hot Work Safety Procedures. Training includes:

- Explosion of compressed gases
- Flammable or combustible vapors, solids, and liquids near the area of the hot work
- Processes involving oxyfuel, sharp blades, and flames on torches
- Metal splatter and electric shock
- Confined space issues and the creation of hazardous fumes
- Transportation of gas cylinders

Guidelines

Prior to any hot work all movable fire hazards shall be removed from around the area of the hot work. If hot work is required near fire hazards, guards, shields fire blankets or other barriers shall be used to confine heat and sparks. The competent person (foreman/supervisor) shall be responsible for inspecting the area prior to authorizing welding/cutting operations. Some of the potential hazards while doing hot work shall be minimized by:

- Ensure sprinklers and hose streams are in service and operable or facilities and workers haven notified if they will be out of service during the hot work.
- Hot work equipment is inspected and taken out of service if defects or hazards are identified.
- Multi-purpose fire extinguisher and/or water source is nearby, and employees shall be trained to use fire extinguishers.
- First Aid kit shall be available at all times.
- Dust, lint, debris, flammable liquids and oily deposits removed.
- An explosive atmosphere in the area is eliminated.
- Combustible floors should be wet down, covered with damp sand or fire blankets.
- Remove flammable and combustible materials where walkways are unprotected
- Confined spaces are cleaned of all combustibles such as grease, oil, flammable vapors, and special confined space precautions are taken including ventilation, securing cylinders, using lifelines, removing electrodes, gas cylinder shutoffs and all warning signs posted.
- If necessary fire watch will be provided during and for 30 minutes after work
- Fire watch is supplied with an extinguisher and is properly trained in the fire watch
- Damaged or defective equipment shall be tagged “Do not use” and then be taken out of service and repaired by a qualified person or disposed of.

If hazardous fumes, gases or dust is produced – proper general and/or local ventilation shall be provided to prevent inhalation of fumes such as zinc, cadmium, lead, or other hazardous chemicals. If that is not feasible, a respirator shall be required to protect workers (See Respiratory Protection for further details).

If welding, cutting or hot work cannot be conducted safely it shall not be permitted!

Hot Work Permit

In some cases a site specific hot work permit may be required. If this is the case then NAC shall obey written policies set for by the specific jobsite. If a hot work permit form has not been provided, NAC shall utilize its own form, *Hot Work Permit,* as attached in this manual.

The hot work permit will guide employees through the process of evaluating their working environment through the process of completing a checklist. The permit shall be posted in the working environment as a warning to others nearby and will demonstrate the precautions to take if a fire is to occur. The hot work permit must be completely filled out and its copy needs to be turned into the Facility, Supervisor, or Safety Coordinator, after the work is completed.

Fire Watch

A fire watch is required for at least 30 minutes after completion of work if any of these conditions are met:

1. Anything larger than a minor fire may develop
2. Combustible materials are closer than 35 ft to point of operation.
3. Combustibles that are more than 35 ft away from point of operation may easiliy ignite
4. Wall or floor openings within 35 ft radius expose combustible materials
5. Combustible materials are adjacent to the opposite side of metal partitions, ceilings or roofs.

HOT WORK PERMIT

All temporary operations involving open flames or producing heat and/or sparks require a Hot Work Permit. This includes, but is not limited to, Brazing, Cutting, Grinding, Soldering, Thawing, and Welding.

PART A

INSTRUCTIONS FOR FIRE SAFETY SUPERVISOR

1. **Verify precautions listed at right (or do not proceed with the work).**
2. **Complete PLY 1 and retain for job files.**
3. **Post PLY 2 in vicinity of hot work.**

DATE | JOB NO.

LOCATION/BUILDING & FLOOR (Be Specific)

DESCRIPTION OF WORK BEING PERFORMED

NAME OF PERSON DOING HOT WORK

The above location has been examined, the precautions checked on the Hot Work Checklist have been taken to prevent fire, and permission is authorized for this work.

SIGNED: _____
(Fire Safety Supervisor)

SIGNED: _____
(Person doing Hot Work)

SIGNED: _____
(Fire Watch)

TIME STARTED: Date: _____ Time: _____ AM/PM

PERMIT EXPIRES: Date: _____ Time: _____ AM/PM

FILL OUT EMERGENCY INFORMATION ON PAGE 2.

HOT WORK CHECKLIST

- ☐ Sprinklers and hose streams in service/operable.
- ☐ Hot Work Equipment in good condition (e.g., power source, welding leads, torches, etc.)
- ☐ Multi-purpose fire extinguisher and/or water pump can.

REQUIREMENTS WITHIN 35 FEET OF WORK

- ☐ Dust, Lint, Debris, Flammable Liquids and oily deposits removed.
- ☐ Explosive atmosphere in area eliminated.
- ☐ Combustible floors (e.g., wood, tile, carpeting) wet down, covered with damp sand or fire blankets.
- ☐ Remove flammable and combustible material where possible. Otherwise protect with fire blankets, guards, or metal shields.
- ☐ All wall and floor openings covered.
- ☐ Walkways protected beneath hot work.

WORK ON WALLS OR CEILINGS

- ☐ Combustibles moved away from other side of wall.

WORK IN CONFINED SPACES

- ☐ Confined space cleaned of all combustibles (example: grease, oil, flammable vapors).
- ☐ Containers purged of flammable liquids/vapors.
- ☐ Follow confined space guidelines.

FIRE WATCH/HOT WORK AREA MONITORING

- ☐ Fire watch will be provided during and for 30 minutes after work, including any coffee or lunch breaks.
- ☐ Fire watch is supplied with an extinguisher, and/or water pump can, also making use of other extinguishers located throughout work area.
- ☐ Fire watch is trained in use of this equipment and familiar with location of sounding alarm.
- ☐ Fire watch may be required for opposite side of walls, above, and below floors and ceilings.

OTHER PRECAUTIONS TAKEN

- ☐

HOT WORK PERMIT

All temporary operations involving open flames or producing heat and/or sparks require a Hot Work Permit. This includes, but is not limited to, Brazing, Cutting, Grinding, Soldering, Thawing, and Welding.

PART B

INSTRUCTIONS FOR FIRE SAFETY SUPERVISOR

1. **Verify precautions listed at right (or do not proceed with the work).**
2. **Complete page 1 and retain for job files.**
3. **Post page 2 in vicinity of hot work.**

DATE | JOB NO.

LOCATION/BUILDING & FLOOR (Be Specific)

DESCRIPTION OF WORK BEING PERFORMED

NAME OF PERSON DOING HOT WORK

The above location has been examined, the precautions checked on the Hot Work Checklist have been taken to prevent fire, and permission is authorized for this work.

SIGNED: _____
(Fire Safety Supervisor)

SIGNED: _____
(Person doing Hot Work)

SIGNED: _____
(Fire Watch)

TIME
STARTED: Date: _____ Time: _____ AM/PM

Date: _____ Time: _____ AM/PM

FIRE WATCH SIGNOFF

Work area and all adjacent areas to which sparks and heat might have spread were inspected during the fire watch period and were found fire safe.

Signed: _____

FINAL CHECKUP (minimum 30 minutes after Hot Work)

Work area was monitored for _____ hour(s) following Hot Work and found fire safe.

Signed: _____

FILL OUT EMERGENCY INFORMATION ON BACK OF PLY 2.

HOT WORK CHECKLIST

- ☐ Sprinklers and hose streams in service/operable.
- ☐ Hot Work Equipment in good condition (e.g., power source, welding leads, torches, etc.)
- ☐ Multi-purpose fire extinguisher and/or water pump can.

REQUIREMENTS WITHIN 35 FEET OF WORK

- ☐ Dust, Lint, Debris, Flammable Liquids and oily deposits removed.
- ☐ Explosive atmosphere in area eliminated.
- ☐ Combustible floors (e.g., wood, tile, carpeting) wet down, covered with damp sand or fire blankets.
- ☐ Remove flammable and combustible material where possible. Otherwise protect with fire blankets, guards, or metal shields.
- ☐ All wall and floor openings covered.
- ☐ Walkways protected beneath hot work.

WORK ON WALLS OR CEILINGS

- ☐ Combustibles moved away from other side of wall.

WORK IN CONFINED SPACES

- ☐ Confined space cleaned of all combustibles (example: grease, oil, flammable vapors).
- ☐ Containers purged of flammable liquids/vapors.
- ☐ Follow confined space guidelines.

FIRE WATCH/HOT WORK AREA MONITORING

- ☐ Fire watch will be provided during and for 30 minutes after work, including any coffee or lunch breaks.
- ☐ Fire watch is supplied with an extinguisher, and/or water pump can, also making use of other extinguishers located throughout work area.
- ☐ Fire watch is trained in use of this equipment and familiar with location of sounding alarm.
- ☐ Fire watch may be required for opposite side of walls, above, and below floors and ceilings.

OTHER PRECAUTIONS TAKEN

- ☐

WARNING!

HOT WORK IN PROGRESS
WATCH FOR FIRE!

IN CASE OF AN EMERGENCY:

CALL: _____

AT:

WARNING!

WELDING AND CUTTING (1926 .350-352)

To prevent injury, extreme caution should be exercised when using any type of welding or gas cutting equipment. Injury can result from fire, explosions, electric shock, or harmful agents.

Please take the following precautions while welding and cutting:

- Wear proper eye safety protection during welding and cutting operations.
- Ventilation shall be provided whenever welding, cutting or heating is being performed.
- Arc welding and cutting operations will be shielded by noncombustible or flameproof shields/ curtains to protect employees from direct rays.
- A fire extinguisher shall be readily available when welding, cutting or heating operations are being conducted. (see section 20 hot work safety procedures for more specifics)
- Always clear the area below cutting or welding operations so hot slag will not drop on hoses, cables, or employees.
- When electrode holders are left unattended, electrodes should be removed and the holder should be placed or protected so it cannot make electrical contact, all arc welding and cutting cables should be completely insulated.
- Always wear required eye protection and face protection to guard against slag while chipping, grinding and dressing of welds. Always wear a welding hood to protect eyes from flash burn.
- Fuel gas and oxygen hoses must be easily distinguishable and not interchangeable. Inspect hoses daily and repair or replace if defective.
- Always store cylinders upright on a welding cart or secured to a wall with a chain
- All tank valves shall be closed when equipment is not in use or in transport. For storage or transport remove cylinder gauges and replace with protective cap.
- Oxygen must be separated from flammable gases like acetylene and propane during storage. Keep them either 20 feet apart or place a 5 foot firewall between them with a ½ hour fire rating. Oxygen can be stored with Inert gas.
- Do not cut or weld around gasoline tanks or attempt to weld or cut a container that has stored a flammable or combustible liquid.
- Welding or cutting equipment shall not be operated unless proper training has been provided.

Subpart q

(2) *Ventilation for general welding and cutting*—(i) *General.* Mechanical ventilation shall be provided when welding or cutting is done on metals not covered in paragraphs (c)(5) through (c)(12) of this section. (For specific materials, see the ventilation requirements of paragraphs (c)(5) through (c)(12) of this section.)

(A) In a space of less than 10,000 cubic feet (284 m^3) per welder.

(B) In a room having a ceiling height of less than 16 feet (5 m).

(C) In confined spaces or where the welding space contains partitions, balconies, or other structural barriers to the extent that they significantly obstruct cross ventilation.

(ii) *Minimum rate.* Such ventilation shall be at the minimum rate of 2,000 cubic feet (57 m^3) per minute per welder, except where local exhaust hoods and booths as per paragraph (c)(3) of this section, or airline respirators approved by the Mine Safety and Health Administration and the National Institute for Occupational Safety and Health, pursuant to the provisions of 30 CFR part 11, are provided. Natural ventilation is considered sufficient for welding or cutting operations where the restrictions in paragraph (c)(2)(i) of this section are not present.

Welding Hazards

Ventilation Guidelines

General Ventilation or Dilution Ventilation:

Electric Welding and Cutting

Gas Welding and Cutting

PPE

Welding Shade

Hot work

Cylinder Storage

Electric Shock

https://www.osha.gov/laws-regs/regulations/standardnumber/1926/1926.350

Welding operation	Shade No.
Shielded metal-arc welding— 1/16 -, 3/32 -, 1/8 -, 5/32 -inch electrodes	10
Gas-shielded arc welding (nonferrous)— 1/16 -, 3/32 -, 1/8 -, 5/32 -inch electrodes	11
Gas-shielded arc welding (ferrous)— 1/16 -, 3/32 -, 1/8 -, 5/32 -inch electrodes	12
Shielded metal-arc welding:	
3/16 -, 7/32 -, 1/4 -inch electrodes	12
5/16 -, 3/8 -inch electrodes	14
Atomic hydrogen welding	10-14
Carbon arc welding	14
Soldering	2
Torch brazing	3 or 4
Light cutting, up to 1 inch	3 or 4
Medium cutting, 1 inch to 6 inches	4 or 5
Heavy cutting, 6 inches and over	5 or 6
Gas welding (light) up to 1/8 inch	4 or 5
Gas welding (medium) 1/8 inch to 1/2 inch	5 or 6
Gas welding (heavy) 1/2 inch and over	6 or 8

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	3 1/2
8 to 10 inches from arc or torch	425	4 1/2
10 to 12 inches from arc or torch	600	5 1/2

NAC Line Breaking Procedures

Line break procedures are used to protect employees from injury caused by unexpected release of hazardous materials while opening or disconnecting a system of piping, process piping, or equipment that cannot be verified clear and/or depressurized. NAC will follow the necessary steps to maintain proper demolition or replacement of piping systems. The following procedures will be carried out to avoid disruptions in building operations, safety hazards, and property damage.

Risk Assessment

Prior to the demolition or breaking of any pipes, hazards will be minimized through the following means:

- Engineering Controls – Minimize hazards by isolating and preparing for dangers. Ensure isolating devices are used properly and according to manufacturer instructions. Use Lockout/Tagout to prevent unanticipated release of hazardous energy.
- Administrative Controls – Develop procedures to follow so risk are limited. Ensure a plan is communicated to all involved, and the plan takes into account worst-case scenario prevention. If further training is necessary, contact NAC safety. Plumbers working on sanitary systems should ensure they are current on all recommended vaccines.
- Use of Personal Protective Equipment – To block exposure between workers and the hazards. Ensure employees wear PPE during tasks with increased risk of exposure, such as removing a cap or plug, or breaking the line. Ensure cleanup and decontamination supplies are also available in the event of a spill or exposure.

Preparation

Pre-task plan: Before any work begins a plan will be developed and communicated between NAC, facilities, and any other subcontractors or personnel influenced by the line breaking events.

Warning signs will be posted, access to demolition areas will be limited, and necessary permits will be obtained including but not limited to: lockout/tagout, hotwork, fire watch and confined space permits, etc.

Any tools, materials, and equipment will be stationed close by to ensure that the task can be carried out in an efficient and timely manner. Including but not limited to mechanical caps, pumps, fire extinguishers etc.

Operations

1. A line trace will be done to verify that all valves leading to the line break source have been shut closed and locked out/ tagged out.
2. The area near the line break will be set up with drop cloths, poly, drain off buckets, hoses or other means to contain fluids.
3. Pressure from the line will be relieved and fluids will be drained from the line.
4. If necessary a clean flush will be performed to cleanse the line. Host client may be required to perform and confirm clean flush for Process Safety Management.
5. Sections of the lines will be removed by disassembling or cutting the lines into manageable sections.
6. Lines which are removed will be trucked out of the area by means which contain fluid runoff such as by stacking in fluid tight carts or by capping open ends to pieces which are removed.
7. After the lines are removed any open ends should be repaired, sealed, or capped closed to prevent fluids from leaking on a daily basis.

8. A preliminary inspection should be carried out once work is complete to maintain that all fluids are concealed. Periodic inspections should be preformed to ensure that fluids have not leaked from the line.
9. A final Inspection will be performed daily. Any tools, materials, and equipment will be removed
10. Any open permits will be closed, facilities will be notified if work is complete or ongoing, valves will be opened and mechanical systems will be reenergized accordingly.

Sanitary Work:

1. Ensure all plumbers are up to date on vaccines.
2. Shutdown the water to the building and/or system. Isolate as needed and lockout/tagout. Ensure occupants are given appropriate notification of shutdown with clear directions on restrictions. Work with host client as needed to send notification out.
3. Wear protective PPE for situations with increased risk, such as removing a plug, or dumping waste bin. Tyvek suits, gloves, goggles, face masks or face shields, etc. to prevent exposure.
4. Ensure appropriate cleanup and decontamination materials are available, as discussed.
5. Avoid pressure build up. Do not fully plug a system that has potential pressure buildup. Divert material upstream, away from work. Block downstream to reduce pressure potential at work area. Blocks/plugs used should be capable of withstanding more than the anticipated pressure to prevent failure. Do not use inflatable pressure test balls for this purpose as they cannot hold that much pressure.

REQUEST FOR SERVICE INTERRUPTION

Job Name:_____ Contract Number:_____

PART I: SCOPE OF WORK:

Start Date:_____ Start Time:_____ Stop Date:_____ Stop Time:_____

If work is ongoing specify details:_____

_____

Building Location:_____ Floor:_____ Room Number:_____

Description of work to be done and system affected:_____

_____

_____

_____

If other companies are involved please describe:_____

_____

Does this affect the area below? Description: _____
Does this affect the area above? Description: _____
Does this affect neighboring areas? Description: _____

Requester/ Title:_____ Date:_____

PART II: RISK ASSESSMENT:

(1) How will the risks be isolated:_____

_____

_____

(2) Describe safe work practices to be followed:_____

_____

_____

(3) Describe personal protective equipment used:_____

_____

_____

PART III: APPROVAL(S) TO PERFORM THE SHUT DOWN:

_____ _____

Facilities Manager Facilities Engineer

_____ _____

Other specify: (_____) Person performing the work

Note: Once the work is complete, forward this form to NAC Project Manager for review and retention.

Gas Meter Connection Process

NAC will take the following steps to make sure gas meter projects are carried out safely and efficiently:

Review Site Conditions for Meter Replacement:

- Develop safety pre task plan
- Determine schedule of work to occur and labor, materials, resources needed for project
- submit permits

Work with CenterPoint/ Michels Corporation to Coordinate Project:

- Determine start date
- Submit project schedule, safety plan, and LOTO procedures with team
- Attend onsite meeting with project team and building facilities
- Prefabrication Pipe prior to start of project

Carry Out Work Onsite:

- Review safety pre task plan and take necessary safety precautions utilizing: Administrative Controls, Engineering Controls, and PPE.
- Insure proper lock out/ tagged out prior to modifications
- Perform gas piping modifications per Local/ State codes and to proper weld procedures
- After gas modifications are complete, carry out pressure/ leak test prior to starting system
- Review piping installation with Local/ State Inspectors
- Schedule gas startup with Michels/ Facility Owner

Gas Startup:

- Place Systems back online following proper LOTO safety procedures
- Once the gas is operational, work with facility maintenance to insure gas fired equipment is functioning

LOCKOUT/ TAGOUT PROGRAM

PURPOSE

The purpose of the Lockout/ Tagout Program at **NAC Mechanical & Electrical Services** is to establish safe practices to control hazardous energy. It is designed to protect individuals from injuries resulting from unintended machine motion or unintended release of energy.

SCOPE

This program covers all equipment servicing and/ or maintenance activities on **NAC Mechanical & Electrical Services** property as well as other construction/ service work performed by NAC employees at other jobsite facilities. Lockout/Tagout shall be followed in certain routine adjusting, cleaning or setup activities and, whenever an employee:

- Must remove machine guarding.
- Bypasses a guard, interlock, or other safety device.
- Places part of their body in harm's way.
- Performs any major servicing or maintenance work.

EXCEPTIONS

This standard does not apply to the following situations:
Equipment or machines that have a single shutoff source controlled by and within eyesight of the employee. The single shutoff alone must be effective, and not require additional steps to control hazardous energy.

Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the employee performing the servicing or maintenance.

Hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines, provided that the employer demonstrates that continuity of service is essential; shutdown of the system is impractical; and documented procedures are followed, and special equipment is used which will provide proven effective protection for employees.

Minor tool changes and adjustments, and other minor servicing activities, which take place during normal production operations, are not covered by this standard if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection.

Note: Temporary removal of lockout tagout devices is allowed for testing and positioning of machines. See the section "**TESTING, DIAGNOSIS, RE-POSITIONING PROCUDRES DURING LOCKOUT**" on page 5.

PROGRAM

MANAGEMENT

The **Safety Director** shall have the responsibility for the overall management of the Lockout/ Tagout Program, including providing training for **NAC Mechanical & Electrical Services** employees, periodic program revisions as they may become necessary and periodic and annual inspections to determine the effectiveness of the procedures. The Supervisors shall ascertain that only authorized persons who have received proper training are initiating Lockout/ Tagout procedures. They shall make sure that adequate communication between affected persons takes place when lockout/ tagout is being used. Outside personnel and site employer must inform each other of their respective lockout/tagout program and procedures. Site employees must understand and comply with the outside personnel's energy control program.

DEFINITIONS

Lockout is the procedure of blocking the source of energy to a machine or piece of equipment, and keeping it out, in order to perform maintenance or repairs. Lockout is accomplished by placement of a lockout device at the power source of equipment so that the equipment powered by the source cannot be operated until lockout device is removed. Lockout shall be used unless the employer can demonstrate a tagout system will provide full employee protection.

Tagout is the procedure of attaching a tag in the same place that a lock would be placed when an energy isolating device is not capable of being locked out, or when the employer can demonstrate that the tagout program will provide an equivalent level of protection as a lockout program. After isolating the energy source and applying the tag, employees shall try verify isolation was successful. Tags must be applied by hand and clearly state that the equipment being controlled cannot be operated until tag is removed. If tags cannot be applied directly to the energy isolating device, or verification is unsuccessful, employees shall trace back to the source (where applicable) and isolate upstream to ensure full employee protection.

Energy Sources on which lockout/ tagout must be used to protect individuals from the release of hazardous energy include but are not limited to the following:

- ELECTRICAL
- MECHANICAL
- PNEUMATIC or HYDRONIC
- FLUID AND GASES
- THERMAL
- WATER UNDER PRESSURE
- GRAVITY

Authorized Employee means any employee trained on Lockout Tagout and uses lockout procedures on equipment, machines or processes. The authorized employee will ascertain the exposure status of individual group members. Each employee shall attach a personal lockout or tagout device to the groups' device while they are working and remove it when finished.

Affected Employee means any employee who is not an Authorized person but is required to work in the area of equipment/machine/processes where Lockout procedures are being implemented.

Control Mechanism means any lock or combination of locks, multi-lock hasps and/or other types of special mechanisms (chains, valve covers, breaker covers, etc.) applied to an energy-isolating device to ensure that it cannot be moved/operated.

Energy Isolating Device means a mechanical device that physically prevents the transmission or release of hazardous energy, including, but not limited to the following: a manually operated electrical circuit breaker; a disconnect switch; line valve; slide gate; similar device used to block or isolate energy.

Hazardous Energy Source means any type of energy that could injure anyone working on or near the equipment/machine/process if released as a result of work activities. Examples of hazardous energy sources include, but are not limited to the following: electrical; hydraulic (fluid/liquids); pneumatic (air); chemical; radiation; thermal; mechanical (from stored energy, like in flywheels and springs); and mechanical (from gravity).

Lockout means the placement of a control mechanism on an energy-isolating device that ensures that the equipment/machine/process being worked on cannot be operated/initiated until the control mechanism is removed.

Other Personnel means non NAC employees or visitors to any work area where authorized employees are using Lockout Tagout procedures

Operation Device means any switch, button, leaver, valve, etc. that is expressly intended for the starting or initiation of the equipment/machine/process.

Zero Energy State means the equipment/machine/process has been purged of and blocked from hazardous energy sources that are no hazardous energy is present.

TRAINING

All NAC employees shall be trained in the recognition of, and compliance with, the Lockout Tagout warning system, and receive an annual refresher training.

Authorized employees training shall consist of the following:

- Explanation of the rules
- How to use the procedure and who to notify
- Identification of machinery energy sources at **NAC** and Various worksites
- Procedure for shift or personnel changes
- Documentation and program continuity

If equipment, jobsite, machines, LOTO procedures, or jobsite assignments changes or a new hazard is introduced, additional training or retraining shall occur. All training/ retraining shall be documented, signed and certified.

LOCKOUT / TAGOUT RULES

1. If an outside contractor is called in to perform work with NAC, it shall be the responsibility of the supervisor involved to advise the contractor of any locks or tags which might affect the contractor or their employees. Whenever company supervisor actively directs the work of any such workers, it shall be the responsibility of the supervisor to apply lockout/ tag out procedures if necessary. If an outside contractor creates a hazardous condition for NAC employees by failure

to observe or execute proper lockout/ tagout procedures, it shall be immediately reported to the Safety Coordinator.

2. Lockout/ Tagout shall be applied when maintaining or serving any powered equipment or machinery, whether mechanical, electrical, pneumatic, natural gas, water pressure, hydraulic, thermal, or gravity.
3. The supervisor and/ or the mechanic working on the equipment shall direct the Lockout/ Tagout procedure. In the event there is more than one person working on the equipment, as directed by the procedure.
4. If work is to continue on equipment, which has been locked out or tagged out to another shift, the supervisor shall notify any persons on subsequent shifts who might be affected.
5. Each authorized employee using this program shall be issued a lock and key for their use only. Only that person who applied his lock or lockout device may remove it. Each lock should only have one key.
6. Certain personnel will be issued locks and/ or lockout devices when it becomes evident that routine maintenance, setup or adjustments to their equipment subjects them to hazard from unexpected start up or energy.
7. The person initiating the lockout/ tagout procedure is responsible for informing the area supervisor when the machine or equipment is taken out of commission and when it is put back into commission.
8. Each person's lockout equipment (lock, lockout device, or tag) shall have their name affixed to it for easy identification.
9. If it becomes necessary to disable machinery/ equipment for tagout by means of blocking hydraulic, electrical, pneumatic or other such systems, only persons qualified to work on those systems shall initiate the tagout procedure.
10. Supervisors shall enforce these lockout/ tagout procedures and rules. Violations of these rules are considered serious and must be followed with disciplinary action.

LOCKOUT/ TAGOUT PROCEDURE FOR AUTHORIZED EMPLOYEES
PREPARATION FOR LOCKOUT OR TAGOUT

SEQUENCE OF LOCKOUT OR TAGOUT SYSTEM PROCEDURE

Survey the area to locate and identify all isolating devices to be certain which switch(s), valves(s) or other energy isolating devices apply to the equipment to be locked or tagged out. More than one energy source (electrical, mechanical, others) may be involved.

1. *Employee Notification*
   Notify all affected employees that a lockout or tagout system is going to be utilized and the reason for the lockout. The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards thereof.
2. *Preparation*
   Locate all energy sources that must be isolated.
3. *Equipment Shut down*

If the machine or equipment is operating, shut it down by normal stopping procedures (depress stop button, open toggle switch)

4. *Equipment Isolation*
   Operate the switch, valve or other energy isolating device(s) so that the equipment is off / isolated from its energy sources(s).
5. *Apply Lockout-tagout device*
   Lockout and/ or tagout the energy isolating devices with assigned individual locks(s) or tags(s). Note when tagout alone is used (without lockout)tags shall be attached directly to shutoff to provide effective warning to achieve the same level of safety. If that is not possible, a double tag system may be used, where the authorized employees trace the line upstream towards the source, isolate the energy and apply an additional tag.
6. *Release Stored Energy*
   Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure) must be dissipated or restrained by methods such as repositioning, blocking, or bleeding down.
7. *Test Start to Verify*
   After ensuring that no personnel are exposed, check to ensure all energy is totally disconnected and de-energized, operate the normal operating controls to ensure equipment will not operate. Return operating control(s) to "Neutral" or "Off" position after the test. For pipes, read pressure gauges, or in some applications, test by drilling a small hole with a self-driving screw. Always locate main shutoffs prior to starting work in case of an emergency.

The equipment is now locked or tagged out, and work can be performed.

RESTORING MACHINES OR EQUIPMENT TO NORMAL PRODUCTION OPERATIONS

After the servicing and/ or maintenance are complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that no one is exposed.

1. Clear all tools and repair equipment
2. Replace all guards and safety devise
3. Remove all locking devices
4. Restore all disconnects to normal operating position
5. Notify all operating personnel that equipment is back in its normal operational state
6. Equipment can be started and operated normally

*Emergency Lock Removal

Every effort shall be made to personally contact the authorized employee who installed the lock prior to removal. The direct supervisor of the person who installed the lock shall ensure removal of the lock can be done safely before authorizing removal. Removal shall not be allowed until employee is accounted for and contact is made ensuring they are not on site, and removal will not cause harm to them or others.

TESTING, DIAGNOSIS, RE-POSITIONING PROCUDRES DURING LOCKOUT

Testing or positioning of machines, equipment or components thereof. In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following sequence of actions shall be followed:

- Clear the equipment/machine/process of tools, materials and personnel
- Remove employees from the area and remove the lockout tagout devices

- Energize the applicable portion of the equipment/machine/process
- Proceed with the test/diagnosis/re-positioning
- De-energize the equipment/machine/process and re-apply energy control measures
- Re-test operation devices to ensure a zero energy state is in place
- Continue work and repeat this procedure as necessary

PROCEDURES INVOLVING MORE THAN ONE PERSON OR SHIFT CHANGE

In the preceding steps, if more than one individual is required to lockout or tagout equipment, each shall place their own personal lockout device or tagout device on the energy isolating devices(s). When an energy isolating device cannot accept multiple locks or tags, a multiple lockout or tagout device (hasp) may be used. Each employee will then use their own lock to secure the multiple lockout device(s). As each person no longer needs to maintain their lockout protection, that person will remove their lock from the device. Personal locks will be identified with the person's name and contact information on the lockset itself or on a LOTO tag attached to their individual lock.

The following steps shall be followed to accommodate multiple authorized employees or groups on a single project:

- A multi-lock hasp shall be utilized when more than one authorized employee is performing work on the equipment/machine/process.
- The senior authorized employee working on the specific project shall be responsible for assuring that other authorized employees working on the project attach their personal lockout device prior to work being performed.
- The senior authorized employee working on the project shall be responsible for assuring the continuity of the lockout device during shift changes to ensure orderly transfer of lockout/tagout devices to minimize exposure to hazards from unexpected release of stored energy. They shall not remove their lock until they are formally relieved of that responsibility by the next shift supervisor, they the new supervisor's lock is in place. Off-going employees will remove their locks as they leave, and on-coming employees will add their locks as they arrive on-site.
- When a traditional multi-lock hasp will not provide enough attachment points for authorized employees, another method shall be established (e.g. adding another multi-lock hasp, lockout box, lockout cabinet, etc.) as per the direction of the senior authorized employee working on the specific project**.**

Authorized employees shall inform the supervision of other employers in a multiemployer work site of all aspects covered by this manual section. Subcontractors for NAC Mechanical & Electrical Services are required to meet or exceed all aspects covered by this program. All equipment shall be locked out or tagged out to protect against accidental or inadvertent operation when such operation could cause injury to personnel. Do not attempt to operate any switch, valve, or other isolating device where it is locked or tagged out.

AUTHORIZED EMPLOYEES

An authorized employee shall affix lockout or tagout application to each energy isolating device. Lockout devices shall be affixed to hold the energy devices in a safe or off position, and tagout devices shall clearly indicate the operation or movement of energy from the safe or off position. When using tags in combination with locks, the tag shall be affixed at the same point as the lock or where locks would have been or as close as possible in an obvious location.

SERVICE	Construction Foremen
Pipe Fitters	Pipe Fitters
Sheet Metal Workers	Sheet Metal Workers
Electricians	Electricians
Plumbers	Plumbers

Authorized employees shall receive LOTO kits from NAC. Kits are made of red locks and tags printed by NAC. Locks and tags shall be durable, standardized in type and tags shall indicate the employee's name and contact information. If there is a job which needs special LOTO equipment or a worker on the job does not have a LOTO kit extra kits will be available to lone out from the NAC tool crib.

DANGER

LOCKED OUT

DO NOT REMOVE

DO NOT OPERATE

EQUIPMENT:

DATE:

This Lock/Tag may only be removed by person who placed it. Unauthorized removal may result in fatal injury.

NAC

651-490-9868

DANGER

LOCKED OUT

DO NOT REMOVE

DO NOT OPERATE

EQUIPMENT:

DATE:

This Lock/Tag may only be removed by person who placed it. Unauthorized removal may result in fatal injury.

NAC

DANGER

LOCKED OUT

DO NOT REMOVE

DO NOT OPERATE

EQUIPMENT:

DATE:

This Lock/Tag may only be removed by person who placed it. Unauthorized removal may result in fatal injury.

NAC

DANGER

LOCKED OUT

DO NOT REMOVE

DO NOT OPERATE

EQUIPMENT:

DATE:

This Lock/Tag may only be removed by person who placed it. Unauthorized removal may result in fatal injury.

NAC

DANGER

LOCKED OUT

DO NOT REMOVE

DO NOT OPERATE

EQUIPMENT:

DATE:

This Lock/Tag may only be removed by person who placed it. Unauthorized removal may result in fatal injury.

NAC

DANGER

LOCKED OUT

DO NOT REMOVE

DO NOT OPERATE

EQUIPMENT:

DATE:

This Lock/Tag may only be removed by person who placed it. Unauthorized removal may result in fatal injury.

NAC

DANGER

LOCKED OUT

DO NOT REMOVE

MY LIFE IS ON THE LINE

DO NOT OPERATE

DANGER

LOCKED OUT

DO NOT REMOVE

MY LIFE IS ON THE LINE

DO NOT OPERATE

DANGER

LOCKED OUT

DO NOT REMOVE

MY LIFE IS ON THE LINE

DO NOT OPERATE

DANGER

LOCKED OUT

DO NOT REMOVE

MY LIFE IS ON THE LINE

DO NOT OPERATE

DANGER

LOCKED OUT

DO NOT REMOVE

MY LIFE IS ON THE LINE

DO NOT OPERATE

DANGER

LOCKED OUT

DO NOT REMOVE

MY LIFE IS ON THE LINE

DO NOT OPERATE

LOCKOUT PROCEDURES FOR REFRIGERATION PIPING

All Servicing involved with the refrigerant system shall be performed by a technician who holds a certification of "proper refrigerant practices".

The following procedures shall be followed in order to prevent injury. Refrigerant in any system can cause severe burning, freezing and irritation to the skin or other body parts.

Review of specific refrigeration types Material Safety Data sheets shall be examined prior to handling any new or existing refrigeration. Proper engineering controls, administration controls, and use of personal protective equipment shall be utilized during this work.

All EPA regulations for handling, storing and disposing of refrigerant shall be followed.

Specific LOTO procures may vary for each type of equipment onsite however the following steps should be reviewed and carried out during all service to refrigeration systems:

SEQUENCE OF APPLYING THE LOCKOUT TAGOUT

1. Notify all affected employees that a lockout or tagout system is going to be utilized. The authorized employee shall know the type and magnitude of energy that the machine or equipment utilizes and shall understand the hazards thereof.
2. If the machine or equipment is operating, shut it down by normal stopping procedures (depress stop button, open toggle switch etc.)
3. Operate the switch, valve or other energy isolating device(s) so that the equipment is isolated from its energy sources(s).
4. Lockout and/ or tagout the energy isolating devices with assigned individual locks(s) or tags(s).
5. After ensuring that no personnel are exposed, and as a check on having disconnected energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.
   NOTE: Return operating control(s) to "Neutral" or "Off" position after the test.
6. The equipment is now locked or tagged out

SEQUENCE FOR RESTORING THE SYSTEM

1. After the servicing and/ or maintenance are complete and equipment is ready for normal production operations, check the area around the machines or equipment to ensure that no one is exposed.
2. After all tools have been removed from the machine or equipment guards have been reinstalled and employees are in the clear, remove all lockout or tagout devices. Operate the energy isolating devices to restore the energy to the machine or equipment.

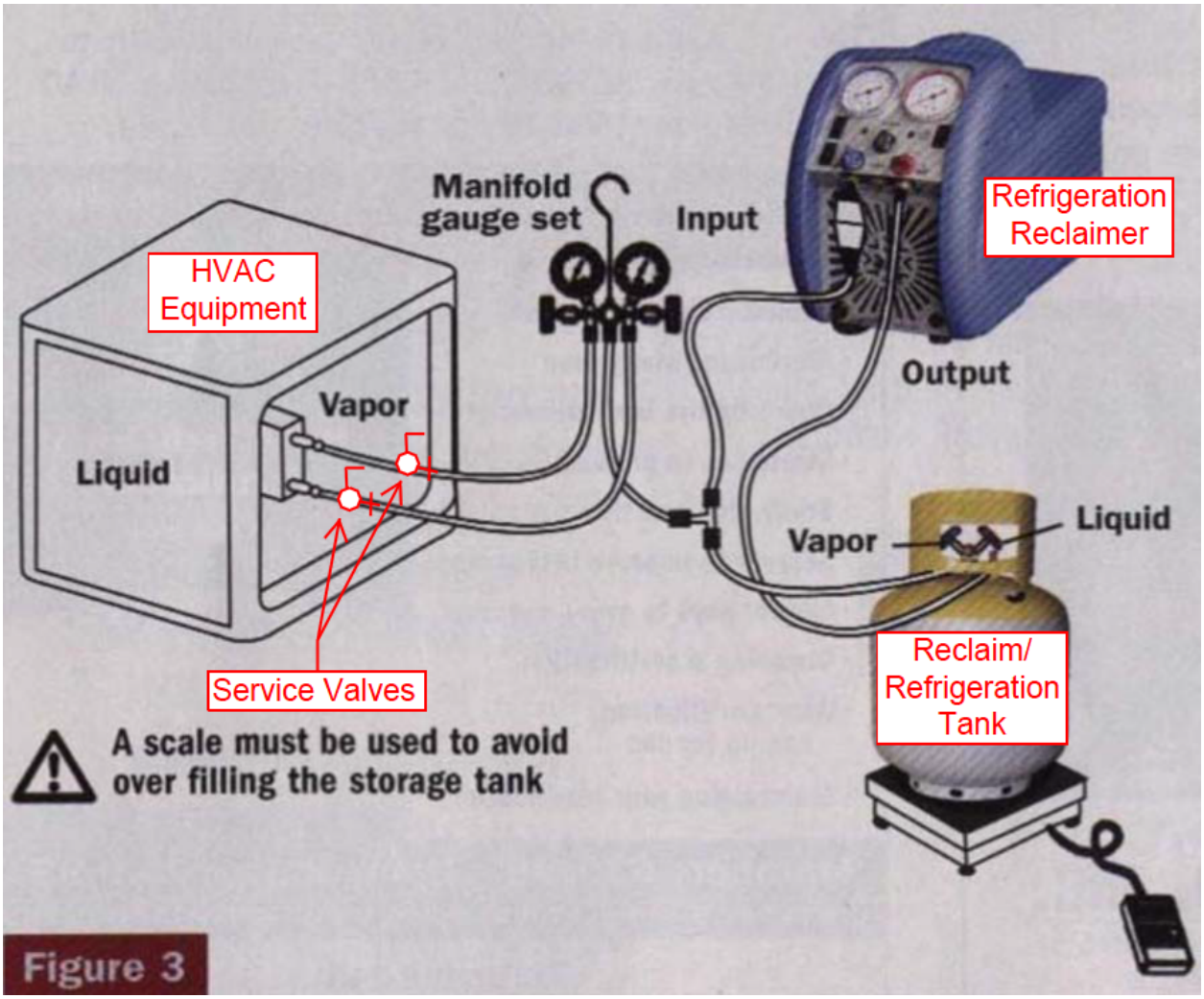
RECLAIMING REFRIGERANT FROM SYSTEM

1. Shut off power to unit by normal operating procedures using “standard LOTO procedures”
2. Connect refrigeration manifold to system:
    a. Connect hose between reclaim tank and relcaimer
    b. Connect gauge manifold to reclaimer
    c. Connect gauge manifold to vapor and liquid lines at service valves
3. Verify all connections are secure and open service valves on Liquid & Vapor lines
4. Locate purge valves and bleed out any remaining air
5. Open valve on reclaim tank and manifold gauges
6. Turn power “On” to refrigeration reclaimer (Reclaimer shall be connected to a GFCI source)
7. Proceed with reclaiming refrigerant (Monitor refrigerant reclaim speed/ levels on manifold gauges and reclaim tank weight scale)
8. When reclaim tank is full or all refrigeration has been removed from system turn off reclaimer
9. Close of valve connections:
    a. Close service valve on liquid and vapors
    b. Close valves on reclaim tank
    c. Close manifold gauges
10. Disconnect all hoses and equipment from unit
11. Remove reclaimed refrigerant tank from area and store in a safe location

CHARGING REFRIGERANT SYSTEM

1. Shut off power to unit by normal operating procedures using stand LOTO procedures
2. Connect refrigeration manifold to system:
    a. Connect hose between reclaim tank and relcaimer
    b. Connect gauge manifold to reclaimer
    c. Connect gauge manifold to vapor and liquid lines at service valves
3. Verify all connections are secure and open service valves on Liquid & Vapor lines
4. Open valve on refrigeration tank and manifold gauges
5. Turn power “On” to refrigeration reclaimer (Reclaimer shall be connected to a GFCI source)
6. Proceed with adding refrigerant to the system (Monitor refrigerant fill speed/ levels on manifold gauges and refrigeration tank weight scale)
7. When reclaim tank is empty or desired amount of refrigeration has been added to the system turn off reclaimer
8. Close of Valve Connections:
    a. Close service valve on liquid and vapor line sides
    b. Close valve on reclaim tank
    c. Close manifold gauges
10. Disconnect all hoses and equipment from unit
11. Remove remaining refrigerant liquid remaining in tank from area and store in a safe location
12. Startup the unit using “standard sequence for restoring the system”

COMMON CONFIGURATION FOR REFRIGERANT RECLAIM & CHARGE



Section V

Material Handling

VI. Material Handling

1. Ergonomics
2. Hoists, Cranes + Scissor Lifts
    a. Universal Rigging Signals
    b. Crane Lift Approval Form
3. PIT Forklifts
    a. Forklift Pre-Operation Check
    b. Forklift Skills Evaluation
4. Storage + Stacking

NAC
Mechanical ♦ Electrical ♦ Fabrication
Building Technology ♦ 24 Hour Service

Ergonomics

NAC strives to reduce the likelihood of musculoskeletal injuries due to ergonomic factors by implementing ergonomic solutions on the job using the hierarchy of controls. Employees shall as conduct a hazard assessment of manual lifting procedures prior to lifting to help reduce the risk of musculoskeletal injuries. Periodic evaluations by supervisors and co-workers shall be conducted to help ensure employees' work techniques and lifting methods are done in a way to prevent injuries. Contact NAC Safety for help conducting assessments and training specific to your task. If you receive a musculoskeletal injury caused by improper lifting, NAC will conduct an incident investigation to improve work procedures to avoid future industries.

Hierarchy of Controls:

1. Engineering Controls – implement a physical change to the workplace to eliminate or reduce the hazards for the job or task
    - Use a device to lift or reposition heavy objects to limit force exertion
    - Reduce the weight of a load to limit force exertion
    - Reposition a work surface to eliminate a long/excessive reach and enable working in neutral postures
    - Use devices to reduce or eliminate excessive leaning or reaching
    - Redesign tools to enable neutral postures

2. Administrative Controls + Work Practices--establish efficient processes or procedures and ensure all employees are trained on safe lifting methods.
    - Use two or more people to lift heavy loads to limit force exertion
    - Rotate job tasks to reduce repetition, continual exertion and awkward postures.
    - Proper use of power and pneumatic tools to reduce repetition and force
    - Proper lifting techniques: Lift close to your body, bend at the knees and lift with your legs, not your back.
    - Refrain from twisting at the waste while lifting, rotate at the feet
    - Reduce lifting distance – place items on elevated surfaces, use handles to increase grip and reduce lifting distance.
    - Reduce repetition- use power tools or change your process or position if possible

3. PPE – Use protection to reduce exposure to ergonomic risk factors
    - Use padding to protect against vibration, hard and sharp surfaces
    - Wear gloves to improve grip and reduce strain from excessive gripping
    - Use knee pads to protect your knees

NAC's work environments vary drastically, so redesigning each workspace is not always a practical solution across the company, however the use of lifting equipment, product staging and safe work practices will be most effective at targeting ergonomic problems.

Heat + Cold Stress

NAC recognizes the risks associated with working in extremely hot or cold environments and seeks to reduce the risks of illness from environmental factors using the hierarchy of controls. NAC employees must recognize the hazards extreme temperatures pose, and recognize signs and symptoms of illness. If

an employee seems effected by the hot or cold stress, they shall be removed from the environment and seek appropriate medical attention.

Stretch + Flex

NAC encourages employees to take a 5-minute warm up during the morning huddle and task planning to help prepare you for the physical work demands you frequently encounter on the job. Simple stretches of the arms, legs, neck and back help to increase the oxygen flow to your muscles, and helps prepare them for the variety of work you do throughout the day. Remember the Goldilocks principle: Not too much, not too little, but just the right amount. If it hurts, stop. Your body knows when you're pushing your limits. Taking time for your physical health is important, and a way to reduce your risk of injuries is to stay physically fit. For example, maintaining a healthy posture and strong back and shoulders reduces your risk for bicep injuries. Your body is a system that works together, so exercising your whole body will help reduce your risk for injuries and help you recover faster if you are injured.

Hoists Cranes and Rigging

Procedures

Fatalities and serious injuries can occur if hoists, cranes, and lifts are not inspected and used properly. Many hazards are present when working with this equipment so NAC has developed a Hoists, Cranes and Lifts Training Program to educate employees which may come into contact with these operations. This will train employees to:

- Properly level and position hoists and lifts
- Inspect their surroundings for proper operating environments
- Secure and weight loads properly
- Inspect equipment for its proper use
- Operate equipment in a safe manner

Hoists

Hoists can be useful in areas that are too tight to use a crane or lift in. and can provide many useful benefits for lifting and positioning materials and equipment. In order to do this in a safe and efficient manner employees will always:

- Read owner's manuals and follow the proper requirements for lifting and rating capacities.
- If a hoist is not working properly it should be fixed by a professional or use should be discontinued.
- Make sure that the surface and connections that the hoist is attached to will hold the weight of lift.
- Before hoisting any objects make sure that the environment is safe from obstructions to the lift and that there are no other present dangers.
- All Hoists will be inspected on a yearly basis to verify their condition. All bad equipment shall be taken out of service.

Cranes

Cranes are useful in applications where cumbersome or heavy objects need to be lifted into place or when other not so cumbersome objects need to be hoisted to various elevations. NAC utilizes contractors specializing in crane operation to perform crane lifts. Crane operators must be qualified operators, and shall maintain inspection and preventive maintenance records, including pre-erection inspections and assessment of ground conditions. Cranes can pose many threats to injuries and the damage of property however, the following guidelines will minimize these risks:

- Fire extinguishers shall be located in crane cabs.
- Cranes will be operated only by qualified and trained personnel, and shall meet all training requirements of state, local and federal regulations. Refresher training shall be up to date.
- A designated competent person must check all crane controls to ensure proper operation before use.
- Be sure the crane is on a firm stable footing, with outriggers and baseplates, and that the crane is level.

- During assembly dissemble do not unlock or remove pins unless sections are blocked & secure.
- Fully extended outriggers and barricade accessible areas inside the crane's swing radius.
- Inspect all rigging prior to use do not wrap hoist lines around the load.
- Do not exceed the load chart capacity while making lifts.
- Raise load a few inches, hold, verify capacity/ balance and test brake before delivering load.
- Watch for overhead power lines and maintain safe working clearance with booms as indicated in OSHA Energized Electrical Clearances tables 1 & 2:

TABLE 1

General clearances required from energized overhead high-voltage conductors

Nominal Voltage (Phase to Phase)		Minimum Required Clearance (Feet)
600	50,000	6
Over 50,000	345,000	10
Over 345,000	750,000	16
Over 750,000	1,000,000	20

TABLE 2

Boom- type clearances required from energized overhead high-voltage lines

Nominal Voltage (Phase to Phase)		Minimum Required Clearance (Feet)
600	50,000	10
Over 50,000	75,000	11
Over 75,000	125,000	13
Over 125,000	175,000	15
Over 175,000	250,000	17
Over 250,000	370,000	21
Over 370,000	550,000	27
Over 550,000	1,000,000	42

Rigging

When hoists, cranes and lifts are used usually some rigging plays a role in the attachment and transportation of equipment or supplies. Proper rigging procedures are a valuable these operations and the following guidelines for rigging should be maintained.

As part of OSHA 1926.428 only qualified signal persons shall be assigned as the dedicated signal person for a crane or other material lift. If a qualified rigger is not present from NAC one shall be requested from the rigging company providing the crane or rigging equipment. All qualified riggers shall have proof of their qualified rigging certification card on them during any lifts. Universal signals will be used by all qualified riggers at NAC and can be found in *Universal Rigging Signals*.

Definition

The term "rigging" refers to both of the following:

- The hardware and equipment used to safely attach a load to a lifting device.
- The process of safely attaching a load to a hook by means of adequately rated and properly applied slings and related hardware.

General Rigging Safety Requirements

The following requirements apply:

- Do not stand under suspended loads.
- Taglines shall be used to guide equipment when lifted.
- Wire ropes, chains, ropes, and other rigging equipment shall be inspected prior to use and defective gear shall be removed from service.
- Job or shop hooks, links, or makeshift fasteners formed from blots, rods or other such attachments should not be used.
- When U-bolts are used for eye splices the U-bolt shall be applied so the U's section in contact with the dead end of the rope.
- All hooks must be equipped with latches or locking pins to prevent hook throat openings.
- Rigging equipment not in use shall be removed from the immediate work area.
- When U-bolt wire rope clips are used to form eyes the following table shall be used to determine the number and spacing of clips:

Improved plow steel. Rope diameter (inches)	Number of Clips		Minimum spacing (inches)
	Drop forged	Other material	
1/2(1.27 cm)	3	4	3 (7.62 cm)
5/8 (1.58 cm)	3	4	3 3/4 (8.37 cm)
3/4 (1.9 cm)	4	5	4 1/2 (11.43 cm)
7/8 (2.22com)	4	5	5 1/4 (12.95 cm)
1 (2.54 cm)	5	6	6 (15.24 cm)
1 1/8 (2.665 cm)	6	6	6 3/4 (15.99 cm)
1 1/4 (2.79 cm)	6	7	7 1/2 (19.05 cm)
1 3/8 (2.915 cm)	7	7	8 1/4 (20.57 cm)
1 1/2 (3.81 cm)	7	8	9 (22.86 cm)

- Only rigging equipment that is in good condition may be used.
- Rigging equipment shall be inspected to ensure it is safe. Rigging equipment for material handling shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe (see attached inspection form at end of policy).
- Defective equipment shall not be used and removed from service immediately.
- Rigging equipment shall not be loaded beyond its recommended safe working load.
- Identification markings, indicating rated capacity for the type(s) of hitch(es) used, the angle upon which it is based, and the number of legs if more than one, shall be permanently affixed to the rigging.
- All employees shall be kept clear of loads about to be lifted and of suspended loads.
- All rigging equipment shall be stored and maintained in accordance with the manufacturer's recommendations.
- Rigging equipment not in use shall be removed from the immediate work area so as not to present a hazard to employees.
- Slings (e.g., wire rope, synthetic web or rope, and chain) and rigging hooks shall:
- Be inspected at least annually by a qualified inspector
- Have a documented inspection history, with records readily available
- Be labeled for identification purposes with a durable tag (synthetic or metal) permanently affixed to the device. Equipment that is not properly labeled shall not be used. However, manufacturer-supplied serial numbers or other individualized markings meet the labeling requirement

The Responsible Individual for the equipment shall ensure that a designated person determines whether conditions found during inspection constitutes a hazard and whether a more detailed inspection is required. Defective equipment shall be removed from service and destroyed to prevent inadvertent reuse.

All rigging equipment shall be maintained, inspected, tested (or calibrated), inventoried, and stored. A competent person shall ensure that equipment purchased through commercial channels meets or exceeds the requirements.

Rigging a Load

Do the following when rigging a load:

- Determine the weight of the load - Do not guess
- Determine the proper size for slings and components
- Make sure that shackle pins and shouldered eye bolts are installed in accordance with the manufacturer's recommendations
- Make sure that ordinary (i.e., shoulderless) eye bolts are threaded in at least 1.5 times the bolt diameter
- Use safety hoist rings (i.e., swivel eyes) as a preferred substitute for eye bolts whenever possible
- Pad sharp edges to protect slings. Machinery foundations or angle-iron edges may not feel sharp to the touch but could cut into rigging when under several tons of load. Wood, tire rubber, or other pliable materials may be suitable for padding.
- Do not use slings, eye bolts, shackles, or hooks that have been cut, welded, or brazed
- Determine the center of gravity, and balance the load before moving it. Keep the attachment points of rigging accessories as far above and as far away from the center of gravity as possible
- Initially lift the load only a few inches to test the rigging and balance
- Tag lines shall be used unless their use creates an unsafe condition

Protect rigging hardware as required. Items left in the sun may have surface temperatures that exceed the safe limits of synthetic lifting devices

Crane Institute of America, Inc.
800 832-2726

MOBILE CRANE HAND SIGNALS
(ANSI/ASME B30.5)


USE MAIN HOIST


USE WHIPLINE


HOIST


LOWER


RAISE BOOM


LOWER BOOM


RAISE BOOM AND LOWER LOAD


LOWER BOOM AND RAISE LOAD


SWING


EXTEND BOOM


RETRACT BOOM


EXTEND BOOM (ONE HAND)


RETRACT BOOM (ONE HAND)


MOVE SLOWLY (i.e. HOIST SLOWLY)


STOP


EMERGENCY STOP


TRAVEL (ONE TRACK)


TRAVEL (BOTH TRACKS)


TRAVEL


DOG EVERYTHING

CRANE LIFT FORM

COMPLETED BY*		DATE*	
SITE LOCATION*			
JOB #		Expected Lift DATE*	
NAC Contact Person*		Phone/Email	
Site Contact Person*		Site Phone/Email	
Crane Company		Crane Phone/Email	

Did the crane company do an on-site consultation? ☐ Yes / / ☐ No Did you review pick plan? ☐ Yes ☐ No

Discussed with: Client: Name Manager/Coordinator: Name Foreman: Name

Client site-specific safety requirements:

Hazards + Mitigation LIFT PLAN SUMMARY*		Unit Description*		# of Pieces	

Heaviest Weight		Unit Dimensions		Distance to Edge*		Roof Height	
Elect. Voltage		Curb Adapter		Power Lines/ Obstructions?*			

Certified rigging signal person: Name Their fall protection used at roof edge:

FALL PROTECTION PLAN* ☐ Tie-off where? ☐ Warning line (15′ construction, 6′ service) ☐ Guardrail/Parapet (42″+/-3)
☐ Unit + work area >15′ from the edge (work rule: stay>15′ from edge or use fall protection)

Crew Size: Hole covers needed: Anchors or ropes needed:

Special Equipment Needed Delivery Details

GUIDE: FALL PROTECTION - Work on Low-Slope Roofs

Is the lift occurring on a Construction Site, or is the task expected to take more than a few days? (is it continual or frequent?)

A. Yes. Then use conventional fall protection or set up warning line at least 15 feet from edge, around entire work area.
B. No. The task falls under general industry standards (Maintenance + Service work on flat or low-slope roofs) For tasks performed:
   a. 6 feet or less from the roof edge
      - Use conventional fall protection (guardrails, personal fall protection system, or safety net)
   b. Between 6 feet and 15 feet from the roof edge
      - Conventional fall protection system; or A "warning-line" system set at 6 ft from the edge (unless mechanical equipment is used, then set warning line at 10 feet)
   c. 15 feet or more from the roof edge
      - Temporary and Infrequent Tasks: No fall protection system required but must implement and enforce a work rule: Stay 15 feet or more away from edge unless using fall protection 29 CFR 1910.21(b)(13)(iii)(A))

Note: If the certified rigging signal person is at the edge, they must be tied-off or have other fall protection. Open holes should be covered ASAP or workers tie-off to prevent falling through holes. If there is mechanical equipment to help move items around, set warning line at 10′. If the site has more stringent safety requirements, follow them.

POWERED INDUSTRIAL TRUCKS
(1910.178)

Procedures

Only trained and certified employees can operate Power Industrial Trucks (PIT). Certification is achieved by the successful completion of the training and evaluation of NAC Powered Industrial Trucks Training Program.

Training shall consist of:

- Formal Instruction – an educational lecture on the proper use of power industrial trucks (initially and as needed)
- Practical Demonstration – hands-on evaluation of the equipment, use of pre-operation check list, and interactive training session on how to operate the vehicle (initially and as needed)
- Skills Evaluation – evaluation of skills during operation of the vehicle *(every 3 years)*

Refresher training will be provided when unsafe operations are observed, after an accident or near miss, if evaluations indicate the need for retraining, if operator is assigned to a new type of truck, if conditions in the workplace change. A Skills Evaluation must be completed after refresher training.

Training will be conducted on the following item:

- General safety regulations and procedures
- Loading and stacking
- Operation
- Routine Inspections and maintenance checks

General safety procedures

To ensure the safety of all employees who operate forklifts or work in or near an area that a forklift is to be operated, the following rules are adhered to:

- Do not allow any employee under 18 years old to operate a forklift.
- Only authorized and trained employees may operate a forklift.
- Do not modify or make attachments unless approved by the manufacture
- Examine forklift truck for defects before using and document on the Pre-Operation Inspection Form.
- Follow safe operating procedures for picking up, moving, putting down and stacking.
- Drive safely, never exceed 5 mph, and slow down in congested or slippery or areas.
- Do not handle loads that are heavier than the capacity of the industrial truck.
- Remove unsafe or defective forklift trucks from service.
- Operators shall always wear seatbelts.
- Avoid traveling with elevated loads.
- Assure that rollover protective structure is in place
- Make certain that the reverse signal alarms operational and audible level

Loading and stacking

To prevent forklift truck from tipping over, falling sideways or dropping its load the operator should:

- Make sure the load is stable and safely arranged on the forks.

- Do not tilt the forks forward except when picking up or depositing a load.
- Tilt the load backward only enough to stabilize the load.
- Keep the load low just above the pavement with forks tilted back when traveling.
- Keep the load uphill when going up or down an incline.
- Drive at a speed that will allow you to stop safely within the stability triangle.
- Avoid driving over loose objects or on surfaces with ruts and holes.
- Never lift compressed gas cylinder with a sling or by the head. Secure upright in groups on a pallet to lift.
- Fixed jacks, dock locks or wheel chocks must be in place for all semitrailers during loading and unloading when the trailer is not coupled to a tractor.

Suggested Stacking Techniques

BRICK BLOCK PINWHEEL IRREGULAR STACKING

Operation

The basic rule for traveling is that you maintain control of your forklift at all times. The competent forklift or truck user will operate safely by:

- Operate a forklift only while in the seat or operator's station. Never start it or operate the controls while standing beside the forklift.
- Never allow passengers unless designed for a passenger.
- Do not put any part of your body between the uprights of the mast or when traveling, outside of the forklift frame.
- Always look in the direction of travel and keep a clear view of the travel path.
- Travel in reverse if the load blocks your view.
- Keep a distance of at least three forklift lengths between you and any forklift traveling in front of you
- Never drive a forklift up to anyone in front of a bench or other fixed object.
- Never allow anyone to walk or stand under the elevated forks.
- Always check that there is adequate clearance under overhead objects.
- Forks shall be lowered when the forklift is not being operated

Routine Inspections and Maintenance Checks

Daily pre-operation inspections must completed daily prior to operating forklift trucks. (See Forklift Pre-Operation Daily Checklist) Maintenance and inspections shall be documented and kept on file. A competent NAC employee will perform routine inspection on trucks and material lifts returned to the NAC Warehouse using the Maintenance Inspection Form to document. An outside contractor will conduct annual inspections.

A minimum of the following items shall be checked on pre-operation inspections. See checklist on the forklifts for a vehicle specific list.

- Is the horn working? Sound the horn at intersections and wherever vision is obstructed.

- Are there hydraulic leaks in the mast or elsewhere? These could cause slipping hazards or lead to hydraulic failure.
- Are fuel connections tight and battery terminals covered?
- Is there a lot of lint, grease, oil or other material on the forklift that could catch on fire?
- Does the engine show signs of overheating?
- Are tires at proper pressure and free of damage? A tire with low pressure or a tire failure can cause a forklift to tip or fall when a load is high.
- Do all controls such as lift, lower, and tilt work smoothly? Are they labeled?
- Is there any deformation or cracks in the forks, mast, overhead guard, or backrest?
- Are lights operating if used at night or in dark locations?
- Is steering responsive? A lot of play or hard steering will reduce your control.
- Do brakes stop smoothly and reliably? Sudden stops can cause tipping.
- Does the parking brake hold the forklift on an incline?
- Are seat belts (if equipped) working and accessible?

FORKLIFT PRE-OPERATION INSPECTION

1. Forklifts must be inspected daily before use as required by 29 CFR 1910.178(q)(7)
2. Write date, Initial and check items to confirm in good working order. Retain for at least one year
3. No forklift shall be operated while damaged

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Forklift Name + ID:

Date																				
Operator Initials																				
Item Inspected	OK	Repair	OK	Repair	OK	Repair	OK	Repair	OK	Repair	OK	Repair	OK	Repair	OK	Repair	OK	Repair	OK	Repair
Forks, Backrest, Carriage																				
Mast, Chain, Hydraulic Lines																				
Tires, Axles																				
Overhead Guard / Roll-over Protection																				
Fuel Tank & Connections																				
Engine Oil Levels																				
Radiator Water Levels																				
Fuel Level / Charge																				
Leaks under forklift																				
Seat and Seat Belt																				
Horns and/or backup alarm																				
Lights																				
Gauges and Instruments																				
All Brakes																				
Hydraulic Controls and Lift																				
Steering																				
Overall Machine , nuts & bolts, guards,																				
Lift attachments																				
Other:																				
Comments:																				

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Forks, Backrest, Carriage																				
Mast, Chain, Hydraulic Lines																				
Tires, Axles																				
Overhead Guard / Roll-over Protection																				
Fuel Tank & Connections																				
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All Brakes																				
Hydraulic Controls and Lift																				
Steering																				
Overall Machine , nuts & bolts, guards,																				
Lift attachments																				
Other:																				
Comments:																				

C. Hands-On Skills Evaluation

Complete a series of tasks to test your ability to operate forklift safely. Evaluator completes the Hands-on Skills Evaluation

To be conducted initially, every 3 years, and after refresher training. Evaluator must be competent in overall machine safety and shall observe operators performance.

Operator Name _____ Date _____

Machine Type: _____

Evaluator Name _____

Skills to evaluate for safe operation:	YES	NO	N/A
1. Conducts thorough daily inspection of lift			
2. Shows familiarity with controls and operated safely			
3. Was aware of surroundings and used signals/spotter when needed			
4. Slowed down at intersections or walkways			
5. Traveled with forks lowered close to ground			
6. Kept a clear view of direction of travel, yielded to pedestrians			
7. Maneuvered machine smoothly and effectively.			
8. Stops smoothly and completely			
9. Keeps equipment/body inside of bucket/cage			
10. Obeys signs and site rules			
11. Aware of center of gravity, and is cautious while on inclines			
12. Traveled with load uphill on inclines			
13. Considered environmental factors like wind and weather conditions that may affect stability of machine.			
14. Inspected area for hazards and machine prior to use			
15. When completed, controls neutralized, brakes set, power off, and parked appropriately.			
16. Obeys sign and site rules			
	+	-	
☐ **PASS** ☐ **FAIL** Total			

_____

Evaluator Signature

Notes:

STORAGE + STACKING

NAC employees must follow precautions while handling and storing material. Stored materials must not create a hazard for employees. Workers should be aware of the height and weight, accessibility, and storage conditions to ensure additional hazards are not created by storing methods.

- Keep storage areas free from accumulated materials that cause tripping, fires, or explosions, or that may contribute to the harboring of rats and other pests
- Place stored materials inside buildings that are under construction and at least 6 feet from hoist ways, or inside floor openings and at least 10 feet away from exterior walls
- Separate non-compatible material (oxygen 20 feet from acetylene and other flammable materials)
- Equip employees who work on stored grain in silos, hoppers, or tanks, with lifelines and safety belts
- Place bound material on racks, and secure it by stacking, blocking, or interlocking to prevent it from sliding, falling, or collapsing

Stacking materials can be dangerous if workers do not follow safety guidelines. Falling materials and collapsing loads can crush or pin workers, causing injuries or death. To help prevent injuries when stacking materials, workers must do the following:

- Stack lumber no more than 16 feet high if it is handled manually, and no more than 20 feet if using a forklift
- Remove all nails from used lumber before stacking
- Stack and level lumber on solidly supported bracing
- Ensure that stacks are stable and self-supporting
- Do not store pipes and bars in racks that face main aisles to avoid creating a hazard to passersby when removing supplies
- Stack bags and bundles in interlocking rows to keep them secure
- Stack bagged material by stepping back the layers and cross-keying the bags at least every ten layers (to remove bags from the stack, start from the top row first)\

During materials stacking activities, employees must also do the following:

- Store baled paper and rags inside a building no closer than 18 inches to the walls, partitions, or sprinkler heads
- Band boxed materials or secure them with cross-ties or shrink plastic fiber
- Stack drums, barrels, and kegs symmetrically
- Block the bottom tiers of drums, barrels, and kegs to keep them from rolling if stored on their sides
- Place planks, sheets of plywood dunnage, or pallets between each tier of drums, barrels, and kegs to make a firm, flat, stacking surface when stacking on end
- Chock the bottom tier of drums, barrels, and kegs on each side to prevent shifting in either direction when stacking two or more tiers high
- Stack and block poles as well as structural steel, bar stock, and other cylindrical materials to prevent spreading or tilting unless they are in racks
- Paint walls or posts with stripes to indicate maximum stacking heights for quick reference
- Observe height limitations when stacking materials
- Consider the need for availability of the material
- Stack loose bricks no more than 7 feet in height. (When these stacks reach a height of 4 feet taper them back 2 inches for every foot of height above the 4-foot level. When masonry blocks

are stacked higher than 6 feet, taper the stacks back one-half block for each tier above the 6-foot level)

Section VI

Safe Work Practices

VII. Safe Work Practices

1. Compressed Air
2. Compressed Gas
3. Cutting & core drilling
    a. Cutting & Core Drilling Form
4. Pressure Washers
5. Spray Painting
6. Specialty Work Environments
    a. Health Hazard Concern Form

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COMPRESSED AIR

Procedures

All Employees at NAC who work with compressed air will follow the proper procedures for minimizing the risks associated with using compressed air.

Hazards

Compressed air is pressurized that is capable of blowing debris causing projectiles and breaking through the skin. If pointed at the skin, compressed air is capable of entering through the skin, forcing the pressurized air deep into tissue, and into the bloodstream. The air may travel to the heart causing stroke or heart attack like symptoms. If blown into the mouth or other body parts, compressed air can cause internal rupturing in the lungs and stomach, etc. Keeping the nozzle pressure regulator below 30 PSI will help to reduce the likelihood of an accident, but even as little as 12 PSI can cause you to loose and eye.

Guidelines

When dealing with compressed air in the facility warehouse, on jobsites, or in fleet vehicles the following procedures shall be followed to reduce the risk of injury.

- Use low pressure (under 30psi) and the correct nozzle to remove dust or particles from jigs, fixtures or deep holes in parts. Wear cup type goggles and set up shields to protect others in the area. Do not use compressed air for cleaning unless pressure is reduced to 30 PSI or less.
- Air pressure against the skin may penetrate deeply to cause internal hemorrhage and intense pain. Air that enters body opening may burst organs.
- Check the condition of the hose. Air hoses are designed to withstand pressure, but become weakened at bends, kinks and connections to shut-off valves and nozzles. Such weak points may swell and burst, throwing pieces of hose in every direction, also causing the hose to thrash about dangerously.
- Keep the air hose off the floor. It is a tripping hazard and is subject to damage by trucks, doors, and dropped tools.
- Always coil the hose, without kinks, and hang it over a broad support when not in use.
- Where you have a choice of pressure, use the lowest pressure possible.
- Do not use compressed air to clean clothing. It is dangerous to use compressed air to remove dust from clothing. Use safer better ways of cleaning your cloths. Dust blown from anything merely rises and settles again to become a nuisance.
- Air cylinders shall be equipped with pressure relief valves and pressure gauges.
- For transferring liquids check air pressure, attach hose connection tightly, remain at control valve to shut off in emergency, and make sure bleed-off valve and pressure relief valve work.
- Air filters shall be installed on the compressor intake to ensure only clean, uncontaminated air enters the compressor.
- Safety devices such as valves shall be checked and tested frequently, and always visually inspect your cylinder.
- Before any repair work is done on the pressure system of a compressor, the pressure shall be bled off and the system locked-out, and signs shall be posted to warn of the automatic starting. Ensure frequent draining of the receiver to prevent accumulation of liquids.
- The belt drive system shall be totally enclosed to provide protection for the front, back, top and sides.

- When compressed air is used with abrasive blast cleaning equipment, the operating valve shall be of the type that must be held open manually.

COMPRESSED GASES

Compressed gas, like any material under pressure, can be dangerous if not handled properly. Compressed gasses may be flammable, explosive, reactive, toxic or a combination of these hazards, so it is important that they are clearly labeled to identify the contents and hazards. All employees working with compressed gasses must be trained to identify the type of gas you are working with, the hazardous properties of the gas, and safe handling and storage of the compressed gas cylinder.

Gases Requiring Special Treatment:

- OXYGEN: is not flammable, but increases the tendency of things around it to burn or explode. Keep oxygen cylinders away from combustible or flammable materials and fire hazards, including oil or grease on your hands, clothes and work area. Oxygen should not be used for compressed air.
- CHLORINE AND FLUORINE: These gases are highly corrosive and irritating and will corrode many materials. When combined with acetylene, and exposed to light, they may explode. In water chlorine will form corrosive hydrochloric acid, attacking iron or steel equipment. A gas mask and other protective equipment should be available.
- AMMONIA: Ammonia is a highly corrosive gas that requires quick access to a gas mask and other protective equipment.
- ACETYLENE AND HYDROGEN: Both are highly explosive gasses requiring extreme caution when handling. Hydrogen can escape easily around threaded fittings. Friction of escaping gas can ignite spontaneously. Hydrogen has no odor to warn of a leak.

Cylinder Storage:
When dealing with compressed gases in the facility warehouse, on jobsites and during the transportation in fleet vehicles the following procedures must be followed.

- Inspect cylinders, regulators, hoses and connectors for damage or hazards before use. If damage is found, or cylinders are leaking remove from service and contact the supplier. Leaking cylinders should be immediately moved to a well ventilated area away from other hazards.
- Cylinders should always be chained in upright position to a wall, cylinder truck, cylinder rack or post. This becomes especially important when gas is in use, as a regulators are attached to the cylinder valve and the safety cap is not in place to protect the valve.
- When transporting, always secure and keep upright in a vertical position. Transport using a basket or cart.
- Store fuel gas cylinders away from oxygen and compressed gas cylinders. OSHA regulations require stored oxygen cylinders be separated from fuel gas cylinders and combustible materials by at least 20 feet or by a noncombustible barrier at least 5 feet high having a fire resistive rating of at least one half hour. (e.g. Store *flammable fuel gases* such as Acetylene away from *Oxygen and inert gases* such as Nitrogen and Argon).
- Store Empty and Full cylinders separately. Mark cylinders that are no longer needed for pickup by supplier.

- Always replace the cylinder cap when the cylinder is not in use or when it is being moved.
- “NO SMOKING” signs should be posted around all fuel gas and oxygen storage areas.
- Keep unauthorized persons away from the cylinder storage areas. Use a lock or fence if necessary.
- Never place cylinders in hallways or work areas where they could be hit by forklift trucks or struck by falling objects.
- Keep cylinders away from electrical circuits and excessive heat. Cylinders are made of steel and will conduct electricity.

Cylinder Use:

- Never hammer, pry or wedge a stuck or frozen cylinder valve to loosen it. If a valve will not open by hand, or if the cap is removed, call the gas distributor.
- Do not rely on the color of the cylinder to identify the gas inside, as suppliers may use different color codes. Read the labels to identify the gas and return any unidentifiable cylinders to the supplier.
- Keep cylinders away from sparks, hot slag of molten metal resulting from welding, cutting, machining or foundry operations; using or storing cylinders at temperature in excess of 130 degrees F is in violation of DOT regulations. Keep cylinders out of direct sunlight as gases expand when heated. A cylinder at 2200 psig and 70 degrees F will increase pressure to 2451 psig at 13-degrees F.
- Always “crack” the cylinder valve (open slightly and close it immediately) before attaching a gas regulator to any cylinder, **but never “crack” hydrogen or fuel gas cylinders.** Cracking removes any dirt that may be lodged in the valve outlet, and prevents dirt from entering the regulator. Wipe out the outlet connections on hydrogen or fuel gas cylinders with a clean, dry lint free cloth. Do not stand in front of the valve outlet while cracking it, and do not point the outlet at anyone.
- Always use a cylinder wrench or other tightly fitting wrench to tighten the regulator nut and hose connections.
- Under certain conditions, otherwise harmless gases can kill. Inert gasses such as argon, helium, carbon dioxide and nitrogen can cause asphyxiation. Always use and store compressed gases in well ventilated areas.

NAC Cutting & Core Drilling Procedures

NAC will follow the necessary steps to minimize risk during cutting and core drilling. The following procedures will be carried out to avoid disruptions in building operations, safety hazards, and property damage.

Risk Assessment

Prior to any cutting or core drilling, hazards will be minimized through the following means:

- Engineering Controls – Minimize hazards by isolating and preparing for dangers
- Administrative Controls – Develop procedures to follow so risks are lessened
- Use of Personal Protective Equipment – To block exposure between workers and the hazards

Preparation

Before any work begins, a plan will be set forth between NAC, the host facility, and any other subcontractors or personnel influenced by the cutting or core drilling. To insure that this plan is conveyed properly "NAC Cutting and Coring Form" will be completed and signed by all parties involved.

Warning signs will be posted, access to demolition areas will be restricted, and necessary permits will be obtained including: lockout tagout, hot work and confined space entry permits.

Any tools, materials, and equipment will be stationed close by to ensure that the task can be carried out in an efficient and timely manner. Including but not limited to water cans, extra blades and bits, fire extinguishers etc.

Operations

1. The area where cutting or core drilling will take place will be surveyed first to make sure no structural or utilities will be crossing path. All surfaces surrounding penetration will be examined. If necessary an x-ray will be conducted.

2. Cutting & coring sites will be secured from loss debris by any of the following methods:
    - Cones/ warning barrier around cutting site and beneath drop zone
    - A spotter will be located below to catch falling debris or to ensure debris is contained within the specified catch area.
    - Net, canvas, wood or other device be placed under drop zone to cushion impact and catch debris.

3. While cutting, dust or debris will be minimized by watering, vacuuming or, exhausting area

4. Any open holes will be covered with secured plywood or sheet metal at least twice the size of the opening and marked "HOLE"

5. After work is complete debris will be removed from the site

6. Any open permits will be closed, facilities will be notified if work is complete or ongoing, and location will be reopen to the public accordingly

Cutting & Core Drilling Form

Job Name:_____ Project Number:_____

PART I: SCOPE OF WORK:

Start Date:_____ Start Time:_____ Stop Date:_____ Stop Time:_____

If work is ongoing specify details:_____

_____

Building Location:_____ Floor:_____ Room Number:_____

Description of work to be done: _____

_____

If other companies are involved please describe:_____

_____

Does this affect the area below? Description: _____

Does this affect the area above? Description: _____

Does this affect neighboring areas? Description: _____

Surrounding cutting areas have been checked/ free of obstructions: ❑Front Side ❑Back Side ❑Between Surface

PART II: RISK ASSESSMENT:

(1) How will environment be isolated from public access (check all that apply, or describe other):
❑Secured Area ❑Construction Barrier ❑Warning Tape ❑Facility Notice ❑Night Work

_____

_____

(2) How will construction dust/ debris be minimized (check all that apply, or describe other):
❑Watering ❑Dust Barrier ❑Vacuum ❑Exhaust Fan ❑Smoke Eater

_____

_____

(3) How will removed pieces be secured when falling: (check all that apply, or describe other):
❑Support from below ❑Spotter ❑Cushioning Device ❑Secure Drop Zone ❑Anchoring Line

_____

_____

(4) Describe necessary personal protective equipment and any other precautions taken:

_____

_____

PART III: APPROVAL(S) TO PERFORM CUTTING OR CORE DRILLING:

_____ _____

Facilities Manager Facilities Engineer

_____ _____

Other specify: (_____) Person performing the work, Title

Note: Once the form is complete, forward this form to NAC Project Manager for review and retention.

Pressure Washers

Procedures

All Employees at **NAC Mechanical & Electrical Services** who work with pressure washers will follow the proper procedures for minimizing the risks associated with using pressure washers. Pressure washers are commonly found in the following areas at NAC:

- On Service Jobsite to clean Air Conditioner Coils
- In the NAC Fab Shop Wash bay
- On Construction Jobsites

Hazards

Pressure washers operate at high pressures using different nozzles of varying degrees from lower pressured 40 degrees to high pressure zero degrees. It is not recommended to use any nozzles below 15 degrees because of the risk of lacerations. Pressure washers are capable of cutting through skin, and forcing the pressurized liquid deep into tissue.

Injuries from pressure washers often appear minor, but often result in deep tissue infections. In the event of an injury from pressure washers, you should seek medical attention immediately. Injuries that appear minor may be severe.

Guidelines

- Use 15° - 40° nozzles or where possible
- Wear safety glasses and safety boots: rubber soles that provide insulation are recommended.
- Never point a pressure washer at yourself or others.
- Never attempt to push or move objects with spray from the washer.
- Never use a gasoline powered washer in an enclosed space.
- Always test the ground fault circuit interrupter (circuit breaker or outlet) before using a pressure washer.
- Always have a qualified electrician check the pressure washer for electrical problems after it ha s tripped a circuit breaker.
- Always plug a properly grounded pressure washer into a properly grounded receptacle. Keep both the power cord and extension cord away from water.
- If an injury occurs, seek medical help immediately.

SPRAY PAINTING

When spray painting on jobsite or in the warehouse facility the following guidelines shall be followed:

- Conduct all spray painting operations according to NFPA Standard No. 33 "standard for spray applications using flammable and combustible materials."
- Conduct all spray painting operations in a factory built approved spray painting booth.
- Construct the walls, floors, ceiling and doorways of steel concrete, masonry or other noncombustible material.
- All electrical wiring and equipment should be approved for Class I. Division 1 hazardous locations.
- No open flame or spark producing equipment should be located within the spray area.
- Heat should be ducted into the booth, with no heat sources inside the booth.
- Keep only one days supply of flammable or combustible liquids stored inside the booth.
- Mechanical ventilation, adequate to remove flammable or combustible vapors, mists, residues, dusts or deposits to a safe location, should be provided and must be in operation while spray painting.
- The mechanical ventilation exhaust motor should be located outside the path of escaping vapors.
- The mechanical ventilation system should also be located within 18 inches of floor level.
- Replace filters and clean the ventilation system frequently. Remove overspray from the spray area and mechanical ventilation system on a regular basis.
- Maintain good housekeeping practices at all times.
- Personal protective equipment should be worn by all employees engaged in spray painting operations.
- Know and understand the MSDS available to you.
- **"NO SMOKING"** signs shall be posted in the spray painting area.

Specialty Work Environment Hazard Exposure

NAC will follow the necessary steps to maintain safe and hazard free work environments and has developed the following procedures to address work carried out in laboratories, clean rooms, hospitals, disposal facilities, and other worksites where health concerns may play a factor.

Risk Assessment

Prior to performing any work, the work space and all associated mechanical and electrical equipment shall be evaluated for health hazards. NAC Health Hazard Concern form shall be distributed to the facility manager or general contractor if necessary.

Once health conditions of the environment are determined, the project manger or account manager shall work with the facilities to abate any health hazards. Additionally the following techniques should be practiced to abate any dangers:

- Engineering Controls – Minimize hazards by isolating and preparing for dangers
- Administrative Controls – Develop procedures to follow so risks are lessened
- Use of Personal Protective Equipment – To block exposure between workers and the hazards

Operations

Before any work begins a plan will be set forth between NAC, facilities, and any other subcontractors or personal influenced by the construction process.

Warning signs will be posted, access to exposed areas will be constricted, and necessary permits will be obtained including: lockout tagout, fire watch and confined space permits, but not limited to these.

Any tools, materials, and equipment will be stationed close by to ensure that the task can be carried out in an efficient and timely manner. Including but not limited to mechanical caps, pumps, fire extinguishers etc.

Tools and equipment will be properly sterilized or protected from entering/ leaving exposures.

Proper PPE shall be used including the following: Containment suite, respirator, Face Shield, Safety glasses, gloves.

if health hazards are present during the work, medical surveillance shall be monitored by the facility or qualified contractor to prevent exposure levels from becoming hazardous to any workers.

Proper housekeeping should be maintained in the environment.

Proper disposal of construction debris and PPE shall be maintained.

Record keeping shall be kept of health conditions and work practices following this work.

HEALTH HAZARD CONCERN FORM

Issued to:_____ Date:_____

From:_____ Contact number:_____

NAC has encountered *a potential health hazard* in a work area and requests your cooperation in assessing and controlling this hazard.

SITUATION / CONCERN:

REQUESTS:

If you disagree with this assessment, contact us by:_____

OTHERWISE THE FOLLOWING PRECAUTIONS WILL BE TAKEN:

Thank you for your cooperation.

Sincerely,

Stephanie Hagen
Safety Coordinator
shagen@nac-hvac.com
651.200.3024