IIPP

INJURY AND ILLNESS PREVENTION PROGRAM

JANUARY 2021

NOVO Construction Inc.

1460 O' Brien Drive
Menlo Park, CA 94025

608 Folsom Street
San Francisco, CA 94107

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INTRODUCTION

The safety and protection of all NOVO Construction (NOVO) personnel is paramount. Our goal is for NOVO Construction and its subcontractor personnel to plan, manage, and direct each activity free from error, injuries, or incidents achieving true operational safety integration.

All levels of NOVO Construction management recognize their responsibility to assure a safe workplace and the protection of personnel, equipment, and property. This duty is accomplished by remaining cognizant of NOVO Illness Injury Prevention Program (IIPP) and other safety protocols required by using NOVO Construction.

It is the requirement and responsibility of each NOVO Construction employee to adhere to the requirements of this IIPP. All employees shall be trained and oriented to the specifics of this IIPP, assigned job duties and all other policies, programs, procedures and practices that may be applicable to providing a safe work environment. NOVO's objective is to create and maintain the highest level of awareness, assure effective safety pre-planning and safe execution of all work activities that meets and/or exceeds safety guidelines and requirements.

NOVO is experienced and will implement its safety principles, and safety values to achieve zero incidents. NOVO plans safety into every aspect of our work activities through: Job Hazard Analysis (JHA) and Pre-Task Planning (PTP) for high hazard/high risk activities, training and instruction to employees, through oversight and evaluation of safety performance. NOVO focuses on continuous improvement in every aspect of our work, and on achieving safety excellence.

SAFETY POLICY STATEMENT

Environmental, Health and Safety in our business must be part of every operation. Without question, it is every employee's responsibility at all levels to comply and maintain a safe work environment.

It is the intention of NOVO Construction to comply with all environmental and occupational health and safety laws. To do this, we must constantly be aware of hazardous conditions in all work areas that can result in injury, illness and property loss. No employee shall be required or expected to work in an unsafe or unhealthful environment. Your cooperation in detecting, reporting and, in turn, controlling hazards is a condition of employment. Inform your supervisor immediately of any unsafe condition or situation beyond your ability or authority to correct. No reprisal or punitive action will ever be taken against employee for providing such notice to company management.

The personal safety and health of each employee of NOVO Construction is of primary importance. Prevention of occupationally induced injury or illness will be given precedence over operating productivity. Our objective is a safety and health program that will reduce the number of injuries and illnesses to an absolute minimum. Our *goal is Zero Accidents and Injuries.*

In order for NOVO Construction to succeed in this goal, it will be necessary for every employee to be responsible for following the procedures put forth by management to protect themselves and their fellow workers. We ask each of our employees to make the commitment to work safely and in a manner to prevent injuries to persons or property.

Please note that employees who violate safety and health rules, orders or standards, or expose themselves or fellow employees to safety or health hazards will be subject to disciplinary measures.

Please also be advised that the person responsible for the implementation of this Illness Injury Prevention Program (IIPP) for NOVO Construction is Robert Williamson. If you have any questions regarding the program or the Company's Code of Safe Practices, which every employee is required to read, acknowledge and sign, please contact Robert directly.

We look forward to joining with you in this opportunity to promote physical and financial well-being for the Company and all of our employees.

Sincerely,

Robert Williamson President

NOVO Construction, Inc.
1460 O' Brien Drive, Menlo Park, CA 94025 Telephone 650-701-1500 / Fax 650-701-1501

1.0 – PURPOSE AND POLICY STATEMENT

NOVO has established, implemented and maintains an effective Environment, Health and Safety (EHS) — Illness Injury Prevention Program (IIPP) to provide an administrative structure within which NOVO, its employees, subcontractors and clients shall commit and provide a safe and healthful work environment for employees and all other individuals affected. The IIPP does not relieve management, employees and other contractors of any of their traditional or specific legal responsibilities with respect to occupational health and safety or the protection of property, equipment and the environment. The health and safety of every employee is of primary importance. Our goal is to prevent all occupational injuries, illnesses and property loss.

The requirements for establishing, implementing and maintaining an effective written IIPP are contained in Title 8 of the California Code of Regulations (CCR), Section 3203 and consist of the following eight elements:

- Responsibility
- Compliance
- Communication
- Hazard Assessment
- Accident / Exposure Investigation
- Hazard Correction
- Training and Instruction
- Recordkeeping

This program will be reviewed and updated at least annually by Thomas Allison (Safety Director). Code of Safe Practices referenced in this IIPP is attached as Appendix A.

2.0 – RESPONSIBILITIES

Executive / Senior Management
NOVO Executive / Senior Management shall demonstrate observable leadership to support, allocate resources and conduct periodic reviews of the safety program and operations to ensure the effectiveness the safety program.

Safety Director
NOVO has designated Thomas Allison, Safety Director, as the Program Administrator. The Program Administrator is responsible for overall management, implementation and administration of the Injury and Illness Prevention Program (IIPP). Responsibilities include:

- Development, review, administration and implementation of the IIPP and all company safety program elements,
- Establish and review methods and procedure for correcting unsafe and unhealthy conditions and work practices,
- Communicate and provide continual feedback to executive management on the overall effectiveness of the company safety program,
- Ensure employee training on general, specific safety & health practices and job assignments,
- Ensure there is an effective procedure for communicating to employees company safety and health rules, policies and procedures,
- Ensure there is an established method of communication for employees to report concerns, unsafe conditions and acts without reprisal or punitive action against the employee,
- Ensure company compliance with state and federal regulations, laws, and
- Administer, maintain and ensure recordkeeping of personnel training, medical & exposure records, as well as, production/operational safety inspections and corrective measures implemented as the result of inspections, as required by this IIPP and other Cal/OSHA required programs and accordance with Title 8 California Code of Regulations.

Project Managers, General Superintendents and Project Superintendents
Project Managers (PM), General Superintendents (GS) and Project Superintendents (PS) are responsible for the implementation of the IIPP and safe execution of construction operations under their control. Compliance with safe work practices will be formally reviewed and evaluated during project safety audits and performance appraisals. A copy of the IIPP shall maintained at each project location and readily available for review upon request from employee, supervisor and manager. Additional responsibilities include:

- Implement requirements outlined in the IIPP and other company safety policies and procedures,
- Set and establish proper example for workers to follow,
- Ensure orientation of new personnel to company and client safety requires,
- Ensure employees have received training for job assignments,
- Reporting and investigating of all injuries, illnesses and accidents that result in chemical release and threaten equipment or property,
- Ensure personal protective equipment (PPE), first aid and other required lifesaving equipment are inspected and readily available for use,
- Take prompt corrective action whenever unsafe cond"4ions or acts are reported or identified,
- Conduct and document project safety inspections,
- Maintain current certification in First Aid and Cardio-pulmonary Resuscitation (CPR), and

- Ensure enforcement of company disciplinary policy when there has been an obvious or willful violation of published safety rules and practices.

Employees

Employees are responsible for performing their work assignments in a safe and responsible manner, in accordance with NOVO policies and procedures, regulatory laws and regulations, and in accordance with training instructional requirements. Other employee responsibilities include:

- Observation of safety notices posted and communicated by NOVO and/or its clients,
- Properly selecting and the proper utilization of prescribed Personal Protective Equipment (PPE),
- Safe operation of tools, equipment, handling of potentially hazards chemicals and other materials (refer to Material Safety Data Sheet [MSDS]),
- Attend safety meetings,
- Posting and complying with all safety barricades and signage,
- Attend, observe and understand all necessary safety training and instruction,
- Report any unsafe condition, acts and behavior, and
- Follow requirements outlined in the IIPP and other safety policies and procedures.

Safe work practices are a condition of employment. All employees are responsible for performing their work assignments in a safe and responsible manner; in accordance with this IIPP, NOVO health and safety policies and procedures, Cal/OSHA Title 8 CCR regulatory laws and standards, safety instruction and training, and supervisor's instructions.

Supervisors will counsel and, if appropriate, arrange, schedule retraining for employees who violate safety policies, procedures, or who do not demonstrate understanding of safe behavior or decision making. Serious or repeated violations may result in disciplinary action up to and including termination of employment.

3.0 – COMPLIANCE

NOVO requires employee compliance with all established safety rules, policies and procedures as a condition of employment. All employees are required to familiarize themselves and adhere to company safety practices, policies and procedures in every aspect of their duties and job assignments. Supervisory, administrative and management personnel at all levels are responsible for taking immediate corrective action when am unsafe condition, act or violation is observed.

Any employee knowingly performing an unsafe act or causing an unsafe condition shall be subject to disciplinary action up to termination of employment. Supervision and management shall take immediate action to correct the violation. Methods and progression of disciplinary actions is as follows:

First Offense: Verbal (Documented) Warning
An employees' first safety violation offense may result in a (documented) verbal warning and coaching with a copy of the Disciplinary Notice given to the employee for review and acknowledgement. The original document will then be filed and maintained in the employees' personnel file.

Second Offense: Written Warning
A written warning similar to the first warning will be given to the employee, shall require retraining of the employee for the safety policy and procedure of the violation, a copy of the violation shall be retained by the Safety Director and the original document filed and maintained in the employees' personnel file. A meeting will be held with the employee, the Superintendent responsible for the employee, the Safety Director and Senior Management in order to determine the reasons the employee violated safety rules and procedures. Any action taken at this time will be determined by Senior Management, Safety Director and Superintendent, and based upon the severity of the violation.

Third Offense: Serious Violation Notice
A written warning shall be prepared and a copy given to the employee, be retained by the Safety Director and original document filed and maintained in the employees file. Three (3) warnings for safety violations within a twelve (12) month period may result in suspension or termination of employment. Three (3) safety violations within a six (6) month period will result in termination of employment without pay.

4.0 – COMMUNICATION

Managers and supervisors are responsible for communicating with workers about occupational safety and health in a form readily understandable by all workers. Our communication system encourages all workers to inform their managers and supervisors about workplace hazards without fear of reprisal. *Retaliation against employees for reporting safety problems or making safety suggestions is strictly prohibited.*
Communication of health and safety requirements will be accomplished through the following means:

- Safety training and instruction of company IIPP, policies and procedures and occupational safety and health required trainings,
- New worker orientation including a discussion of safety and health policies and procedures,
- Scheduled employee and staff meetings,
- Weekly safety meetings,
- Office and job site postings, and
- Employee suggestion program: A system for workers to anonymously inform management about workplace hazards and other concerns. Workers are encouraged to report any deficiencies without repercussion. Guidelines for reporting can be found in Appendix B and posted at project locations in accordance with California Labor Code 1102.8.

NOVO has developed an Employee Suggestion Policy to empower employees to submit any company work-related safety suggestions or concerns. A copy of the Employee Suggestion Policy and Suggestion Form are included in Appendix B.

Employees may submit (anonymously or otherwise) written suggestions or comments to NOVO Executive Management and Safety Director at the following addresses:

NOVO Construction
Attn: Safety Director
1460 O'Brien Drive
Menlo Park, CA 94025

NOVO Construction
Attn: Safety Director
608 Folsom Street
San Francisco, CA 94107

Employees may obtain a self-addressed stamped envelope at the project or NOVO office locations upon request, if they choose.

Employees who report unsafe conditions cannot be disciplined, nor shall they suffer any reprisals. Safety suggestions shall be reviewed each quarter, or more frequent, depending on the nature of the suggestion by the NOVO Safety Committee.

All employees are responsible for immediately notifying their supervisors of any unsafe or unhealthy working conditions or equipment. The results of investigation of any safety problem or suggestion reported will be communicated to all affected employees in verbal staff meetings, during weekly safety meetings (at remote sites), by email, or written postings.

5.0 – HAZARD ASSESSMENT

Inspections to identify and evaluate workplace hazards shall be performed twice daily by the Project Superintendent, and periodically by Executive / Senior Management prior to project initiation and during daily operations. Results and instruction shall be provided to project personnel during weekly safety meetings, or as necessary to communicate and inform personnel of hazards and corrective action required or taken as remedy. Additional inspections are performed:

- When new equipment, procedures, processes or substances which present potential new hazards are introduced into our workplace;
- When new, previously unidentified hazards are recognized;
- When occupational injuries, illnesses or other incidents resulting in loss, or have the potential, but did not result in actual loss (e.g., near miss) occur, and
- Whenever workplace conditions warrant an inspection.

Job Hazard Analysis (JHA) / Pre-Task Planning (PTP)

The JHA-PTP is an effective management technique for identifying hazardous conditions and unsafe acts in the workplace. A JHA-PTP is intended to analyze the individual steps or activities, which together create a job or specific work duty, and to detect any actual or potential hazards that may be present. This process can identify less obvious potential hazards that may go undetected during routine management observations or audits.

A JHA-PTP shall be completed before commencement of any "High Hazard" work activity and updated in the event of changing conditions. Site specific information may not be in the checklists and employees are trained to effectively evaluate hazards and how to properly complete the JHA-PTP form or to add all pertinent information. It should be understood that changing conditions that a work crew encounters during a work period (inclement weather, another contractor began work in area, etc.) requires the JHA-PTP be modified to address the new hazards. Defined high risk / high hazard tasks include, but are not limited to the following:

- Crane lifting operations
- Confined space entry (permit and non-permit entry)
- Demolition
- Excavation, trenching and shoring
- Heavy equipment operations
- Hot work
- High voltage electrical work
- Life safety utility modifications
- Scaffold work (any height)
- Steel erection

The Project Superintendent is responsible for implementing and enforcing this procedure. The Safety Director is responsible for monitoring compliance with this procedure. Each Employee is responsible for complying with the project safety program along with the rules and regulations as stipulated in this procedure and instructions issued by the employee's supervisor.

6.0 – INCIDENT REPORTING AND INVESTIGATIONS

It is essential that all incidents and work-related injuries or illnesses are prevented. NOVO has; however, created a Crisis Management (CM) Policy that includes a supplemental project specific Crisis Management Plan (CMP) that shall be completed, maintained and posted at all projects location. The CMP provides specific project emergency contact and instructional information to be taken in the event of emergencies, incidents, injury or illness.

Employees shall immediately report to their supervisor any incident involving occupational injury or illness, near miss incidents, chemical exposure, property damage, vehicle accident, fire, explosion, or spill or release of a hazardous material. Project Management and employees will complete written incident reports in accordance with the NOVO Accident / Injury Reporting policy. Project management and the Safety Director are responsible for investigating and following up on all incidents.

Procedures for investigating workplace accidents and hazardous substance exposures include:

- Interviewing injured or affected workers and witnesses;
- Examining the workplace for factors associated with the accident or exposure;
- Determining the cause of the accident/exposure;
- Taking corrective action to prevent the accident or exposure from reoccurring; and
- Recording and maintain the findings and actions taken.

The Incident / Injury Investigation Report will (at a minimum) include the following information:

- Date & time of accident,
- Location,
- Accident description,
- Workers and witnesses involved,
- Preventive action recommendations,
- Corrective actions taken,
- Manager responsible, and
- Date completed.

Incident Review Process

The incident review process and incident review meetings serve two basic purposes: 1) as an organized and documented process to present the facts surrounding an incident, and 2) to initiate corrective actions to prevent a similar type of incident.

The incident review process consists of the following steps.

- Project Management shall promptly investigate incidents defined above and complete the proper incident report forms. The completed incident report will be sent to the NOVO Safety Director within 24 hours of the incident.
- Project management will schedule an incident review meeting. Attendees may include the Project Manager, Project Superintendent, General Superintendent, Executive / Senior Management, Subcontractor Safety Representative (if applicable) and any affected employees and witnesses.
- The Safety Director will complete a summary of the meeting and distribute it to meeting attendees in order to prevent further occurrences. The names and companies of those involved shall be redacted in order to protect their privacy.
- This summary will be presented at the next weekly safety meeting to reinforce the need to follow safety

procedures with respect project specific hazards.

First Aid/CPR Trained Personnel

NOVO Construction and its subcontractors shall have at least one person certified in First Aid and CPR on the jobsite. At least one first aid/CPR certified person shall be on site at all times when employees are working. An approved first aid kit will be located in the NOVO project office or other designated.

All first aid kits will be properly stocked and inspected at least monthly. Equipment and materials to prevent exposure to blood-borne pathogens shall also be maintained onsite. Equipment and materials may include mouth-to-mouth resuscitation devices, powdered bleach, and latex disposable gloves.

Injury/Illness Treatment Protocol

ALL work-related injuries or illnesses, *NO MATTER HOW MINOR,* shall be reported to supervision immediately and documented on an incident report. To ensure prompt treatment, a project specific Crisis Management Plan (CMP) and emergency phone numbers shall be conspicuously posted on all project locations.

Onsite First Aid Treatment

Only certified first aid/CPR trained personnel, Emergency Management Services (EMS) or a medical facility will provide first aid treatment. Employees shall not obtain treatment off-site unless approved by NOVO Construction or in emergency (life threatening) situations. NOVO shall be contacted as soon as reasonable in life threatening emergencies.

Offsite Medical Treatment

Non-emergency (life threatening) injuries or cases involving NOVO employees that require offsite medical treatment may be transported by a designated NOVO representative to the designated medical facility. Immediately contact a NOVO project management team member involving cases that may require an ambulance. A NOVO representative shall remain with or accompany the employee the designated medical facility or hospital.

Catastrophes and Fatalities

NOVO has a statutory obligation to notify Cal-OSHA within 8 hours of any catastrophes or incident resulting in hospitalization of twenty-four (24) hours, amputation, fatality or significant equipment failure. In the event of a fatality, the incident location shall be immediately barricaded off and all operations shall be suspended as to preserve and not disturb the scene and potential evidence.

Return-to-Work Program

NOVO has an effective return to work program that allows for a health recovery and minimize an employee's time away from work due to work-related injuries and illnesses. Should an employee sustain an injury requiring treatment by a designated medical provider, it is responsibility of the injured employee to follow all directives prescribed their treating physician. NOVO project management responsible for oversight of the injured worker shall ensure the employee is complying with all prescribed directives and restrictions. NOVO may assign modified work for employees with work-related injuries that are under active medical care.

Modified duty assignments will comply with the attending physician's instructions to ensure recovery is not impeded. If an employee has work restrictions while undergoing treatment, the physical limitations must be accurately documented so that assigned tasks do not impede recovery. These limitations will be explicitly stated in writing by the authorized treating physician. When the attending physician removes the work restrictions, the employee's return to full duty must be explicitly stated on the final work status report.

7.0 – CORRECTIVE ACTIONS

Unsafe or unhealthy work conditions, practices or procedures shall be corrected immediately, or in a timely manner based on the severity of the hazards. Availability of equipment and materials to be procured shall be considered when assigning responsibility and timeline for closure. In these situations, the unsafe condition shall be suspended or other administrative or engineering controls shall be incorporated to protect personnel.
Hazards shall be corrected as follows:

- When observed or discovered; and
- When an imminent hazard exists, which cannot be immediately abated without endangering employee(s) and/or property, NOVO shall remove all exposed workers from the area except those necessary to correct the existing condition. Workers who are required to correct the hazardous condition shall be provided with the necessary protection.

Project Management is responsible for implementing immediate, temporary corrective measures for any unsafe or unhealthy condition, and to prevent recurrence of any incident. Long-term corrective actions will be developed and implemented in a timely manner, in cooperation with the Project Superintendent, Safety Director and NOVO senior management.

The Hazard Assessment and Correction Record will (at a minimum) include the following information:

- Date of Inspection:
- Person Conducting Inspection:
- Unsafe Condition or Work Practice:
- Corrective Action Taken:

Project Superintendent and Safety Director shall inform affected employees of corrective actions as soon as they are implemented.

8.0 – TRAINING

Employees shall receive classroom instruction and on-the-job training from site supervisors, health and safety professionals, and other qualified trainers, in accordance with the NOVO Environmental, Health and Safety Program and Cal/OSHA Title 8 CCR standards. All workers, including managers and supervisors, shall have training and instruction on general and job-specific safety and health practices. Training and instruction shall be provided upon:

- Employee orientation,
- Assignment of duties (unless previously trained),
- Weekly safety meetings,
- Introduction of new substances, processes, procedures or equipment into the workplace and represent new hazards, and
- For supervisors to familiarize them with the safety and health hazards to which workers under their immediate direction and control may be exposed.

Employee Safety Orientation

Each employee shall safety orientation of NOVO safety rules; policies and procedures upon hire or project assignment. Additional training sessions, such as clean room, gowning, etc. may be required by the customer.

Safety Orientation may vary in duration based on the employees' recent work history with NOVO. All newly hired employees shall attend orientation within one day of arrival on site. Safety Orientation shall contain at a minimum:

- Requirements of the IIPP,
- Incident / Injury reporting requirements,
- Proper use, maintenance, storage and disposal of PPE,
- Safety requirements for specific job assignments and duties,
- Company specific policies, including fall protection, material handling, safe equipment operation, ladders, fire protection, power and hand tools, Mobile Elevated Work Platform (MEWP), Personal Protective Equipment (PPE), scaffolds, trench excavations, etc.,
- Provisions for medical services and first aid including emergency procedures,
- Prevention of musculoskeletal disorders, including proper lifting techniques,
- Proper housekeeping techniques and requirements, such as keeping stairways and aisles clear, maintaining work areas in a neat and orderly condition, and promptly cleaning up spills,
- Prohibiting horseplay, scuffling, or other acts that tends to adversely influence safety,
- Proper storage to prevent stacking goods in an unstable manner and storing goods against doors, exits, fire extinguishing equipment and electrical panels,
- Proper reporting of hazards and accidents to supervisors,
- Hazard communication, including worker awareness of potential chemical hazards, and proper labeling of containers, and
- Proper use, storage and disposal of hazardous substances including prohibiting eating or storing food and beverages in areas where they can become contaminated.

Weekly Safety Meetings

All NOVO Construction personnel and subcontractors are required to conduct and document weekly safety toolbox talks. The weekly toolbox talks will relate to the work that is underway, or in the immediate future with the goal of increasing safety awareness on this project. Each individual that attends these safety talks shall sign an attendance roster. A copy of the Toolbox Talk and attendance roster will be forwarded to Project Safety Manager.

Additional Safety Training

Additional safety training shall be provided when work conditions change, upon discovery of new hazards, assignment of new activities, as mandated by Title 8 California Code of Regulations or as needed for the specific task being performed. Such training may include:

- Hazard Recognition Training – NOVO employees and supervision shall receive training on hazard recognition, corrective action techniques and prevention methods in controlling or eliminating hazards in the work place.
- Contractor Safety Training – Employees may be required to attend client specific safety training prior to working on site. This training emphasizes particular safety issues, rules and procedures unique to the client.

9.0 – RECORDKEEPING

NOVO will keep and maintain records of actions taken to implement and maintain this IIPP. The records will be maintained on file for a minimum of three (3) years. The records kept by NOVO shall not adversely affect the retention of medical and exposure records in accordance with Title 8, CCR, Section 3204 — Access to Employee Exposure and Medical Records, or employee training records.

NOVO has taken the following steps to implement and maintain our IIPP:

- Records of scheduled and unscheduled hazard assessment inspections, as well as other records including methods used to identify and evaluate workplace conditions and work practices shall be retained for a minimum of three (3) years.

- Records relating to the IIPP will including at a minimum: the person(s) conducting the inspection, unsafe conditions and work practices identified, and the action taken to correct the identified unsafe conditions and work practices, and

- Records and documentation of safety and health training for each employee will include, at a minimum: the name of the employee and/or other identifier, training dates, topic of training, training format and training instructor will be recorded and maintained in accordance with this IIPP.

Records and documentation of training will be maintained for three (3) years, except for training records of employees who have worked less than one (1) year which may be provided to the employee upon termination of employment and after NOVO receives a written request or acknowledgement letter from the employee requesting training records.

Records of training are stored in each employee's training files and maintained by the Safety Director at the San Francisco, California office, and employee exposure and medical monitoring records are stored and maintained by the NOVO Human Recourses Manager. Personnel training and medical records will be maintained for a minimum of 30 years following the termination of employment with NOVO.

Records of work area inspections will be stored at the work site. Upon termination of a temporary job site, inspection records will be stored in the specific project files at the NOVO office. Work area inspection records will be stored for a minimum of 3 years or the duration of the project, whichever is longer.

APPENDIX A – CODE OF SAFE PRACTICES

It is the posture and philosophy of NOVO Construction, Inc. that employees conduct themselves in a professional, safe manner while conducting business with clients, contractors and the public. Such conduct is expected to include compliance with established environmental, health and safety rules, policies and procedures to minimize personal risk and liabilities of the company. Violation of established work rules may result in disciplinary action which could include discharge from employment.

The following sections provide work rules that employees shall be aware of, comply with, and to which they shall be held. Each employee is encouraged to discuss these rules with their immediate supervisor if there are questions about the applicability of a particular rule.

General Requirements and Practices

- Supervision shall insist on employees observing and obeying all rules, regulations, and order as is necessary to the safe conduct of the work, and shall take such action as is necessary to obtain observance.

- All employees shall be given frequent accident prevention instructions. Instructions shall be given in weekly safety meetings or at least every 10 working days. When applicable, accident prevention instructions shall also include specific instruction on the safe use, care and maintenance of company tools, equipment and other materials used at the jobsite.

- Unprofessional conduct such as gambling, horseplay, possession of firearms, explosives or threatening others will not be allowed onsite.

- Any person reporting to work, in possession or under the influence of alcohol or illegal drugs on company or client premises shall be subject to immediate discharge. Employees under a physician's care and/or taking prescribed narcotics must notify the Superintendent.

- Personal protective equipment (PPE) shall be properly utilized, maintained and stored. Such equipment may include, but is not limited to, respiratory protection, earplugs where noise level dictates, hard hats, safety eyewear, safety footwear (high-top shoes or boots in most instances), gloves (when rough edged items, chemicals or soil and/or water are involved) or other prescribed protective garment and equipment. Any noted defects in the PPE shall immediately be reported to the Superintendent.

- Employees must clean up as they work and at the end of their shift before leaving the site. This includes pickup and proper stowage of tools and PPE. In some cases, employees may be required to shower before leaving a worksite. Washing of hands is strongly recommended to avoid infectious diseases.

- Eating, drinking, smoking, and chewing gum or tobacco are allowed only designated areas.

- Changes in work practices or work rules shall be implemented only after approval by the Superintendent.

- Work shall be well planned and supervised to prevent incident, injury and illness in the handling of materials

and in working with equipment.

- No one shall knowingly be permitted or required to work while the employee's ability or alertness is so impaired by fatigue, illness, or other causes that it might unnecessarily expose the employee or others to injury.

- Employees shall not enter manholes, underground vaults, chambers, tanks, silos, or other similar places that receive little ventilation, unless it has been determined that it is safe to enter.

- Employees shall be instructed to ensure that all equipment guards and other protective devices are in proper places and adjusted, and shall report deficiencies promptly to the Superintendent.

- Workers shall not handle or tamper with any electrical equipment, machinery, air or water lines in a manner not within the scope of their duties, unless they have received instructions from their supervisor.

- All injuries shall be reported promptly to the foreman or superintendent so that arrangements can be made for medical or first aid treatment, if warranted.

- Use proper lifting techniques while lifting heavy objects.

- Inappropriate footwear or shoes with thin or badly worn soles shall not be worn.

- Materials, tools, or other objects shall not be thrown from buildings or structures until proper precautions are taken to protect others from the falling objects.

- Employees shall review Material Safety Data Sheets (MSDS) prior to handling chemical and other potentially hazards materials. Employees shall cleanse thoroughly after handling hazardous substances, and follow special instructions.

- Ladders shall be properly utilized. Extension ladders shall be secured and extend 36 inches (3 feet) beyond landing platform. “A" frame ladders shall be completely opened with cross bracing in locked position and employees shall not straddle the top of ladder or position themselves on the top 2 steps.

- Work shall be so arranged that employees are able to face the ladder and use both hands while climbing.

- Gasoline or other hazardous chemicals, such as solvents, shall not be used for cleaning purposes.

- No burning, welding, or other source of ignition shall be applied to any enclosed tank or vessel, even if there are some openings, until it has first been determined that no possibility of explosion exists, and authority for the work is obtained from the Superintendent.

- Any damage to scaffolds, falsework, or other supporting structures shall be immediately reported to the Superintendent and repaired before use.

- All tools and equipment shall be maintained in good condition.

- Damaged tools or equipment shall be removed from service and tagged "DEFECTIVE".
- Pipe or Stillson wrenches shall not be used as a substitute for other wrenches.
- Only appropriate tools shall be used for the job.
- Wrenches shall not be altered by the addition of handle-extensions or "cheaters".
- Files shall be equipped with handles and not used to punch or pry.
- A screwdriver shall not be used as a chisel.
- Portable electric tools shall not be lifted or lowered by means of the power cord. Ropes shall be used.
- Electric cords shall not be exposed to damage from vehicles.
- In locations where the use of a portable power tool is difficult, the tool shall be supported by means of a rope or similar support of adequate strength.
- Only authorized, trained personnel shall operate machinery or equipment.
- Loose or frayed clothing, or long hair, dangling ties, jewelry (e.g., rings, necklaces, etc.) shall not be worn around moving machinery or other sources of entanglement.
- Machinery shall not be serviced, repaired or adjusted while in operation, nor shall oiling of moving parts be attempted, except on equipment that is designed or fitted with safeguards to protect the person performing the work.
- Where appropriate, lock-out procedures shall be used.
- Employees shall not work under vehicles supported by jacks or chain hoists, without protective blocking that will prevent injury if jacks or hoists should fail.
- Air hoses shall not be disconnected at compressors until hose line has been bled. Appropriate locking pins or equipment shall be used on all connections.
- All excavations shall be visually inspected before backfilling, to ensure that it is safe to backfill.
- Workers must follow emergency procedures explicitly and quickly.
- Employees must immediately report all injuries, avoided accidents, and/or illnesses to their supervisor, no matter how slight. The report of "near miss" or "avoided accidents" will provide a method to warn employees of potential unsafe situations of which to be aware.

- Beards or long sideburns will not be allowed to interfere with respiratory protection seal surface. Trimmed sideburns and mustaches are acceptable. Employees must report to work clean-shaven when there is a potential need for respiratory protection.

- All field employees must complete and understand required training programs prior to starting work.

- All employees must abide by all safety rules and procedures as described in the work rules of this manual.

- Personnel who work 6 feet or more above ground without guard rails are required to wear fall protection or fall restraint equipment.

- Obey all warning signs and safety tags, i.e., "keep out," "no smoking," "eye protection required," "hearing protection required," "authorized personnel only" ect.

- Employees exposed to vehicular traffic, shall wear Class II traffic/safety garments, or equivalent, as required for flaggers.

- Do not take shortcuts; use provided ladders, ramps, stairways and walkways. Never cross through a flagged or barricaded area. Only run when an emergency requires it.

- Do not use compressed air or oxygen to blow dust or dirt from clothing, skin, or work surfaces. This practice could cause serious injury or create a fire hazard.

- Electric cords, hoses and leads must be protected or elevated, where necessary. They must be kept clear of walkways and other locations where they may be exposed to damage or create tripping hazards.

- No vehicle shall be driven at a speed greater than is reasonable and proper, with due regard for weather, traffic, intersections, width and character of the roadway and/or type of motor vehicle.

Additional Safety Requirements

This section addresses particular construction operations and describes the procedures to be followed by every employee. It is arranged alphabetically for ease of reference.

Although every effort has been made to be comprehensive, complete, and practical, it is possible that a condition on a jobsite may not be completely addressed, or a new condition may be encountered which may not be covered at all. Each new situation of these types must be immediately addressed by referring to Cal/OSHA Title 8 California Code of Regulations (CCR) and/or federal requirements governing the process. In such cases, the NOVO EHS Director should be immediately contacted for assistance and direction.

Compressed Gas Cylinders

Compressed gas cylinders shall be secured and protected from accidental tip. In addition, Cylinders shall be stored in accordance with manufactures recommendations, at a safe distance from welding and cutting operations, and must have protective caps on. *Note: Oxygen and acetylene must not be stored together.*

Compressed Air Cleaning
Compressed air can be extremely dangerous if allowed to penetrate the skin. Careless use of compressed air may also cause unnecessary dust and airborne particulates to be introduced into the work area atmospheres, thereby increasing risk of health danger to employees. *NOTE: The use of compressed air to clean off yourself or other workers is strictly prohibited.*

Concrete Framework and Shoring
Concrete formwork and shoring are not to be removed until it has been determined through proper testing that the concrete has gained sufficient strength to support its weight and any superimposed loads, and meets all requirements of the project contract documents.

Concrete Reinforcing Steel (Rebar)
Unprotected or protruding reinforcing steel (rebar) shall be protected again impalement hazards.

Cranes and Hoisting Equipment
Crane lifts shall be well planned and safely executed. A Lift Plan shall be completed and approved 48-hours prior to the scheduled lift date, longer if required by client or due to complexity of lift. Lift plan should include:

- Completed NOVO crane evaluation form
- Diagram of crane positioning, showing swing direction and radius.
- Load calculations for equipment or materials, including rigging
- equipment, to be lifted.
- Current crane annual and quadrennial inspection certificate.
- Crane Company Certificate of Insurance (COI).
- Crane operator (NCCCO) certification.
- Rigging certification.

Electrical
NOVO Construction does not self-perform electrical installations although qualified electrical subcontractors are hired to work under our supervision. NOVO employees shall be considered non-qualified electrical personnel.

Electrical Ground Fault Protection
To protect employees on construction site from electrical shock, NOVO requires the use of ground-fault circuit interrupters (GFCI) on all 120-volt, AC, single- phase, 15- and 20-ampere receptacle outlets, which are not a part of the permanent writing of the building or structure. Receptacles on a two-wire, single- phase portable or vehicle-mounted generator rated not more than 5 kV, where the circuit conductors of the generator are insulated from the generator frame and all their grounded surfaces, need not be protected with ground-fault circuit interrupters.

Energized Equipment or Systems
Work shall not be performed on exposed energized parts of equipment.

Underground Utilities
All underground work shall have utility clearance performed and documented by a qualified utility locator company. Non-intrusive operation shall not commence until clearance has been compete and documentation received by NOVO Construction.

Overhead Electric
All overhead electric lines are to be considered as energized and life threatening. Measures shall be taken (e.g., signage at ground level) to identify and warn personnel and equipment operators of overhead electrical hazards.

Fall Protection
NOVO requires 100% use of fall protection for all employees exposed to fall hazards in excess of 6 feet or greater, except when designated employees are inspecting, investigating or assessing workplace conditions before the actual start of construction activities or after all construction work is completed.
Employees performing these tasks must notify the Safety Director and receive prior approval before performing these activities.

Employees shall be trained on the use, maintenance and storage requirements of selected fall protection systems and devices. NOVO will procure and issue all fall protection equipment required to safely perform work.

All fall protection systems selected for each application will be installed before an employee is allowed to go to work in an area that necessitates protection from fall hazards.

Fall Protection System Selection
Fall protection requires an assessment of location where exposure to fall hazards exist. NOVO shall assess and determine fall protection systems to be incorporated and utilized. Each employee exposed to the following hazards must be trained.

Fall protection systems include the following:
- Covers
- Guardrail system
- Personal fall arrest (PFA) system
- Fall restraint system
- Safety net

It is the policy of NOVO that controlled access zone procedures shall not be used in the course of construction operations and activities.

Unprotected Sides and Edges
Employees shall be protected when they are exposed to falls from unprotected sides and edges of walking or working surfaces, including horizontal and vertical surfaces, which are six (6) or more above lower levels.
The following are systems that may be used for protecting employees when exposed to unprotected sides or edges:
- Guardrail system
- Personal fall arrest (PFA) system
- Fall restraint system
- Safety net

Wall Openings, Holes and Skylights
Employees shall be protected from wall openings, holes and skylight openings. Skylights in tact shall be protected to prevent failure and employees from falling through. Protective systems shall consider tripping in, stepping into and/or through wall openings, holes, as well as, objects falling through holes, including skylights.

The following fall protective systems shall be incorporated to protect employees when fall exposure exists from openings, holes opening and/or skylights:

- Guardrail system
- Personal fall arrest (PFA) system
- Fall restraint system
- Safety net

Covers shall be the primary protective system used for wall openings, holes and skylights. Should a cover be removed while work is in progress, employees shall be protected from falls utilizing any method identified above.

Ramps, Runways and Other Walkways
All ramps, runways and other walkways shall be equipped with guardrails when employees are exposed to fall 6 feet or more, or as required by occupational requirements.

Walking/Working Surfaces Not Otherwise Addressed
Situations and conditions not specifically addressed in this plan are not exempt and shall be identified, inspected and reviewed for method(s) to be used in the protection of employees to fall hazards.

Protection from Falling objects
Employees shall be required to wear an ANSI approved hardhat when exposed to falling objects; in addition, implementation of one of the following measures may be required:

- Erect toe boards, screens or guardrail systems to prevent objects from falling from higher levels
- Erect a canopy structure and keep potential falling objects far enough from the edge of higher levels so that objects would not go over the edge if they are accidentally moved
- Barricade the area to which objects could fall, prohibit employees from entering the barricaded area and keep objects from falling beyond the barricade
- Cover and/or guard holes to prevent objects from falling into or through to lower levels

Fire Protection and Prevention
Mandated and approved fire protection methods shall be incorporated in to all construction operations.

Fire Protection
Portable fire extinguisher shall be procured, positioned, readily available and maintained in ready to use condition. Most commonly, ABC (universal extinguishing agent) type extinguishers in 2 to 20 lb. sizes shall be used on jobsites. Employees shall be trained on the proper use of fire extinguishers.

In building, fire extinguishers, rated not less than 2A, will be provided for each 3,000-square ft. of building area (or major fraction). Travel distance from any point to the nearest fire extinguisher shall not exceed 75 ft. with at least one extinguisher per floor.

Should any company employee use an extinguisher, or observe one that has been used or that needs charge or other attention, they should immediately contact the Superintendent.

Fire Prevention
The use of "Hot Work Permits" shall be required for operations producing open flame, sparks or other ignition

sources. Good housekeeping practices shall also be required. All flammable and combustible materials shall be removed from ignition sources and stored in accordance with regulatory requirements.

Hand, Power and Powder Actuated Tools
Employees shall be trained on the safe use of hand and power tools. The use of powder actuated tools shall only be performed by trained qualified personnel.

Employees shall not use unsafe tools. Employees are responsible to make a visual inspection of any tool before each use to ensure no unsafe conditions exist.

Manufacturer's switches and safety devices shall not be altered, removed, or overridden in any manner, including all types of guards, baffles, and shields.

Hazard Communication Program
All employees shall receive training on the company HAZCOM program in accordance with Cal/OSHA regulations. The HAZCOM program shall include:

Housekeeping
Employees are required to practice and maintain good housekeeping techniques continuously during work activities. Trash and debris shall not be allowed to collect and at a minimum, cleaned at the end of tasks and at the end of shift.

Trash and debris containers shall be provided for collection and separation of all refuse.

Disposal of Waste Material
When possible, scrap and debris shall be recycled and/or disposed properly. Combustible scrap materials shall be removed from jobsites at intervals sufficient to prevent unnecessary fire potential. Regulated hazardous and universal wastes must be disposed in accordance with environmental and occupational requirements. Contact the EHS Director if you are unsure if a material is hazardous.

Ladders, Stairways and Ramps
Ladders, stairways and ramps shall be incorporated and maintain in good condition. Defective, damaged or unsafe ladders or ramps shall be removed from service and/or replaced immediately. Employees are required visually to inspect these devises prior to use. Employees shall be trained on the safe use of ladders, stairways and ramps.

Ladders
- Face the ladder when ascending or descending, keeping at least one hand grasping the ladder.
- Never carry a load on a ladder that might cause you to loose your balance or fall.
- Never use the top step of a ladder as a step.
- All ladders must be kept free of oil, grease, and other slipping hazards.
- Any ladder that becomes defective, weakened, broken, or otherwise faulty, must be tagged "DO NOT USE" and removed from service until repaired.
- Ladders used to access an elevated area or landing must extend at least 3 ft. above the landing. If not possible, then the ladder must be secured at the top and a grab rail or similar grasping device at the landing be provided.

- Ladders that are not permanently fixed or self-supporting shall be used at a ratio of approximately 4:1 (i.e., ladder being used at a working length of 16ft. would need to be 4 ft. from the wall at the base).
- Ladders used on unstable or unlevel surfaces must be secured to prevent their displacement.
- Ladders used in non-barricaded areas of traffic such as doorways, driveways, etc. must be secured against displacement. Ladders used on hard, smooth, slippery type surfaces must be secured or must have slip-resistant safety feet.

Stairways

- Any personnel access area with a difference in elevation of 19 inches or more must have an approved means of moving from one elevation to the other, including stairways, ramps, sloped embankment, hoist, etc.
- Stairways having four or more risers or raising more than 30 in. must have a handrail and midrail along each unprotected side. The handrail shall be between 30 and 37 in. high.
- Where doors or gates swing open into a stairway, a landing platform or area must be maintained that is a minimum of 20 in. in width.

Railings

- Ramps shall be designed and constructed to safely support 4 times the maximum intended load.
- Ramps shall be secured to prevent accidental movement or displacement.
- Ramps shall not be sloped such to present a hazard to personnel or allow rolling equipment or materials to roll out of control.

Personal Protective Equipment (PPE)

NOVO shall issue employees required PPE. Employees are required to properly and safely utilize prescribed PPE to minimize and prevent injury and occupation exposure hazards.

Safety Director is responsible for the assessment and selection of company PPE in accordance with occupational regulations. Additional responsibilities include:

- Scope and description of program
- Hazard assessment
- PPE selection
- Employee training
- Cleaning and maintenance of PPE, and
- PPE specific information

Training

NOVO shall provide training for employees who are required to use
personal protective equipment (PPE). Training shall include:

- When PPE is necessary
- What PPE is required
- Proper techniques in use, donning and doffing PPE
- Limitations of PPE, and
- Proper use, care, maintenance, useful life and disposal requirements of assigned PPE

Employees must demonstrate an understanding of the training and the ability to use the PPE properly before they are allowed to perform any work requiring the use of such equipment. Defective, damaged or outdated PPE shall

not be used, will be removed and is prohibited.

Employees shall receive retraining when the employee demonstrates inadequate knowledge or improper use of PPE, a change in workplace, or changes in types of PPE to be used.

Training shall be documented and maintained by the Safety Director.

Body Protection
Non-dedicated employee owned clothing may be worn where there is no potential exposure by harmful chemicals, materials or substances such as lead, asbestos radioactive matter, etc. Employee provided clothing must fit appropriately, be free of tears, rips or holes and shirts must have a sleeve. Pants must be full length. Shorts are not allowed.

Head Protection
NOVO requires the use of ANSI approved hardhats to prevent head injuries that may result for from falling objects, bumping the head against a fixed object, or electrical shock. Employees of other contractors shall be required to wear hardhats in designated work areas. Designated areas shall be identified and signage posted to inform personnel of requirement. Personnel required to wear hard hats must routinely inspect and properly care for their hard hats.

Hearing Protection
Employees may be required to use hearing protection when exposed to noise. When required by regulatory statutes, employees may be required complete an auditory evaluation by a qualified, licensed professional. In these cases, the employee shall be informed in writing of the findings requiring the need for such evaluation. Hearing protection is required in any work area where noise levels are found to be above the permissible levels. (Table 1— Permissible Noise Levels)

Employees shall be required to use approved hearing protection and shall be trained on proper use, care and types of protection provided by the company.

Table 1: Permissible Noise Levels

Decibels of Noise (dBA)	Work-time allowed per day
90	8 Hours
92	6 Hours
95	4 Hours
97	3 Hours
100	2 Hours
102	1.5 Hours
105	1 Hour
110	.5 Hour

Eye and Face Protection
It is the policy of the company that as a condition of employment, all employees working in designated works areas and/or job assignments are required to wear Z87.1 ANSI approved safety eye and face protection to prevent injury from flying particles, molten metal, acid or caustic chemicals, chemical gases or vapors and/or light radiation.

Employees who wear non-ANSI approved corrective lenses are required to wear approved over-the-glasses or safety goggles over their personal corrective lenses. Contact lenses shall not be worn.

Employees exposed to radiating (e.g., welding, burning or torching) or laser light shall be required to wear shaded lenses (Table 2 — Filter Lens Shade Numbers).

Table 2. Filter Lens Shade Numbers

Operation	Shade Number
All forms of arc welding	10-14
All forms of gas welding	4-8
Brazing and cutting	3-5
Gas Soldering	2

Foot Protection

Foot protection is required for all employees. Approved footwear shall be a leather work boot with ankle support. All employees and contractor personnel shall comply with this policy.

Hand Protection

Employees shall wear approved company provided gloves where risk of injury to hands exists. Such hazards include cuts, lacerations, abrasions, smashing, crushing and punctures.

Respiratory Protection

This respiratory protection plan specifies standard operating procedures to protect all employees from respiratory hazards. Respirators are to be used only were engineering control of respirator hazards is not feasible, while engineering controls are being installed or in emergencies.

Respirators are selected on the basis of respiratory hazards to which the workers may be exposed in the workplace and user factors that affect respirator performance and reliability.

The following shall be considered when respirator selection is conducted:

- Select and provide respirators based on respiratory hazard(s)
- Select a NIOSH-certified respirator
- Identify and evaluate the respiratory hazards in the workplace, including a reasonable estimate of employee exposure to respiratory hazards and an identification of the contaminant's chemical state and physical form. Consider the atmosphere to be immediately dangerous to life and health (IDLH) if hazards cannot be identified or reasonably estimate employee exposure
- Select respirators from a sufficient number of respirator models and sizes so that the respirator id acceptable to and correctly fits the user

Selected respirators include:

- North — half face air purifying respirator; sizes small to large
- MSA — half face air purifying respirator; sizes small to large

Program Evaluation

Evaluation of the respiratory program shall be completed as needed by the Safety Director, and shall include

interviewing employees for information and feedback on respiratory equipment used. Such discussion shall include respirator fit, selection, use and maintenance. Other evaluation criteria shall include the following:

- Conducting evaluations of the workplace as necessary to ensure that the provisions of the current written program are being effectively implemented and continues to be effective
- Regularly consulting employees required to use respirators to assess their views on program effectiveness and to identify any potential problems. Any problems that are identified during the assessment must be corrected. Factors to assess include;
- Respirator fit (including the ability to use the respirator without interfering with effective workplace performance)
- Appropriate respirator selection for the hazards to which the employee is exposed
- Proper respirator use under the workplace conditions the employee encounters, and
- Proper respirator maintenance

General requirements for respirator use include:

- No employee shall enter or work in an area where a known or suspected toxic or harmful atmosphere may prevail. This includes areas of potential low levels of oxygen.
- In all situations in which employees are working in areas where abnormal levels of common nuisance dusts, fumes, or mists prevail, an approved dust mask must be worn.
- In emergencies, or when feasible engineering or administrative controls are not completely effective in controlling toxic substances, approved respiratory protective equipment must be used by every employee working in such conditions.
- Employees required to use respiratory protective devices will be thoroughly trained in their use. Respiratory protective equipment will be inspected regularly and maintained in good condition.
- Any employee using a respirator must be fit tested by an approved method.
- Only NIOSH-certified respirators shall be provided.

Drinking Water

An adequate supply of fresh drinking water is to be readily available at every jobsite. Where portable water containers are used, they must be kept clean, tightly closed, never dipped into for ice or water, and never used as a cold storage for other items such as lunches, soda, etc. Each portable drinking water area shall be supplied with single use disposable cups, a clean container to hold cups, and a cup disposal container.

Toilet Facilities

Where permanent toilet facilities are not readily available to workers at a jobsite, portable facilities of the chemical type will be provided as required by the particular agreement for construction services. The following shall be used as a guide to determine the number of facilities required:

- Jobsites with one to twenty employees, there must be at least one seated toilet.
- Twenty or more employees at a jobsite must be supplied with a minimum of one seated toilet and one urinal per forty workers.
- Sites with 5 or more workers are required to supply a toilet for 20 workers or each fraction thereof of each sex.

Mobile Scaffolds

All platforms are to be tightly planked for the full width of the scaffold, except as may be necessary for entrance openings. Platforms will be secured in place.

Guard rails made of lumber are not to be less than 2 x 4 in. (or equivalent), approximately 42 in. high, with a mid-rail of 1x 6" lumber (or equivalent). Toe boards will be installed at all open sides and ends on scaffolds more than 10ft. above ground or floor. Toe boards will be minimum 4 in. in height. Where persons are required to work or pass under scaffolds, wire mesh is to be installed between toe board and guard rail.

Signs and Barricades
Proper signs and barricades are to be used on jobsites whenever needed, in order to warn and direct pedestrian traffic and our own employees walking and working in the vicinity of a potential hazard, such as an open manhole, trench, falling or flying debris, high pressure pipe testing, etc.

Trench and Excavations
NOVO does not perform trench and excavation operations; therefore, all trench and excavation work shall be performed by a qualified license excavation contractor.

Excavation Access and Egress
All excavations 4 ft. or deeper must have a ladder, ramp (earthen or structural), or similar safe means of access/egress within 25 ft. of persons working in the excavation.

Earthen ramps must be at no greater incline than that which would allow person to exit in an upright position. Structural ramps must have a non-slip walking surface or must be supplied with cleats.

Soils Classifications
There are basically (4) types of soil classifications used to determine stability of soils:

- Cohesive A-Type - High clay or cemented soil content.
- Mildly Cohesive B-Type - High loam or silt mixed with clay or sand.
- Non-Cohesive C-Type - Sandy, granular soil or extremely wet soil or clay.

Sloping
All excavated materials, spoils, loose dirt, stones, tools, etc. must be kept back at least 2 ft. from the edge of an excavation or adequate retaining shields or blocking devices must be used to ensure that materials cannot fall onto employees in the excavation. Type-C soils must be sloped to an incline of at least 1:1; that is, for every 1 ft. depth you must have top of slope back 1 ft. from toe of slope or 1 ft. horizontal for every 1 ft. vertical.

Benching
Benching may be used as a safe means for protecting employees from cane-in hazards. Refer to occupational health and safety standards for benching requirements.

Shoring
Any excavations deemed necessary to use shoring will be handled on an individual basis. The proper materials or system to be used will be determined through a combined effort of the Competent Person, field supervision, excavation contractor and the EHS Director.

Trench Boxes (Shields)
Trench boxes may be used in excavations where sloping requirements cannot be met or are an undesirable option for protection against cave-ins. Only trench boxes that have a signed approved tabulated data sheet available may

be used. Trench boxes must be inspected by the immediate supervisor (Competent Person) prior to and during use, to guard against structural failures. Boxes requiring assembly must be done under the supervision of the designated Competent Person.

Code of Safe Practices End

APPENDIX B – EMPLOYEE SUGGESTION POLICY

Employee Suggestion Policy

Scope

NOVO Construction supports a work environment that encourages participation, innovation and organizational improvement. This program is designed to encourage employees to take an increased interest in Safety, Quality and Production and to generate ideas that improve employee safety and well-being, increase work efficiency, work quality and cost savings.

Submitting Suggestions

Suggestion forms are available in company offices, project offices and in the NOVO Construction Injury and Illness Prevention Program (IIPP) Manual. Suggestions shall be placed into suggestion boxes located in office locations. If a project does not have an office location established, self-addressed stamped envelopes will be available for employees to mail suggestions directly to the Program Coordinator.

Eligibility

All NOVO Construction employees are eligible to submit suggestions. All eligible suggestions must meet the Suggestion Guidelines.

The Suggestion Committee reserves the right to exclude from recognition suggestions submitted by managers, supervisors or technical personnel whose assigned job duties include development of new ideas. Determinations on such exclusions will be made on a case-by case basis after careful review by the Suggestion Committee.

Suggestion Committee

- Suggestion Committee (SC): Suggestion Committee members consist of NOVO Executive Management and General Superintendents. The responsibility of the SC is to evaluate the eligibility of suggestions based on the evaluation criteria, including implementation methods and determination of award for the suggestion.
- Program Coordinator (PC): The Program Coordinator shall date receipt the suggestion, assign a suggestion control number and log the suggestion into the database. The PC is responsible for acknowledging receipt of suggestions and presenting suggestions to the SC at the Quarterly Safety Committee meeting.

Suggestion Guidelines:

Eligible suggestions must meet the following:

1. Suggestions must be on the Employee Suggestion Form (Attached). Suggestion Forms are located in Company offices, project offices, NOVO Injury and Illness Prevention Program and Superintendent's Manuals.
2. Suggestions shall identify a specific problem or deficiency along with a solution. All suggestions ***must*** have a proposed solution or idea.
3. If necessary, to better explain or demonstrate a suggestion, additional sheets may accompany the suggestion form. Sketches, drawings, diagrams or any additional information or justification relative to the suggestion may also be attached.
4. Suggestions shall be placed into a suggestion box, mailed (self-addressed stamped envelope) or submitted to the General Superintendent. Envelopes are available in the Superintendents Manual.

Submitting Suggestions:

Suggestions must be on the Employee Suggestion Form (Attached) and may be placed into a suggestion box, mailed (self-addresse stamped envelope) or submitted to the General Superintendent. Envelopes are available in the Superintendents Manual

- Receipt and Screening of Suggestions: All suggestions will be acknowledged by the PC and logged into the program database upon receipt. Eligibility of suggestion will be determined by the SC.
- Logging and Tracking Suggestions: Each suggestion received will be logged into the program log for tracking. The program log will be maintained by the PC and distributed and discussed as an agenda item in the Quarterly Safety Meetings.

Evaluation Criteria:
Each suggestion received will be evaluated on the following:

1. Practicality,
2. Benefit to the Company, including factors such as increased efficiency, improved effectiveness and/or reduction of cost,
3. Cost factors involved in the implementation of the suggestion, and
4. Improvement of work environment.

Suggestion Implementation:
Implementation methods will be determined by the SC and a cost benefit analysis shall be completed for consideration.

Suggestion Awards:
The SC shall determine which suggestions will receive an award. Award shall be a gift card or certificate not to exceed $100 in value.

APPENDIX C – HEAT ILLNESS PREVENTION PLAN

Heat Illness Prevention Plan

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1. INTRODUCTION

We at NOVO Construction, Inc. expect that all work activities to be conducted safely and with associated hazardous exposures (including potential environmental impact) eliminated and/or controlled. Operations involving high air temperatures, radiant heat sources, high humidity, direct physical contact with hot objects, or strenuous physical activities have a high potential for inducing heat stress in employees engaged in various tasks and operations associated site activities.

This procedure applies to all NOVO Construction, Inc. personnel and their subcontractors working on projects where heat stress requirements are applicable. When employees work in hot conditions, special precautions must be taken in order to prevent heat illness. Heat illness can progress to heat stroke and be fatal, especially when emergency treatment is delayed. An effective approach to heat illness is vital to protecting the lives of our workers. Heat illness results from a combination of factors including – environmental temperature and humidity, direct radiant heat from the sun or other sources, air speed, and workload. Personal factors, such as age, weight, level of fitness, medical condition, use of medication and alcohol, and acclimatization affect how well the body deals with excess heat.

This program will be part of all NOVO Construction, Inc's. New Hire Orientation. In addition, all NOVO Construction, Inc's. Field employees shall be given refresher training every year at the NOVO Construction, Inc. Superintendents and Forman meetings in May.

HEAT ILLNESS RISK REDUCTION:

Recognizing Heat Illness Risk Factors

There is no absolute cut-off below which work in heat is not a risk. With heavy work at high relative humidity or if workers are wearing protective clothing, even work at 70 degrees F. can present a risk. In the relative humidity levels (20 to 40 percent) often found in hot areas, NOVO Construction, Inc. will take actions to effectively reduce heat illness risk when temperatures approach 80 degrees F. At temperatures above 90 degree F. especially with heavy work, heat risk reduction shall be a major concern.

Supervisors must evaluate work conditions before sending employees to perform outdoor work in hot conditions. Typically, temperatures about 90 degree F, especially with heavy physical work activities, would represent conditions where there is a risk of heat illness. Other factors, such as high humidity or work activities that restrict the body's ability to cool, such as protective clothing, could result in a risk of heat illness at lower temperatures.

The National Weather Service Heat Index (NWSHI) guideline may be used to assess the environmental risk of heat illness based on temperature and relative humidity. The superintendent in charge of each project that involves heat illness awareness is responsible for reviewing the NWSHI prior to the start of each project and intermittently throughout the project to sustain a level of safety for all employees. (See chart on page12)

Heat Related Injuries

Injuries and/or illness from heat can occur wherever there is the potential for accumulation of heat such as by open furnaces, confined areas, or under direct sunlight. Heat related injuries/illnesses are extremely serious and can even be fatal.

By taking the proper steps, such as providing shade, frequent breaks, drinking plenty of fluids, andknowing your own limitations such as, your working environment, location on the job site – is access by either an extension ladder or fix ladder, is shade on the roof or do employees need to climb down a ladder to access the shaded area—whatever the condition heat-related injuries/illnesses can be prevented.

The following is a summary of the basic symptoms of heat -related injuries and how to treat an employee who may be suffering from these symptoms.

D. HEAT STRESS

Symptoms:
- Increased heart rate
- Sweating
- Muscle Cramps

Treatment:
- Take short break
- Move to a cool shaded area
- Drinks fluids rich with electrolytes of water

E. HEAT EXHAUSTION

Symptoms:
- Excessive Sweating
- Excessive Fatigue
- Weakness in arms , hands and legs
- Nausea – complains of feeling sick to their stomach
- Damp/Clammy skin

Treatment:
- Move to a cool shaded area
- Encourage victim to drink fluids rich with electrolytes of water
- Fan victim to increase cooling
- Loosen clothing
- If victim vomits or passes out get medical attention immediately
- Call 911 for any serious injury or illness
- Help the victim cool off
- Rest in cool place
- Drink cool water
- Remove unnecessary clothing or loosen clothing
- Shower or sponge with cool water
- Remember: It takes at least 30 minutes to cool the body once a person has become overheated.

F. HEAT STROKE

Symptoms:
- Dry Hot Skin
- Red, blotchy skin – rashes on neck and arms
- Extreme Fatigue - employee might be struggling to stand or walk
- Mental confusion, delirium, loss of consciousness, convulsions or coma;
- A body temperature of 106°F or higher

Treatment:
- Get medical attention immediately – call 911
- Move to a cool shaded area
- Immediate, aggressive, effective cooling
- Soak victim with cool water
- Immerse victim in tub of cool water
- Place in cool shower
- Pack Armpits and inner thighs with ice if available
- Fan victim to increase cooling
- Try to keep victim conscious – do not let them fall asleep – keep talking with them – try to assure them that everything will be alright
- Spray with cool water from a hose
- Wrap in cool, wet sheets and fan rapidly

- Do not give anything by mouth – it won't stay down.
- Transport to hospital

To recognize or answer any of the summary questions above each employee must be trained in Heat Awareness and be competent by following all recommendations on the site specific safety plan for each job site.

If an employee has heat exhaustion and can only access a shaded area below the work area – shade must be provided on the roof or in the immediate work area. No worker should be allowed if suffering from heat exhaustion to climb down a ladder to access shade and cooler conditions. If someone is feeling sick or has heat exhaustion symptoms allowing them to climb down a ladder by themselves is asking for trouble. In some cases employees have been known to slip and fall from a ladder due to weakness and feeling nauseated. In addition, no person appearing to be suffering from any heat illness shall be allowed to go down any type of stairs unattended by another who is not ill.

The NOVO Superintendent or Forman will not allow anyone to leave the work area until he has made his own assessment of an employee's condition. In addition, by recognizing the symptoms when heat-related injuries/illnesses occur and providing the proper treatment, you may save a fellow workers life.

(Exception) – If employees are working on a sloped roof surface and suffering from early stages of heat exhaustion that employee will be asked to seat down on the roof a maximum distance from the unprotected roof edge. Having a canopy on a sloped roof could be trouble because one of the early symptoms to heat exhaustion is dizziness, walking on a sloped roof under these conditions can cause an employee too literally walk, trip and then fall off the roof. The NOVO superintendent will acquire personnel and, or an articulating boom lift to remove the employee off the roof safely. **To accomplish this every job-site shall incorporate into the CMP (Crisis Management Plan) means of lowering a person from an elevated area.**

<u>Casual Factors</u>
Age, weight, degree of physical fitness, degree of acclimatization, metabolism, use of alcohol or drugs, and a variety of medical conditions such as hypertension all affect a person's sensitivity to heat. However, even the type of clothing worn must be considered. Prior heat injury also predisposes an individual to additional injury.

It is difficult to predict just who will be affected and when because individual susceptibility varies. In addition, environmental factors include more than the ambient air temperature. Radiant heat, air movement, conduction, and relative humidity all affect an individual's response to heat.

2. HEAT DISORDERS AND HEALTH EFFECTS

Heat Stroke – Heat stroke, the most serious health problem for workers in hot environments, is caused by the failure of the body's internal mechanism to regulate its core temperature. Sweating stops and the body can no longer rid itself of excess heat.

Even with the information that is provided in the section above – heat stroke must be covered more extensively because a person suffering from heat stroke has a 70% risk of dying if treatment is delayed for 2 hours or more. If someone in your work area has heat stroke symptoms – NEVER LEAVE THEM ALONE OR ALLOW THEM TO LEAVE THE WORK AREA – CALL 911 AND TREAT THEM FOR SHOCK.

Heat stroke occurs when the body can no longer dissipate heat. In hot weather, the body mainly dispels heat by radiating it into the air as a form of electromagnetic energy. When the air temperature is lower than a person's body temperature, radiation accounts for 65% of the body's heat loss.

Evaporation of sweat accounts for just 30% of heat loss. When the air temperature tops 95 degrees Fahrenheit radiation stops and evaporation becomes the body's only means of cooling. When the humidity climbs to 100%, evaporation falls and the body can no longer cool itself.

What may start as over exertion, (sweating and stomach or leg cramps) can progress to heat exhaustion with nausea and dizziness and finally heat stroke. A human body's normal temperature is 98.6 degrees. Although tolerant of some variation, body function slows when the internal temperature falls below 98.6 and revs up when it rises above it. When a body reaches the level of heat stroke (104 degrees) it has been so overloaded it can no longer keep cool. When this happens, the brain can swell. The person can suffer seizures or fall into a coma. Theliver and kidney can fall and congestive heart failure is possible. The lungs can fill with fluid, and a person can suffer respiratory distress. The possibility is there of developing blood clots.

Victims of heat stroke will die unless treated promptly. While awaiting medical help, the victim must be removed to a cool area and his clothing soaked with cool water. He should be fanned vigorously to increase cooling. Prompt first aid can prevent permanent injury to the brain and other vital organs.

Heat exhaustion – Heat exhaustion results from loss of fluid through sweating when a worker has failed to drink enough fluids or take in enough salt or both. The worker with heat exhaustion still sweats but experiences extreme weakness or fatigue, giddiness, nausea, or headache. The skin is clammy and moist, the complexion pale or flushed, and the body temperature normal or slightly higher. Treatment is usually simple: the victim should rest in a cool place and drink an electrolyte solution (beverage used by athletes to quickly restore potassium, calcium and magnesium salts). Severe cases involving victims who vomit or lose consciousness may require longer treatment under medical supervision.

Heat Cramps – Heat cramps, painful spasms of the muscles, are caused when workers drink large quantities of water but fail to replace their bodies' salt loss. Tired muscles are usually the ones most susceptible to cramps.
Cramps may occur during or after working hours and may be relieved by taking liquids by mouth or saline solutions intravenously for quicker relief, if medically determined to be required.

Fainting – Fainting (heat syncope) may be a problem for the worker unacclimatized to a hot environment who simply stands still in the heat. Victims usually recover quickly after a brief period of lying down. Moving around, rather than standing still, will usually reduce the possibility of fainting.

Heat Rash – Heat rash, also known as prickly heat, may occur in hot and humid environments where sweat is not easily removed from the skin surface by evaporation. When extensive or complicated by infection, heat rash can be so uncomfortable that it inhibits sleep and impedes a worker's performance or even results in temporary total disability. It can be prevented by resting in a cool place and allowing the skin to dry.

3. PREVENTING HEAT STRESS

Most heat-related health problems can be prevented (or the risk of developing them reduced). The following precautions should lessen heat stress:

Engineering Controls – A variety of controls including general ventilation and spot cooling by local exhaust ventilation at points of high heat production may be helpful. Shielding is required as protection from radiant heat sources. Evaporative cooling and mechanical refrigeration are other ways to reduce heat. Cooling fans can also reduce heat in hot conditions. Eliminating steam leaks will also help. Equipment modifications, the use of power tools to reduce manual labor and personal cooling devices or protective clothing are other ways to reduce the hazards of heat exposure for workers.

Work Practices – Work practices such as providing plenty of drinking water (as much as a quarter per worker per hour) at the workplace can help reduce the risk of heat disorders. Training first aid workers to recognize and treat heat stress disorders and making the names of trained staff known to all workers is essential. Employers should also consider an individual worker's physical condition when determining his or her fitness for working in hot environments. Older workers, obese workers and personnel on some types of medication are at greater risk.

Administrative Controls – Alternating work and rest periods with longer rest periods in a cool area can help workers avoid heat stress. If possible, heavy work should be scheduled during the cooler parts of the day and appropriate protective clothing provided. Supervisors shall be trained to detect early signs of heat stress and should permit workers to interrupt their work if they are extremely uncomfortable.
Additional controls are:

WATER

There must be an adequate supply of clean, cool, potable water. Employees who are working in the heat need to drink 4-8oz. glasses of water per hour, especially at the start of the shift, in order to replace the water lost through sweat. For an eight-hour day this means employers will provide two or more gallons per person. Thirst is an unreliable indicator of dehydration.
Employees often need ongoing encouragement to consume adequate fluids, especially when the workload or process does not encourage breaks. The foreman on site will beresponsible for assisting employees by encouraging water breaks.

OSHA States that:

- Water shall be fresh, pure, suitably cool, and provided to employees free of charge.
- The water shall be located as close as practicable to the areas where employees are working. The purpose of requiring that water is "fresh, pure, suitably cool, and provided to employees free of charge" and "located as close as practicable to the areas where employees are working" is to encourage workers to drink water often and avoid making the workers interrupt their work in order to do so.
- Where drinking water is not plumbed or otherwise continuously supplied, it shall be provided in sufficient quantity at the beginning of the work shift to provide one quart per employee per hour for drinking for the entire shift.
- Portable containers used to dispense drinking water shall be capable of being tightly closed, and equipped with a tap. Water shall not be dipped from the containers.
- Any container used to distribute drinking water shall be clearly marked as to the nature of its contents and not used for any other purpose.
- The common drinking cup is prohibited – exception would be if the employee has their own clean cup and after each use the cup is put into the employee lunch container.
- Where single service cups – to be used but once – are supplied, both a sanitary container for the unused cups and a receptacle for dispensing of the cups shall be provided.
- The frequent drinking of water, as described in subsection shall be encouraged.
- To ensure that water is fresh, pure, and suitably cool, Cal/OSHA advises employers or supervisors visually examine the water and pour some on their skin.

Fresh and Pure

Water must be fit to drink (i.e., potable) and free from odors that would discourage workers from drinking the water. If an employer supplies individual water containers, the containers must be clean, and a source of potable water (e.g., a municipal water source) must be readily available. Water from non-approved or non-tested water sources (e.g., untested wells) is not acceptable. If hoses or connections are used, they must be governmentally approved for potable drinking water systems, as shown on the manufacturer's label.

Suitably Cool

During hot weather, the water must be cooler than the ambient temperature but not so cool as to cause discomfort.

As Close as Practicable to Where Employees Are Working

During a Cal/OSHA inspection, the inspector may ask the supervisor to describe the factors the employer considered in deciding where to place water. For example, because water containers are smaller than shade structures, they can be placed closer to employees than shade structures can be. Placing water only in designated shade areas or where toilet facilities are located is not sufficient. When employees are working across large areas, water should be placed in multiple locations. For example, on a multi-story construction site, water should be placed in a safely accessible location on every floor where employees are working.

4. ACCESS TO SHADE

The trigger temperature for shade being present is reduced from 85 to 80 degrees Fahrenheit. When temperatures exceed 80 degrees, shade structures must be erected if no other shade is readily available.

The direct heat of the sun can add as much as 15 degrees to the heat index. If possible, work should be performed in the shade. If not, where possible, employers will provide a shaded area for breaks and when employees need relief from the sun. In the event that "the project" includes shaded areas adjacent to the roof the foreman will encourage employees to take frequent breaks inside the building where shade and cooler temperatures are provided. As stated above – remember never allow anyone to climb down a fix or extension ladder if they are suffering from heat exhaustion.

Always provide shade on the roof if these conditions exist on your work site. White hard hats with wide brimmed connectors should be provided to those employees who request them. Safety sun glasses will be provided for all employees. In some cases, employees will be encouraged to wear long sleeve "white" t-shirt and scarves around their necks to eliminate exposure from the sun.

Even if temperatures do not exceed 80 degrees, shade must still be available. For employers using shade structures, it is helpful to have the structures erected if the weather is hot enough that the shade can help employees cool off.

Employers should monitor predicted weather temperatures in advance (for example, by television or radio or on the Internet) to know when the temperature will probably exceed 80 degrees. Employers are expected to know if the temperature is in fact exceeding 80 degrees at the worksite.

“Recovery and rest period” refers to the normal breaks required to be offered under Industrial Welfare Commission wage orders. The new rules require that enough shade be provided to accommodate all of the employees who are on such a break at any point in time. This does not mean that employers are required to provide enough shade to accommodate all of the employees on the shift at the same time. Employers may, for example, rotate the breaks among employees. They may also erect additional structures on an as-needed basis.

During meal periods, the employer must provide enough shade for all of the employees who choose to remain in the general area of work or in areas designated for recovery and rest periods. Employers may rotate employees in and out of meal periods, as with recovery and rest periods. Employers are not required to provide shade for employees who choose to spend meal periods in their own air-conditioned vehicles. However, employers may not require or pressure employees to eat their lunch in their own vehicles or go off-site to eat. An employee may opt to take a “preventative cool-down rest” in the shade to help the body relieve excess heat. It is crucial that workers not be rushed while taking the cool-down rest. Water should be available in the rest area so that employees are encouraged to drink more water.

The importance of prevention cannot be overstated. Employees who wait until symptoms appear before seeking shade and recovery are at significant risk of developing heat illness.

The employee must be monitored during the cool-down rest and asked if he or she is experiencing any symptoms of heat illness including simple fatigue. If any signs or symptoms of heat illness are observed or reported, the employer must not order the employee back to work and must continuously observe the employee until the signs or symptoms have abated.

Common early signs and symptoms of heat illness may include, for example, pale skin, heavy sweating,

headache, muscle cramps, and fatigue. If no sign or symptom of heat illness is observed or reported, monitoring may be periodic, not continuous. If an employee exhibits or complains of any sign or symptom of heat illness, first-aid procedures should be initiated without delay.

Progression to more serious illness can be rapid, and can include altered coordination and speech, mental confusion, unusual behavior, nausea, vomiting, hot dry skin, unusually profuse sweating, loss of consciousness, and seizures. The affected employee may be unable to self-diagnose these problems.

If heat illness is suspected, emergency medical personnel should be contacted immediately. No employee with signs or symptoms of heat illness should be left unattended or sent home without being offered on-site first aid or provided emergency medical services

When to provide shade?
Cal/OSHA requires that when temperature in the workplace exceeds 80 degrees, shade structures must be erected if no other shade is readily available. Even if temperatures do not exceed 80 degrees, shade must still be available, and it is helpful to have the shade erected if the weather is hot enough that the shade can help employees cool off.

It is a good idea to set up the shade in advance, if at 5:00 p.m. the night before, the temperature is predicted to exceed 80 °F. Or if you want to monitor the temperature during the work hours, perform hourly checks of the temperature at the worksite on the day of work and set up the shade immediately if the temperature exceeds 80 Degrees.

Set-up shades such that there will always be room for employees wanting to have rest under the shade and for handling emergency situations during warm or hot weather, high heat and a heat wave. Set-up in advance portable umbrellas, canopies, and other portable devices used for providing shade

Move portable shade areas as close to work areas as possible. In situations where trees or other vegetation are used to provide shade, have a designated person evaluate the thickness and shape of the shaded area before assuming that sufficient shadow is being cast to protect employees throughout the shift.

Have a designated person to point out the daily location of the shade structures to the workers.
Do not let employees sit directly on the ground as it may add more heat to the body. Instead, provide blankets, chairs, benches, etc.

NOVO Superintendents should monitor predicted weather temperatures in advance (for example, by television or radio or on the Internet) to know when the temperature will probably exceed 80 degrees. Employers are expected to know if the temperature is in fact exceeding 80 degrees at the worksite.

Amount of Shade – "Recovery and rest period" refers to the normal breaks. As an employer we are required to provide enough shade to accommodate all of the employees who are on such a break at any point in time. *This does not mean that employers are required to provide enough shade to accommodate all of the employees on the shift at the same time*. Employers may, for example, rotate the breaks among employees. They may also erect additional structures on an as-needed basis.

During meal periods, there must be enough shade for all of the employees who choose to remain in the general area of work or in areas designated for recovery and rest periods.
Superintendents and Forman may rotate employees in and out of meal periods, like with recovery and rest periods.

Employers are not required to provide shade for employees who choose to spend meal periods in their own air-conditioned vehicles. However, employers may not require or pressure employees to eat their lunch in their own vehicles or go off site to eat.

Ways to Provide Cooling – You need to provide shade as required to employees to allow their bodies to cool during breaks at lunch, or during a preventative cool down rest periods should one become

necessary. You can use one or more Altern ative Cooling Measures (in lieu of shade) to provide cooling to employees. To use these Alternative Cooling Measures, you must make sure they are safe to use for the conditions in your workplace and demonstrate that they are at least as effective as shade in allowing employees to cool. Also, during high heat you may need to add one or more Alternative Cooling Measures to prevent heat illness.

No matter how you choose to provide cooling for employees remember to ensure that:

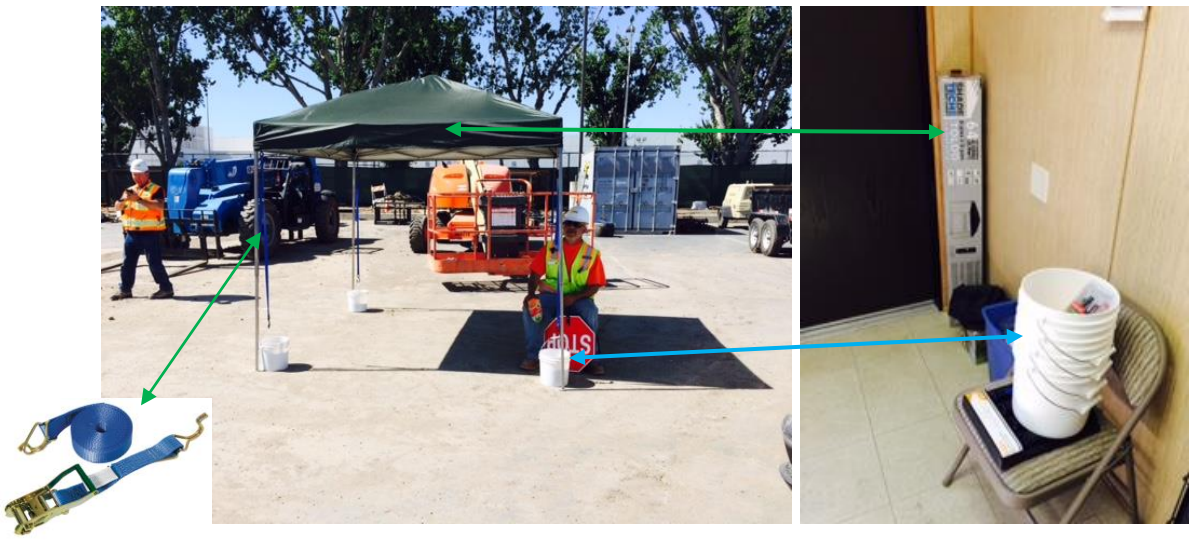
1. Sufficient supplies of potable drinking water are close by
2. Individuals are encouraged to frequently drink sufficient amounts of water
3. Employees are able to assume comfortable body postures

You also must ensure that the shade is easy for employees to reach and they do not have to encounter any obstacles or hazardous or unreasonably unpleasant conditions while moving towards the shade or resting in the shade.

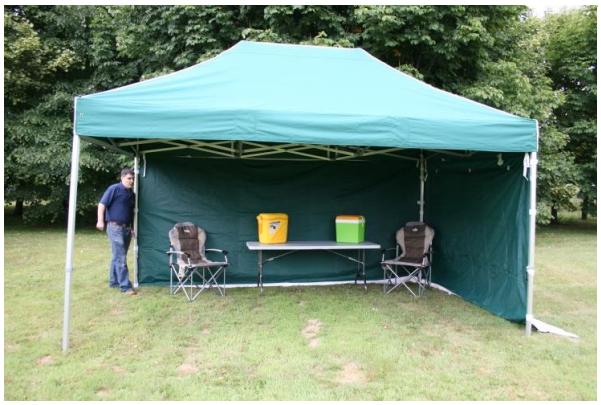
Ways to Provide Shade

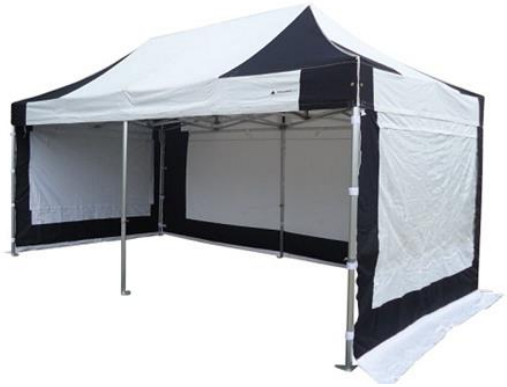
You can provide cooling from shade by using:

Canopies – Below is an easy portable way to provide shade. NOVO Construction, Inc. Superintendent Scott Plummer**.** Mr. Plummer purchased a portable canopy, four (2) gallon buckets and four ratchet tie down straps. The canopy was erected, and then the (2) gallon buckets were filled with sand for weigh, and strapped securely from the canopy down to the buckets to prevent wind displacement.



Structures that are mechanically ventilated or open to air movement (e.g., semi finished garages or other unfinished structures). If two or more stories are available employees can rest in the lowest floor in the shade.

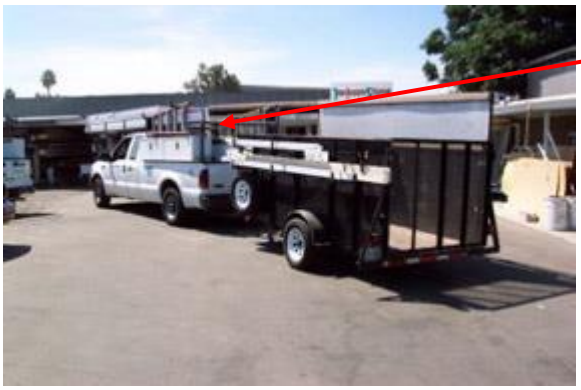




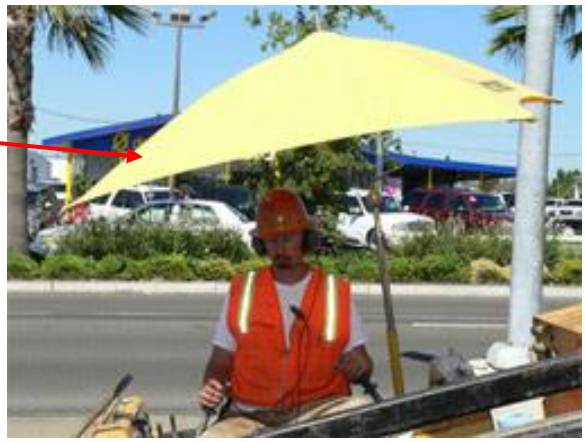
Other Covers

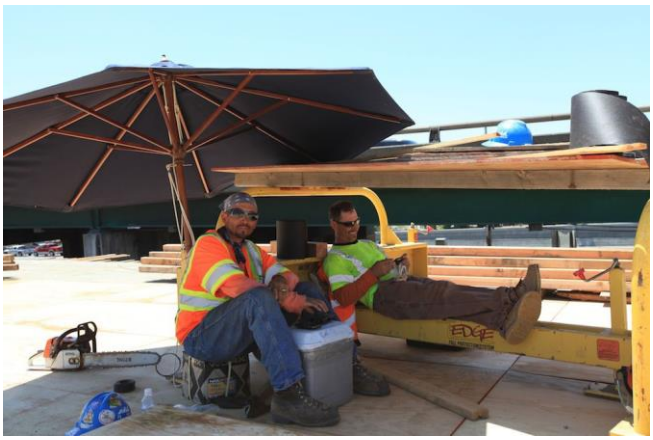
- Tarpaulins tied to 4 posts

- Lean-tos
- Pop-ups
- Conex mounted RV canopies




Umbrellas



- Full and thick tree canopies that block direct sunlight
- Buildings
- Enclosed areas only if they provide cooling comparable to shade in the open air

5. ACCLIMATIZATION

Acclimatization is a process by which the body adjusts to increased heat exposure. The body needs time to adapt when working in hotter environments. Employees are more like to develop heat illness if not allowed or encouraged to take it easy when a heat wave strikes or when starting a job that

newly exposes them to heat. Acclimatization is fully achieved in most people within 4 to 14 days of regular work involving at least 2 hours per day in the heat.

People need time for their bodies to adjust to working in heat. Acclimatization to the heat through short exposures followed by longer periods of work in the hot environment can reduce heat stress. New employees and workers returning from an absence of two weeks or more should have a 5-day period of acclimatization. This period should begin with 50% of the normal workload and time exposure the first day and gradually build up to 100% on the 5th day.

This "acclimatization" is particularly important for employees returning to work after:

- A prolonged absence
- Recent illness
- Recently moving from a cooler environment

For heavy work under very hot conditions, a period of 4 to 10 days of progressively increasing work time starting with about 2 hours' work per day under the working conditions is recommended. For less severe conditions at least the first 2 or 3 days of work in the heat shouldbe limited to 2 to 4 hours.

The Superintendent or foreman will monitor employees closely for signs and symptomsof heat illness, particularly when they have not been working in heat for the last few days, and when heat wave occurs.

Rest Breaks – Rest breaks are important to reduce internal heat and provide time for cooling. Heat illness occurs due to a combination of environmental and internal heat that cannot be adequately dissipated. Breaks should be taken in cooler, shaded areas.
When conditions occur, including building structure with lower levels, breaks will be taken below the roof area in lower levels that provide shade and cooler conditions.
The foreman will insist that employees take rest breaks which provide an opportunity to drink water. ***Note:*** if the daily temperature is expected to rise above I00 degrees employees will be re-scheduled for an earlier shift. If an earlier shift cannot be provided then employees will be re-scheduled for shorter shifts – meaning 8 hour days will be adjusted to 6 hour days until the temperature is less than 100 degrees – employees must remember that the sun's rays reflect off of the single ply membrane and sheet metal panels. In most cased the reflective rays can be 20 to 30% hotter than the ambient temperature.

Employee Education – Employee education is vital so that workers are aware of the need to replace fluids and salt lost through sweat and can recognize dehydration, exhaustion, fainting, heat cramps, salt deficiency, heat exhaustion, and heat stroke as heat disorders. Workers should also be informed of the importance of daily weighting before and after work to avoid dehydration.

6. PERSONAL PROTECTIVE EQUIPMENT

Reflective Clothing – Reflective clothing, which can vary from aprons and jackets to suits that completely enclose the worker from neck to feet, can stop the skin from absorbing radiant heat. However, since most reflective clothing does not allow air exchange through the garment, the reduction of radiant heat must more than offset the corresponding loss in evaporative cooling. For this reason, reflective clothing should be worn as loosely as possible. In situations where radiant heat is high, auxiliary-cooling systems can be used under the reflective clothing.

Auxiliary Body Cooling

a. Ice Vests

Commercially available ice vests, though heavy, may accommodate as many as 72 ice packets, which are usually filled with water.

Carbon dioxide (dry ice) can also be used as a coolant. The cooling offered by ice packets lasts only 2-4 hours at moderate to heavy heat loads, and frequent replacement is necessary.

However, ice vests do not encumber the worker a nd thus permit maximum mobility. Cooling with ice is also relatively inexpensive.

b. Wetted clothing

Wetted clothing is another simple and inexpensive personal cooling technique. It is effective when reflective or other impermeable protective clothing is worn. The clothing may be wetted terry cloth coveralls or wetted two-piece, whole-body cotton suits. This approach to auxiliary cooling can be quite effective under conditions of high temperature and low humidity, where evaporation from the wetted garment is not restricted.

c. Water-cooled garments

Water-cooled garments range from a hood, which cools only the head, to vests and "long johns" which offer partial or complete body cooling. Use of this equipment requires a battery-driven circulating pump, liquid ice coolant, and a container.

d. Circulating air

Circulating air is the most highly effective, as well as the most complicated, personal cooling system. By directing compressed air around the body from a supplied air system, both evaporative and convective cooling is improved. The greatest advantage occurs when circulating air is used with impermeable garments or double cotton overalls.

7. CHECK WEATHER FORECASTS

Weather condition should be monitored approximately 2 weeks in advance (or as many days in advance as possible), go on the internet (www.noaa.gov), call the National Weather Service or check the Weather Channel TV to view the extended weather forecast in order to plan in advance the work schedule. Find out whether high heat is expected and if additional work schedule modifications will be necessary. This type of advance planning should take place all summer long. Prior to each workday, have a designated person monitor the weather using www.noaa .gov or a thermometer at the worksite.

Make sure to monitor the weather at the specific locations where work activities are occurring. Prior to each workday, have a designated person check the weather forecast in the areas of work activities. The weather can be monitored by using local radio and television stations, websites, and electronic or other devices. Some sources to monitor the weather include the:

National Oceanic and Atmospheric Administration at http://www.noaa.gov/

National Weather Service Phone Numbers CALIFORNIA Dial-A-Forecast:

- Eureka 707-443-7062
- Hanford 559-584-8047
- Los Angeles 805-988-6610(#1)
- Sacramento 916-979-3051
- San Diego 858-297-2107(#1)
- San Francisco 831-656-1725(#1)

Weather Channel TV Network

Internet on websites such as:

The Weather Channel at www.weather .com

Weather Underground at www.wunderground .com

View extended weather forecasts in order to plan in advance work schedules, know whether high heat is expected and if work activity and schedule modifications will be necessary. This type of advance planning should take place all summer long.

8. HIGH HEAT PROCEDURES

Every NOVO Construction, Inc. job-site Superintendent and Forman are the designated persons on each worksite authorized to call for emergency medical services, and allowing other employees to call for emergency services when no designated employee is available.

NOVO Construction, Inc. shall implement these high-heat procedures when the temperature equals or exceeds 95 degrees Fahrenheit. These procedures shall include the following to the extent practicable:

There are various effective methods to monitor for heat illness. Whatever method is used, the NOVO Construction, Inc. site supervision must be able to ascertain the condition of employees at regular intervals. During periods of high heat, it is crucial that employees be monitored for early signs and symptoms of heat illness. This helps ensure that sick employees receive treatment immediately and serious illness does not develop.

If an employee suffers syncope (fainting), disorientation, loss of consciousness, or other symptoms of heat illness while working unobserved, initial medical treatment may be delayed, with serious or fatal consequences.

Because each work site is unique, there is flexibility in observing and monitoring employees. When employees work in small groups of no more than 20 workers, direct observation by a supervisor or designee may be sufficient. When there are too many employees to allow direct observation, site supervision may use the buddy system and pair up employees. With the buddy system, we must train and remind the employees to stay in contact, observe each other throughout the day, and immediately report any signs or symptoms of heat illness.

For employees who are required to work alone, there must be a method in place to communicate with the employee by radio or cell phone in locations where there is adequate coverage. The employee must be contacted regularly and as frequently as possible throughout the day, since an employee in distress may not be able to summon help on his or her own.

It is important to immediately provide emergency services when an employee reports symptoms of heat illness or is unable to respond.

Observing employees for alertness and signs or symptoms of heat illness – NOVO Construction, Inc., and sub-contractors under NOVO Construction shall ensure effective employee observation/monitoring by implementing one or more of the following:

- ✓ Supervisor or designee observation of 20 or fewer employees, or
- ✓ Mandatory buddy system, or
- ✓ Regular communication with sole employee such as by radio or cellular phone, or
- ✓ Other effective means of observation.

Because of extreme environmental conditions during high heat employees' physical and mental condition can change even more rapidly into a serious medical condition. The onset of heat illness may be confused with other problems and may not always be obvious before it becomes life-threatening. Therefore, proper planning and taking extra measures may be required to prevent and/or respond to heat illness during high heat.

<u>Extra measures during high heat include but are not limited to the following</u>

Communicating Through Meetings – During high heat a designated person(s) should hold short, frequent meetings (before and during work) with the workers to review the company heat illness prevention procedures, the weather forecast, emergency response and other additional safety measures.

Being Extra Vigilant – During high heat it is necessary to be extra vigilant. Your communication system is especially important to get more frequent feedback from your employees and supervisors on the job-site. Then, based on the environmental conditions present and the condition of your

employees you can more quickly make the appropriate adjustments, communicate them, and put the changes into place before problems arise or become serious. In high heat:

1. Have supervisors and employees watch each other more closely for alertness and any signs or symptoms of heat illness by using your mandatory "buddy system".
2. Encourage supervisors and employees to communicate about how they are feeling on a more frequent basis.
3. Account for the whereabouts of employees at more frequent intervals throughout the work shift and at the end of the work shift.

Changing Work Severity and Duration – During high heat it may be critical to make adjustments to work activities in warm or hot weather and during high heat or a heat wave try to:

- Schedule slower paced, less physically demanding work during the hot parts of the day and the heaviest work activities during the cooler parts of the day (early-morning or evening).
- Split-up work shifts to avoid work during the hottest part of the day.
- Start the work shift even earlier in the day or later in the evening
- Avoid over time work and double shifts.
- Postpone non-essential work to be done until a later time when it is cooler.
- Rotate employees through less physically demanding jobs
- Add extra personnel to reduce exposure time for each employee.
- Cut work shifts short or stop work altogether

*****BE AWARE THAT IN SPITE OF THESE MEASURES HEAT ILLNESS CAN STILL DEVELOP*****

Additional Water Consumption –

- Encourage employees to drink small quantities of water more frequently (i.e., in addition to the four 8-ounce glasses of water, or a total of one quart per hour) throughout the entire work shift to prevent dehydration
- During high heat, have extra drinking water for employee consumption and make sure that effective replenishment measures are in place
- Encourage employees to consult with their doctor on salt and mineral replacement.
- Encourage workers to also drink water before and after work

Drink Only Water – Encourage employees to avoid drinking alcohol altogether
Encourage employees to choose water over other drinks (e.g., sodas and drinks containing caffeine and sugar) because these other drinks may increase dehydration. *Also,* if employees choose these other drinks they may drink less water.

Shade and Additional Cooling Measures – Remember that shade is adequate only when it completely blocks the direct sunlight and allows the body to cool. Shade is not adequate when it does not allow the body to cool. In high heat air temperatures in the shade may still be extremely high and not allow the body to cool. For industries other than agriculture, during high heat, you may need to use other alternative cooling measures in addition to shade, (e.g., allowing employees to spend time in air-conditioned places).

1. The shade shall be enough to accommodate all employees taking rest breaks or having a preventative recovery.
2. The shaded area shade shall be located as close as practicable to the areas where employees are working.
3. During meal periods, the amount of shade must be enough to accommodate all employees who remain onsite during their meal period.

Additional and/or Longer Rest Breaks and Cool Down Rest Periods – During high heat it is especially important to permit employees the freedom to interrupt work activities to take rest breaks and allow the body to cool. During high heat you may need to allow employees to take more frequent and longer breaks, and more cool down rest periods. Remember to provide areas for employees to take their breaks and cool down rest periods which are:

✓ Readily accessible and in close proximity

- ✓ Open to the air and ventilated or cooled, or in shaded areas
- ✓ Near sufficient supplies of drinking water
- ✓ Keep records of breaks as a best practice.

Changing Meals – Encourage employees to eat smaller more frequent meals which reduce the heat the body produces as compared to eating large meals less frequently. In addition, encourage employees to choose foods with higher water content such as fruits, vegetables and salads.

WARNING

Remember, **even employees who were previously fully acclimatized are at risk for heat illness during high heat**. This is because during high heat the body does not have enough time to adjust to a sudden, abnormally high temperature or other extreme conditions.

9. EMERGENCY RESPONSE PROCEDURES

Emergency medical services must be provided as quickly as possible if an employee suffers heat illness. Recognizing the symptoms of heat illness and providing an effective response requires promptly acting on early warning signs. No employee with any of the symptoms of possible serious heat illness should be sent home or left unattended without medical assessment and authorization.

Establishing emergency response procedures is particularly important at non-fixed or remote work sites or at work sites where access is difficult. **It is highly recommended that every NOVO Superintendent reach out to the local Fire Battalion Chief to request a site visit or tour for the fire/rescue personnel that would respond to an incident.**

If employees cannot reach emergency medical services directly (because cell phone coverage is inadequate, for example), the employer must designate a person who can immediately contact emergency services on behalf of the employees. The employees must be able to reach this person quickly (such as by radio) to request that emergency medical services be summoned.

If, however, employees are able to contact emergency medical services directly, they must be allowed to do so in an emergency and not be required to contact a supervisor first.

Employers must ensure that supervisors and employees are trained to recognize the signs and symptoms of heat illness, take steps immediately to prevent the progression of heat illness, provide basic first aid (such as cooling towels and shade), obtain emergency medical services, and not allow an employee with signs or symptoms of heat illness to be left alone or sent home without being offered onsite first aid or provided with emergency medical services.

If required, emergency services (911) should be called in by the Superintendent. Address and directions to the work site must be available to be effectively reported to emergency services. Note if you and your crew are working on a job site with multiple locations the foreman will choose someone on his crew to drive a company truck out to the entrance of the work site and wait for the emergency provider. Once on site the Tecta employee will take them to the location of the employee suffering from an injury/heat illness.

When necessary, employers must be prepared to transport employees safely to a place where they can be reached by an emergency medical provider. Mobile crews must be provided with a map of their location or detailed directions that can be given to emergency responders.

10. HEAT STRESS-RELATED ILLNESS OR ACCIDENT FOLLOW-UP

- Describe events leading up to the episode.
- Evaluation/comments by other workers at the scene.
  - *Work at time of episode (heavy, medium, light)*

- *How long was affected employee working at site prior to episode?*
- *Medical history of affected worker, if known*

- Appropriate engineering controls in place?
- Appropriate engineering controls in operation?
- Appropriate work practices used by affected employee(s)?
- Appropriate personal protective equipment available?
- Appropriate personal protective equipment in use?
- Medical screening for heat stress and continued surveillance for signs of heat stress given to other employees?
- Additional comments regarding specific episode(s).

11. RESOURCES

Type the link below into your computer search engine to download the OSHA Heat Awareness App.
https://www.osha.gov/SLTC/heatillness/heat_index/heat_app.html

Additional Heat Illness Guidelines

- ✓ Workers shall be encouraged to wear white hard hats during work in temperatures above 80 degrees F.
- ✓ Workers will be encouraged to wear white work clothing, including long sleeve.
- ✓ Shirts, wrap-around neck scarf, and safety glasses that provide adequate protection from the sun.
- ✓ Each sub-contractor foreman will maintain adequate water on site including water jug, cups and plastic trash bag for disposal.
- ✓ Each Job site will be monitor by the NOVO safety officer during his inspection, daily by the foreman and weekly by the superintendent.
- ✓ Each job will be pre-inspected prior to the start of work to design the safest working environment for all NOVO Construction site employees. Site inspections will include determining those areas that employees can move to for shade and protection from the heat and/or if shade needs to be provided in the actual area of operation.
- ✓ Employees will be asked to refrain from drinking alcohol after work hours and drinking sodas and/or caffeine enriched sports drinks during work hours.

National Weather Service Phone Numbers CALIFORNIA Dial-A-Forecast:

- Eureka 707-443-7062
- Hanford 559-584-8047
- Los Angeles 805-988-6610(#1)
- Sacramento 916-979-3051
- San Diego 858-297-2107(#1)
- San Francisco 831-656-1725(#1)

http://www.nws.noaa.gov/

Data from California

- Hourly (State Weather Roundup)
- State Forecast
- Zone Forecast
- Short Term (NOWCASTS)
- Forecast Discussion
- Weather Summary
- Public Information
- Climate Data
- Hydrological Data
- Watches

- Special Weather Statements
- Warnings and Advisories
- Fire Weather
- Current Observations

CDC Tips for Preventing Heat-Related Illness
http://www.bt.cdc.gov/disasters/extremeheat/heattips.asp

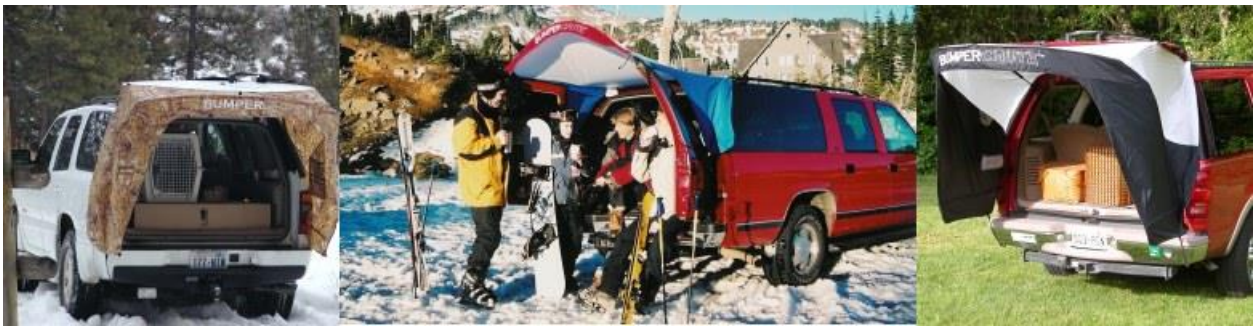
National Weather Service Heat Index Chart

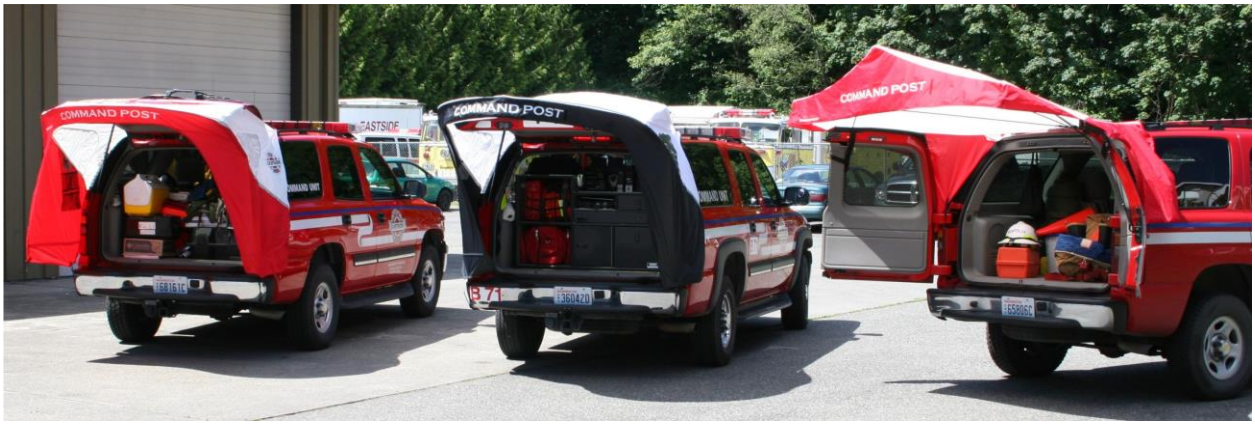
Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure and/or Strenuous Activity

Caution | Extreme Caution | Danger | Extreme Danger

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APPENDIX D – SILICA DUST CONTROL POLICY

Silica Dust Control Policy

PURPOSE
NOVO Construction recognizes that exposure to silica dust can cause silicosis (a deadly lung disease) and may cause lung cancer. NOVO takes responsibility for protecting the safety and health of its employees by creating this policy to reduce or eliminate workplace exposure to crystalline silica

CRYSTALLINE SILICA IS DANGEROUS!!
Exposure to crystalline silica, a chemical compound found in minerals, is very dangerous because it can cause serious lung diseases, such as silicosis. There are more than one million U.S. workers and over 100,000 in high risk settings, who are exposed to crystalline silica where they work. These workers work in a wide range of industries that use silica, including construction, mining, maritime industries, foundries, ceramics, glass manufacturing, electronics, agriculture, rock quarry/crushing and abrasives manufacturing.

What is crystalline silica (quartz)?
The terms “crystalline silica” and “quartz” refer to the same thing. Crystalline silica is a natural constituent of the earth’s crust and is a basic component of sand and granite.

What is Silicosis?
Silicosis is a disease of the lungs due to breathing of dust containing crystalline silica particles. This dust can cause fibrosis or scar tissue formations in the lungs that reduce the lung’s ability to work to extract oxygen from the air. There is no cure for this disease, thus, prevention is the only answer.

When people breathe silica dust, they inhale tiny particles of the mineral silica. This silica dust can cause fluid buildup and scar tissue in the lungs that cuts down your ability to breathe. Intense exposure to silica can cause the disease within a year. But it usually takes at least 10 to 15 years of exposure before symptoms occur.

There is no specific treatment for silicosis. Removing the source of silica exposure is important to prevent the disease from getting worse.
Supportive treatment includes cough medicine, bronchodilators, and oxygen as needed. Antibiotics are prescribed for respiratory infections as well. Treatment also includes limiting exposure to irritants and ceasing from smoking.

There are three types Silicosis:

1. Acute silicosis, which causes cough, weight loss, and fatigue within a few weeks or years of exposure to inhaled silica.
2. Chronic silicosis, which appears 10 to 30 years after exposure and can affect upper lungs and sometimes cause extensive scarring.
3. Accelerated silicosis, which occurs within 10 years of high-level exposure.

When individuals inhale silica dust, they are inhaling tiny particles of the mineral silica. The silica dust can cause fluid retention and scar tissue in the lungs that cuts down the ability to breathe. Intense exposure to silica can cause disease within a year. But it usually takes at least 10 to 15 years of exposure before symptoms occur.

What are the symptoms of Silicosis?

When individuals inhale silica dust, they are inhaling tiny particles of the mineral silica. The silica dust can cause fluid retention and scar tissue in the lungs that cuts down the ability to breathe. Intense exposure to silica can cause disease within a year. But it usually takes at least 10 to 15 years of exposure before symptoms occur. There are several stages of silicosis. Early stages may go completely unnoticed. Continued exposure may result in the exposed person noticing a shortness of breath upon exercising, possible fever and occasionally bluish skin at the ear lobes or lips.

Silicosis makes a person more susceptible to infectious diseases of the lungs like tuberculosis. Progression of the disease leads to fatigue, extreme shortness of breath, loss of appetite, pain in the chest and respiratory failure which possibly lead to death. Acute silicosis may occur after short periods of exposure.

POTENTIAL SILICA EXPOSURES

Silica is usually contained in rocks and released via dust. The following activities may cause silica dust to circulate in the air:

- Sawing, hammering, cutting, drilling, grinding, and chipping of concrete or masonry
- Chipping, hammering, and drilling rock
- Dry sweeping or pressurized air blowing of concrete, rock, or sand dust
- Crushing, loading, hauling, and dumping rock
- Sandblasting
- Demolition of concrete and masonry structures
- Concrete mixing
- Working with ceramics, clay, and pottery

<u>Jackhammer and Chipping Hammer</u>

The use of jackhammers and chipping hammers incidental to plumbing or landscaping scope of work is excluded from the <u>1530.1</u> regulation.

However, Cal/OSHA Section <u>5155(e)(1)</u> may be applicable for any use of jackhammers or chipping hammers on concrete.

Caution: Do not use water where it could cause a hazard with electrical wiring or equipment.

PRECAUTIONS WHEN HANDLING MATERIALS CONTAINING SILICA

A product that contains silica must be labeled if the product contains more than 0.1% silica. The machines used in the operations must be labeled with warning signs indicating that silica is being used. If material or product contains silica in quantities greater than 0.1%, there must be a Safety Data Sheet (SDS) for it.

AIR MONITORING

The NOVO Construction Environmental & Health Department (EHS Dept.) will inspect each worksite and work operations to determine if employees are exposed to silica above the PEL, i.e., Permissible Exposure Limit that a worker may safely be exposed to under OSHA regulations. Indicators that an evaluation of employee exposure should be undertaken include:

- Information or observation which would indicate employee exposure to silica.
- Change in work environment may result in an increase in the airborne concentration of silica.
- Employee complaint of symptoms which may be attributed to exposure to silica.

The EHS Department will conduct air monitoring to measure employee exposures and ensure that engineering controls and respiratory protection are providing adequate protection.

Air monitoring information and results will be made available to employees.

Employees must wear a cyclone assembly and sampling pump throughout the work shift for up to 8 hours. Dust samples will be collected from the worker's breathing zone.

The method of monitoring and analysis will have an accuracy of at least plus or minus 25% for concentrations of airborne silica equal to or greater than the PEL.

If employees are exposed to silica above the PEL monitoring will be repeated quarterly.

EXPOSURE LIMIT

OSHA regulations (Sec. 1910.1000 Table Z-3) will be used to determine the permissible exposure limits for crystalline silica.

The OSHA PELs for crystalline silica are currently 10mg/m3 divided by the percent of silica in the dust +2 (respirable), and 30 mg/m3 divided by the percent of silica in the dust +2 (total dust). For cristobalite and tridymite, the same formula will be used to determine the PELs, divide by one-half.

NOVO Construction will consider NIOSH and ACGIH recommended exposure limits when determining employee exposure. The recommended NIOSH limit is 0.05 mg/m3 and the ACGIH recommendations are:

- 0.05 mg/m3 for cristobalite
- mg/m3 for quartz
- 0.05 mg/m3 for tridymite
- mg/m3 of contained tripoli respirable quartz

MEDICAL SURVEILLANCE

Medical examinations will be made available:

- To employees before their assignment in areas in which airborne concentrations of silica are above the PEL.
- At least annually for each employee exposed to airborne concentrations of silica above the PEL at any time during the preceding 6 months.
- Immediately, upon notification by the employee, that the employee has developed signs or symptoms commonly associated with chronic exposure to silica.

The medical examination will include a medical and occupational history to elicit data on signs and symptoms of respiratory disease before exposure to silica. A chest x-ray and PFT will be performed at the physician's discretion. The chest x-ray will be read by a certified class "B" reader. A chest x-ray will be obtained when an employee's employment ends.

Where medical examinations are preformed, the following information will be provided to the examining physician:

- The reason for the medical examination.
- A description of the affected employee's duties as they relate to the employee's exposure.
- The results of the employee's exposure measurements, if available.
- The employee's anticipated or estimated exposure level.

The EHS Department will obtain and furnish the employee with a written opinion from the examining physician containing the following:

- The signs or symptoms of silica exposure displayed by the employee.
- A report on the findings of the chest x-ray and PFT test.
- The physician's opinion as to whether the employee has any medical condition which would place the employee at increased risk from exposure to silica or would aggravate any medical condition.
- Any recommended limitation upon the employee's exposure to silica or upon the use of PPE and respirators.
- A statement that the employee has been informed by the physician of any medical condition which requires further examination or treatment.

SAFE WORK PRACTICES

The primary means of protecting workers will be through the use of less toxic materials, enclosed systems, local exhaust ventilation, wet methods, and good work practices.

The following measures will be used to reduce exposure to silica in the workplace:

- Install local exhaust ventilation to prevent dust from being released into the air.
- During rock drilling, run water through the drill stem.
- Install dust collection systems onto machines or equipment that generated dust.
- Use concrete/masonry saws that provide water to the blade.

Silica sand or other substances containing more than 1% crystalline silica will not be used for abrasive blasting.

Good personal hygiene will be practiced to avoid unnecessary exposure. Eating, drinking, use of tobacco products or applying cosmetics will not be done in areas where there is dust containing crystalline silica.

If possible, employees will shower and change into clean clothes before leaving the worksite to prevent contamination of cars, homes, and other work areas.

PERSONAL HYGIENE PRACTICES

Personal hygiene practices are essential for protecting workers from respirable crystalline silica and other contaminants during concrete dust generating operations.

Here are some suggested practices for protecting workers from crystalline silica during these operations:

- Disposable or washable protective clothing shall be worn by the employee at the worksite.
- Do not eat, drink, or use tobacco products in dusty areas.
- Wash your hands and faces before eating, drinking, or smoking outside dusty areas.
- Practice good personal hygiene to avoid unnecessary exposure to other work site contaminants such as chemicals.

(If possible instruct the employee to change into clean clothes before leaving the work site to prevent contamination of cars, homes, and other work areas).

RESPIRATORS and the RESPIRATORY PROTECTION PROGRAM

We know the OSHA regulation requires us to implement a respirator program when engineering, administrative, and good work practices are not enough to keep silica exposure below their permissible exposure limit (PEL), as found in OSHA regulations.

We will not use respirators as the primary means of preventing or minimizing exposures to airborne contaminants. Instead, we will use effective source controls such as:

- Substitution,
- Local exhaust ventilation,
- Wet methods, and
- Good work practices.

Such measures will be the primary means of protecting our employees. However, when source controls cannot keep exposures below the PEL, controls will be supplemented with the use of respirators

When source controls cannot keep exposures below the PEL, respiratory protection shall be utilized. The EHS Department will enroll employees in a comprehensive "**Respiratory Protection Program"**. Important elements of this program are as follows:

- Periodic environmental monitoring.
- Training of personnel.
- Selection of proper NIOSH approved respirators.
- An evaluation of the worker's ability to perform the work while wearing a respirator.

- Respirator fit testing.
- Maintenance, inspection, cleaning, and storage of respiratory protection equipment.

HOUSEKEEPING PROGRAM

Exposed surfaces must be maintained free of accumulation of silica dust. To minimize hazards, the following procedures must be used to clean areas contaminated with dust containing crystalline silica:

- Clean floors daily with a wet mop, wet pickup vacuum, or a HEPA filtered vacuum cleaner. The most effective method is with a HEPA vacuum cleaner.
- Never sweep or dry mop, use compressed air, or use a regular vacuum cleaner. Regular vacuum cleaners are not suitable because they filter out heavy particles, allowing the finer more hazardous particles to pass into the air.
- Clean shelves with a damp sponge or a HEPA vacuum cleaner. Used filters should be carefully placed in a double plastic bag and disposed in the regular trash. Wear the proper respirator when changing filters.

Training, Education, and Communication

The new CAL/OSHA standard requires safety training/education of workers who could be potentially exposed to concrete dust from these tools.

Supervisors of workers using these tools are to be provided with training/education that includes the information given to workers and also an identification of work activities to be controlled and dust reduction procedures.

The EHS Department shall review and evaluate the effectiveness of this written exposure control plan at least annually and update it as necessary.

Training for all employees and supervisors must be done annually. The safety training shall include the following:

- Information about the potential health effects of exposure to respirable silica.
- Safety data sheets, masonry products, alternative abrasives, and other hazardous materials.
- Instruction about the purpose and set-up of regulated areas marking the
- boundaries of work areas containing silica.
- Information about safe handling, labeling, and storage of toxic materials.
- Discussion about the importance of substitution, engineering controls, work practices, and personal hygiene in reducing silica exposure.
- Instruction about the use and care of appropriate personal protective equipment (including protective clothing and respiratory protection).

Training will be conducted by the EHS Department and will be provided before an employee's assignment to an area where he/or she may be exposed to silica. And retraining shall be performed if the EHS Manager or Supervisor deems it is necessary to prevent or reduce exposures.

The training records will be kept in the EHS Department for 3 years.

All written site-specific exposure control plans shall be readily available for examination and copying, upon request, to each employee covered by this section, their supervisor, and the EHS Department.

WARNING SIGNS

Warning signs will be posted to mark the boundaries of work areas contaminated with crystalline silica. These signs will warn workers about the hazard and specify any protective equipment required.

The sign(s) will contain the following words or similar words:

"Warning-Silica Work Area- Improper handling or exposure to the dust may cause Silicosis and death- Respirator Required."

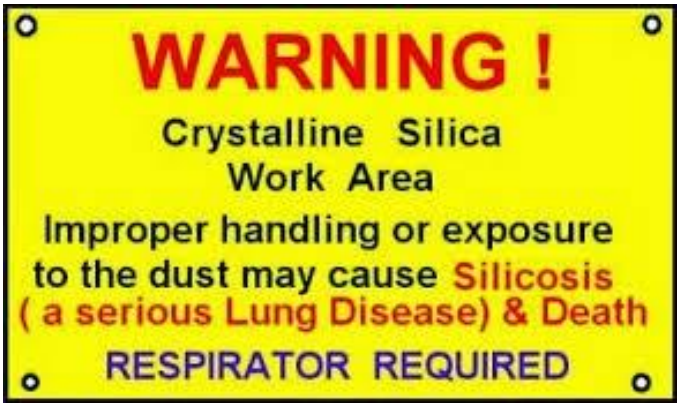


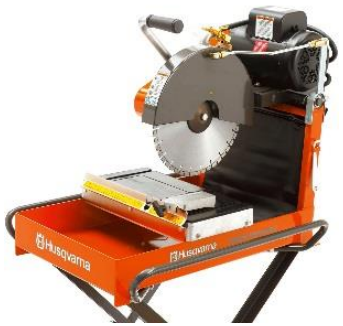
TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(i) Stationary masonry saws 	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.	None	None	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzle is working properly to apply water at the point of dust generation; ■ The spray nozzle is not clogged or damaged; and ■ All hoses and connections are intact.
(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	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzle is working properly to apply water at the point of dust generation; ■ The spray nozzle is not clogged or damaged; ■ All hoses and connections are intact.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(iii) Handheld power saws for cutting fiber-cement board (with blade diameter of 8 inches or less) 	For tasks performed outdoors only: ■ Use saw equipped with commercially available 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.	None	None	Dust Collection Systems: ■ The shroud or cowling is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions to prevent clogging; and ■ The dust collection bags are emptied to avoid overfilling.
(iv) Walk-behind saws 	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	None APF 10	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzles are working properly to apply water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(v) Drivable saws 	For tasks performed outdoors only: ■ 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.	None	None	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzles produce a pattern that applies water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact.
(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	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzles produce a pattern that applies water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(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	Dust Collection Systems: ■ The shroud or cowling is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; and ■ The dust collection bags are emptied to avoid overfilling.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(viii) Dowel drilling rigs for concrete 	For tasks performed outdoors only: ■ Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter-cleaning mechanism. ■ Use a HEPA-filtered vacuum when cleaning holes.	APF 10	APF 10	Dust Collection Systems: ■ The shroud is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; and ■ The dust collection bags are emptied to avoid overfilling.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(ix) Vehicle-mounted drilling rigs for rock and concrete 	Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector. OR Operate from within an enclosed cab and use water for dust suppression on drill bit.	None None	None None	Dust Collection Systems: ■ The shroud or hood is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; and ■ The dust collection bags are emptied to avoid overfilling. Water Controls: ■ An adequate supply of water for dust Suppression is used; ■ The spray nozzles are working properly and produce a pattern that applies water on the discharge point from the dust collector; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(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	Water Controls‡: ■ An adequate supply of water for dust suppression is used; ■ The water sprays are working properly and produce a pattern that applies water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact. Dust Collection Systems: ■ The shroud is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; and ■ The dust collection bags are emptied to avoid overfilling.

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Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xi) Handheld grinders for mortar removal (i.e., tuckpointing)  	Use grinder 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 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.	APF 10	APF 25	Dust Collection Systems: ■ The shroud is intact, encloses most of the grinding blade, and is installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; ■ The dust collection bags are emptied to avoid overfilling; ■ The blade is kept flush against the surface whenever possible; and ■ The tool is operated against the direction of blade rotation, whenever practical.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xii) Handheld grinders for uses other than mortar removal 	For tasks performed <u>outdoors only</u>: Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. OR Use grinder 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 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism. ■ When used outdoors. ■ When used indoors or in an enclosed area.	None None None	None APF 10	Water Controls§: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzles are working properly and produce a pattern that applies water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact. Dust Collection Systems: ■ The shroud is intact and installed in accordance with the manufacturer's instructions; ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions; and ■ The dust collection bags are emptied to avoid overfilling.

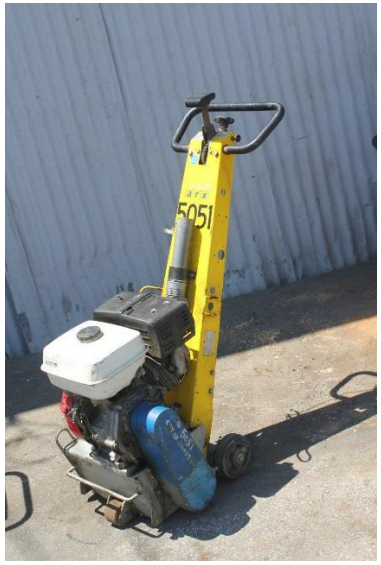
TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xiii) Walk-behind milling machines and floor grinders 	Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. OR Use machine equipped with dust collection system recommended by the manufacturer. Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions. Dust collector must provide the air flow recommended by the manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism. When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.	None None	None None	Water Controls: ■ An adequate supply of water for dust suppression is used; ■ The spray nozzles are working properly and produce a pattern that applies water at the point of dust generation; ■ The spray nozzles are not clogged or damaged; and ■ All hoses and connections are intact. Dust Collection Systems: ■ The hose connecting the tool to the vacuum is intact and without kinks or tight bends; ■ The filter(s) on the vacuum are cleaned or changed in accordance with the manufacturer's instructions to prevent clogging; and ■ The dust collection bags are emptied to avoid overfilling.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xv) Large drivable milling machines (half-lane and larger) 	For cuts of any depth on asphalt only: Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. Operate and maintain machine to minimize dust emissions. For cuts of four inches in depth or less on any substrate: Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust. Operate and maintain machine to minimize dust emissions. OR Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant. Operate and maintain machine to minimize dust emissions.	None None None	None None None	No additional information provided. Refer to the engineering and work practice control methods outlined.

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Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xvi) Crushing machines 	Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyers, sieves/sizing or vibrating components, and discharge points). Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions. Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station.	None	None	Water Controls††: ■ Nozzles are located upstream of dust generation points and positioned to thoroughly wet the material; ■ The volume and size of droplets is adequate to sufficiently wet the material (optimal droplet size is between 10 and 150 µm); and ■ Spray nozzles are located far enough from the target area to provide complete water coverage but not so far that the water is carried away by wind.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(xvii) Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g., hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials** 	Operate equipment from within an enclosed cab. When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.	None None	None None	No additional information provided. Refer to the engineering and work practice control methods outlined.

TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA†				
Equipment/Task	**Engineering and Work Practice Control Methods**	**Required Respiratory Protection and Minimum Assigned Protection Factor (APF)**		**What does *full and proper* implementation require?***
		≤ 4 hours /shift	**> 4 hours /shift**	
(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	None None	The following scenarios are examples of when the employer must use water and/or dust suppressants as necessary to minimize dust emissions: ■ Equipment for grading and excavating is not equipped with enclosed, pressurized cabs. OR ■ Employees other than the operator are engaged in the task. If water or dust suppressants are applied as necessary to minimize visible dust, the employer need not provide an enclosed, filtered cab for the operator.

APF 10 (requires fit testing)		APF 25	
			
Dust Mask/Half Mask	Half Mask (Elastomeric)	Loose-Fitting Powered Air-Purifying Respirator (PAPR)	Hooded Powered Air-Purifying Respirator (PAPR)

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

i. *For tasks performed using wet methods*, apply water at flow rates sufficient to minimize release of visible dust. The appropriate water flow rates for controlling silica dust emissions can vary; therefore, it is necessary to follow manufacturers' instructions when determining the required flow rate for dust suppression systems on a given worksite. Integrated water systems must be developed specifically for the type of tool in use so they will apply water at the appropriate dust emission points based on tool configuration and do not interfere with other tool components or safety devices.

Any slurry generated when using water to suppress dust should be cleaned up to limit secondary exposure to silica dust when the slurry dries following procedures described in the employer's *Written Exposure Control Plan*.

When working in cold temperatures, where there is a risk of water freezing, additional work practices such as insulating drums, wrapping drums with gutter heat tape or adding environmentally-friendly antifreeze.

ii. *For tasks performed using commercially available, dust collection systems (i.e. LEV)*, use equipment that is designed to effectively capture dust generated by the tool being used and does not introduce new hazards such as obstructing or interfering with safety mechanisms. The "commercially available" limitation is meant only to eliminate on-site improvisations of equipment by the employer. <u>When employers use methods other than commercially available systems for dust suppression, they must conduct exposure assessments and comply with the PEL.</u>

Some Table 1 entries for dust collection systems specify use of cyclonic pre-separators and filter cleaning mechanisms to prevent buildup of debris on filters that result in less dust capture. A cyclonic pre-separator collects large debris before the air reaches the filters. A filter cleaning mechanism prevents the need for manually cleaning filters to prevent buildup of debris (caking). Some vacuums are equipped with a gauge indicating filter pressure or an equivalent device (*e.g.*, timer to periodically pulse the filter) to help employees in determining when it is time to run a filter cleaning cycle.

i. *For tasks performed indoors or in enclosed areas*, provide a means of exhaust as needed to minimize the accumulation of visible airborne dust. Indoors or in an enclosed areas mean areas where airborne dust can build up unless additional exhaust is used. Sufficient air circulation in enclosed or indoor environments is important to ensure the effectiveness of the control strategies and to prevent the accumulation of airborne dust. The means of exhaust necessary could include: the use of portable fans (box fans, floor fans, and axial fans), portable ventilation systems, or other systems that increase air movement and assist in the removal and dispersion of airborne dust. To be effective, the ventilation must be set up so that movements of employees during work, or the opening of doors and windows, will not negatively affect the airflow.

ii. *For measures implemented that include an enclosed cab or booth*, ensure that the enclosed cab or booth:
   a. Is maintained as free as practicable from settled dust;
   b. Has door seals and closing mechanisms that work properly;
   c. Has gaskets and seals that are in good condition and working properly;
   d. Is under positive pressure maintained through continuous delivery of fresh air;
   e. Has intake air that is filtered through a filter that is 95% efficient in the 0.3-10.0 µm range (e.g., MERV-16 or better); and
   f. Has heating and cooling capabilities.

(2) Where an employee performs more than one task on Table 1 during the course of a shift, and the total duration of all tasks combined is more than four hours, the required respiratory protection for each task is the respiratory protection specified for more than four hours per shift. If the total duration of all tasks on Table 1 combined is less than four hours, the required respiratory protection for each task is the respiratory protection specified for less than four hours per shift.

* Refer to OSHA's Small Entity Compliance Guide for more information.