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Program Development

This Health & Safety handbook was developed by QES, Inc./Churchill Environmental, Inc. for Diamond & Thiel Construction Co., Inc. The implementation and enforcement of this and all other company safety and health rules are the responsibility of all supervisory and management personnel.

The Occupational Safety and Health Act of 1970 (OSHA) is applicable to everyone and it is Diamond & Thiel Construction Co., Inc. responsibility and legal obligation to comply with OSHA. Subsequently, this handbook is not intended to be an all-inclusive list of rules and regulations. It represents only the

basic safety and health rules and policies of Diamond & Thiel Construction Co., Inc. and it may be amended at any time.

An owner, project management, project and/or labor agreement may have other safety and health rules and regulations, which may also apply to Diamond & Thiel Construction Co., Inc. work and therefore, will need to be reviewed and, if necessary, complied with.

Chapter 1

Overview of Policy and Commitment to Safety

Policy and Commitment to Safety

To our Employees, Customers, and Vendors:

Our company, Diamond & Thiel Construction Co., Inc. is guided by our safety and health policy. This policy is based upon the necessity to eliminate injuries, occupational illnesses and property damage, as well as to protect the public whenever and wherever the public comes into contact with the company's work.

All management and supervisory personnel are charged with the responsibility for planning safety into each work task and for preventing the occurrences of incidents and/or controlling conditions/actions that could lead to occupational injuries or illnesses The ultimate success of a safety and health program depends upon the full cooperation of each individual employee. Management at Diamond & Thiel Construction Co., Inc. assumes the responsibility and is prepared to take the necessary actions to see that safety and health rules and practices are enforced, and to ensure that effective training programs are employed to the best advantage.

Safety will never be sacrificed for production. Safety is an integral part of quality control, cost reduction, and job efficiency. All project managers will be held accountable for the safety performance of the employees under their supervision.

Our goal is the total elimination of incidents from our operations, allowing each employee to return home safely to his or her family. This document pertains to Diamond & Thiel Construction Co., Inc. Employees only.

Safety Policy

It is the policy and practice of Diamond & Thiel Construction Co., Inc. to assure that all OSHA, State and Federal safety requirements are adhered to during the course of our work and at any of its jobsite locations.

Employees of Diamond & Thiel Construction Co., Inc. are considered valuable assets; their safety is of vital concern. Recognizing its need and responsibility for the safety of its employees, Diamond & Thiel Construction Co., Inc. considers incident prevention an important and integral part of every operation undertaken.

Safety will be given primary importance in planning and operating all Company activities in order to protect employees against occupational injuries and illnesses, and to protect Diamond & Thiel Construction Co., Inc. against unnecessary financial burden and reduced efficiency.

Each member of Management is responsible for the safety, well-being, and safe work conduct of all persons who report to or are assigned to him. Employees will be periodically apprised of the Company's key EHS performance indicators during safety meetings; these will include incidents, OSHA inspection results, DART statistics, and more.

To carry out this policy our company will provide to Diamond & Thiel Construction Co., Inc. employees:

A. Maintain safe and healthful working conditions.

B. Furnish, within reason, the best available mechanical safeguards and personal protective equipment, where they are needed.

C. Maintain an active and aggressive program, in which all members of Management will participate, to promote safety awareness among its employees.

D. Provide adequate medical and first aid facilities for work-caused injuries and illnesses.

E. Maintain continuous educational programs in safe operating procedures.

F. Insist that all employees observe established safety regulations and practices and use the safety equipment provided.

Management Responsibility

A. Introduction

It is the policy of Diamond & Thiel Construction Co., Inc. to require any Diamond & Thiel Construction Co., Inc. prime or sub contractor to establish and maintain an effective incident prevention and safety

program on every jobsite.

Safety education of all workmen in the recognition and avoidance of unsafe working conditions and practices shall be conducted throughout all phases of the work performed by the contractor. All practical steps shall be taken to maintain safe, healthful places of work for our workers. Approved protective equipment shall be provided and shall be used by all persons at work locations requiring such equipment. Policies and procedures will be continually evaluated for effectiveness and updated as necessary.

B. Responsibility

The site superintendent is explicitly assigned the prime responsibility for the application and enforcement of the overall incident prevention and safety program on any project. The project managers shall assist him. All supervisory personnel are responsible for the prevention of incidents for work under their direction and shall be responsible for thorough incident prevention and safety training and instruction of the employees they supervise.

Listed and Required Responsibilities

Management will:

1. Provide means to accomplish policy as stated above.

2. Enforce this policy and discharge any employee willfully disregarding it.

3. Conduct safety inspections and file reports.

4. Investigate or cause to have investigated any and all incidents and file full reports on each.

5. Establish procedure for treatment of injuries.

6. Establish and provide safety training for personnel.

7. Assure that provision is made for prompt medical attention and emergency transport in the event of serious injury. If a work site is remote in terms of time or distance from medical facilities, at least one person certified by the American Red Cross or equivalent will be available on each crew to render first aid. If EMT/Ambulance service is not available, a seriously injured employee will be transported to the nearest emergency room or urgent care facility. Employees will not be sent unaccompanied to the facility.

8. Assure each truck contains a first-aid kit containing items appropriate to the work site, at a minimum consistent with ANSI Z308.1-1978, and that each first aid kit is assessed to ensure the availability of adequate first aid supplies before being sent out to each job and at least weekly thereafter. The kits will be weatherproof, with individually sealed containers for each item.

9. Instruct each employee in the recognition & avoidance of unsafe conditions & the regulations

applicable to his/her work environment to control or eliminate any hazards or other exposure to illness or injury.

10. Perform risk assessments using Job Hazard Analyses and other tools, and provide training and enforcement to achieve compliance with safe systems of work as mandated in Company and host employer permits and procedures. Safe systems of work and risk assessments will be periodically reviewed and updated as necessary.

Supervisors will:

1. Be completely responsible for on-site safety.

2. Communicate to the host employer hazards encountered in the course of work or created by construction activities.

3. Make available all necessary personal protective equipment, job safety materials, and first aid equipment.

4. Be responsible for providing and checking that first-aid kits are available with each crew and truck.

5. Instruct employees individually regarding their safety responsibilities.

6. Have available copies of all Federal, State, and Local Safety Regulations.

7. Be familiar with the laws pertaining to safety and their basic requirements.

8. Participate in safety meetings and be informed about the Safety Program and related matters. Also conduct or cause to be conducted Toolbox Safety Meetings once a week to keep employees up to date on any new safety procedures and correct any previous violations.

9. Assure that proper methods are used when lifting or carrying heavy or awkward loads.

10. A project manager's greatest contribution to the success of the Incident Prevention and Safety Program is the display of enthusiasm for the program, and his earnest desire for incident-free production. It is necessary the project manager's set examples for other workers.

Environment, Health, Safety, and Quality Director/Coordinator (referred to hereafter as the Safety Coordinator) will:

1. Establish procedures and guidelines for the safety program(s), and keep these updated.

2. Develop safety recommendations for specific operations.

3. Study and provide current information on government regulations for Occupational Safety and Health (OSHA) and keep Management and Supervisors advised of revisions or new regulations

applicable.

4. Regularly visit projects and work sites for the purpose of inspection, direct communication with personnel, and being knowledgeable of operations.

5. Solicit educational and promotional data for the benefit of safety program(s), and assist with the implementation of such material.

6. Attend meetings and conferences of safety councils, contractor's associations, and other organizations considered advantageous to the company's interest. Attend training schools with courses for incident prevention and safety training.

7. Collect reports required for records and for evaluations of performance of safety and incident prevention programs.

8. Personally investigate or direct investigation of all serious incidents. Work with insurance company representatives, attorneys, and others in the interest of company business with safety.

9. Assure that, where 911 is not available, the telephone numbers of physicians, hospitals or ambulances shall be conspicuously posted.

10. Assure that, where the eyes or body of any person may be exposed to injurious corrosive materials, suitable facilities for quick drenching or flushing of the eyes and body are provided within the work area for immediate emergency use.

11. Establish and oversee the Safety Committee. The Committee will involve employee and management representatives on a revolving basis, and will meet periodically to discuss environment, health, safety, and quality issues of concern to the company and its employees.

All Employees will:

1. Obey all safety rules, government regulations, signs, and markings and instruction. Be familiar with the rules and regulations that apply directly to them in the area in which they work.

2. Stop work if they encounter unsafe conditions/acts and report immediately to the project manager.

3. Refrain from any unsafe act that might endanger her/himself or his/her fellow employees.

4. All prescribed safety equipment and personal protective equipment must be used when required and must be maintained in good working condition. It is your personal responsibility to use such equipment.

5. Report any unsafe situation or act to his/her project manager or company safety representative immediately.

6. Assume his/her share of responsibility for thoughtless or deliberate acts that cause injury to him/herself or his/her fellow employees.

7. Be a safe worker off the job as well as on.

8. Whenever you are involved in an incident that resu1ts in personal injury or property damage, no matter how slight, the incident must be reported to your project manager. First aid, if required, is to be applied immediately.

9. Good housekeeping must always be practiced. Return all tools, equipment, materials, etc. to their proper places when you are finished with them. Keep floors clean and passageways clear. Poor housekeeping wastes time, energy, and material, and often results in injury.
    a. Waste is to be picked up and put in container provided.
    b. No debris will be allowed to accumulate during any operation.
    c. All spills must be taken care of as they occur (water, oil, etc.)

10. Be alert to prevent fires
    a. Paint and other flammable liquid containers must be kept closed when not in use.
    b. Every employee to be given fire extinguisher locations.
    c. Fire extinguishers, fire hoses, alarm boxes, and/or other fire fighting equipment to be unobstructed and in clear view at all times.
    d. Oily rags are not to be left lying around.
    e. Trash cans are to be kept emptied, and work and storage areas are to be kept clean.

11. Do not operate any equipment that, in your opinion, is not in a safe condition. Report the condition to your project manager. Inspection and maintenance are an integral part of our motor safety program. These regulations are designed to keep unsafe motor vehicles off our nation's highways, and to provide a sound basis for a good inspection and maintenance program. Vehicle inspection reports are required for motor vehicles that transport property or passengers in interstate commerce. A commercial motor vehicle is defined as having a gross weight rating of 10,001 pounds or more, or transporting hazardous materials in quantities requiring the vehicle to be placarded. In general, we are subject to the vehicle inspection and maintenance requirements of Part 396 Section 396.1 listed under the federal motor carrier book. Vehicle inspection books (in the required vehicles) will be properly filled out with pre-trip inspections.

12. When lifting, use the approved lifting technique; i.e. bend your knees, grasp load firmly, keep load close to you, and then raise the load keeping your back straight as possible. Always get help with heavy (50 lbs. or more) or awkward loads.

13. Always use the right tools and equipment for the job. Use them safely and only when authorized workers shall also be instructed in the proper use of hand tools and personal protective equipment required for their work and shall be expected to make a daily pre-use inspection of such tools and equipment before putting them to use.

14. The use of drugs and/or intoxicating beverages on the job site are forbidden. Being under the influence of alcohol or drugs when on the job site is inexcusable and could result in either time off or dismissal.

15. Additional appropriate disciplinary action will be taken for the following offenses:
    a. fighting
    b. insubordinate conduct or refusal to follow directions.
    c. false statement, such as injury claims.
    d. other inappropriate behavior including, not limited to, failure to obey safety rules.

16. Loose clothing and jewelry cannot be worn when operating machinery and equipment. Long hair must be secured under a cap, and not allowed to flow loose.

17. Proper work shoes shall be worn at all jobsites. Open toed shoes and sneakers are not permitted to be worn at any jobsite.

18. Do not handle chemicals without consulting the SDS on site.

19. Do not try to place speed above safety. Each worker should be watchful of everyone else, as well as him/herself.

20. Compliance with safety and health rules and regulations is a condition of employment.

C. Employee Orientation

When a new / short service employee is signed up, they shall immediately be oriented in the general safety requirements of Diamond & Thiel Construction Co., Inc.

Before starting work on the project each new / short service employee will also be oriented in the particular safety requirements of this project by their project manager/project superintendent, and will be afforded mentorship by an experienced employee. Particular emphasis will be placed on:

1. The nature and scope of the overall contract, and their obligation to stay in contact with their mentor until they acquire sufficient experience in particular tasks to perform them unaccompanied.

2. Any particular hazard peculiar to the project and to the area in which the employee is to work.

3. The importance of keeping in mind, at all times, the safety of fellow workmen, as well as the safety of one's self.

4. The importance of wearing proper work clothes and protective equipment when required.

5. The fact that disregard of safety instructions or safety practices will be considered grounds for termination of employment.

6. Information as to location of first aid facilities and the necessity for reporting all incidents and injuries.

7. Right to Know Information on Hazardous Material(s).

D. Clothing

Workmen shall wear serviceable and suitable clothing and gloves when required. The use of safety shoes/boots is strongly recommended. Canvas shoes or tennis shoes are strictly forbidden. Boots shall be substantially made with good soles and kept in good condition. Clothing shall be snug fitting to reduce the possibility of catching on projections or machinery. Shirts shall be worn at all times. Workers will wear no short pants.

E. Protective Equipment

1. Safety glasses are required on the construction site and/or when performing duties that require eye protection.

2. Goggles shall be worn when chipping, grinding, welding, cutting, handling cement and working with compressed air, or when necessary to be close to such an operation being performed by another employee.

3. Hard hats are mandatory on job sites or in areas where there is possible danger of head injury from impact, or from falling or flying objects, or from electrical shock and burns.

4. Hearing protection shall be worn when using jackhammers, grinders, pavement saw, earth saw and cutoff saws. In the shop, when using loud abrasive sounding equipment/machinery; when working under vehicles/machinery where falling debris can be damaging to ears.

5. All employees working on all traffic jobs will wear safety vests.

6. All flag persons will be required to wear orange hard hats, safety vest, boots, safety glasses where applicable, and carry flags or stop/slow paddles.

7. Rubber gloves are to be used with handling of hazardous material.

F. Training

The project superintendent has the responsibility of ensuring that all applicable provisions of OSHA regulations are made known and complied with on this project. He/she shall also promote individual safety awareness in an effort to recognize and eliminate unsafe working practices and conditions, which may not be specifically covered in the regulations.

All employees shall be given weekly incident-prevention instructions. Each project manager shall ensure that safety training is an integral part of the day-to-day job training, which he administers to the

men working under his direction. The project superintendent shall point out safety hazards inherent to the work to be done and shall familiarize his men with the tools and equipment which shall be used in doing the work, particularly stressing correct, safe operating procedures.

G. Safety Meetings

The following types of safety meeting will be held throughout the life of the job:

1. Toolbox Safety Meetings

Each project manager/project superintendent on the project will be required to conduct a documented toolbox safety meeting of approximately five (5) minutes duration with the employees at least once a week, at their toolbox or meeting place before starting work. All employees shall be required to attend these meetings. All unsafe conditions or unsafe work practices or conditions will be discussed, as will the employees' right to refuse to do work they deem unsafe, or that involves imminent danger. Key performance indicators for the Company will be shared with employees during toolbox meetings.

The project manager/project superintendent shall also discuss work that will be taking place in the following week and bring to the employees attention any possible hazards pertaining to the type of work they will be performing at that time. Employees shall be encouraged to make safety suggestions at these meetings.

2. Special Toolbox Safety Meetings

If especially hazardous conditions are about to be encountered, or crews appear to be careless in regard to safety, special toolbox meetings will be required at more frequent intervals. Toolbox meetings must be signed by the project manager and his crew and returned weekly to the Safety Coordinator.

3. Environmental Briefings

Supervision will deliver documented briefings related to site environmental requirements. These will include reporting of spills and other incidents that could have environmental impacts, and the prohibition against removal of construction debris and materials by employees, as well as site-specific policies and procedures.

4. Job Hazard Analysis

Prior to undertaking non-routine or especially hazardous tasks, a job hazard analysis will be performed to ensure proper hazard recognition and control. The goal will be to break down tasks into component steps, identify the hazards associated with each step, and identify appropriate engineering, administrative, and personal protective equipment controls.

5. Daily briefings

On reporting for work, employees will meet with supervision for a daily briefing related to environmental and safety and health issues and technical aspects of scheduled work.

H. First Aid

The individual project superintendent will be responsible for seeing that any employee under his supervision, who sustains an injury, shall report it and have it treated. Other than basic first aid treatment will be, if deemed necessary, provided by the nearest hospital or ambulance service.

Records of all injuries treated in first aid will be maintained and will state the type of injury and the treatment given.

First aid kits shall be kept stocked and readily available in each vehicle and maintained on all jobsite locations in areas where medical attention is not immediately available. It is up to the project manager to be familiar with phone numbers of hospital locations within the area.

I. Reporting Incidents

The proper reporting and investigation of incidents are a necessary part of this safety program. Determining causes of incidents generally indicates means, which will aid in preventing the recurrence of similar incidents. Employees shall report all injuries or illness immediately to the injured persons project manager or project superintendent, to determine the cause and, where possible, corrective action shall be taken immediately to prevent recurrence of a similar injury.

Incidents shall be investigated immediately by the injured persons project manager or project superintendent, to determine the cause of the incident, whether an unsafe condition, an unsafe act, or combination thereof, and also an accounting of what steps have been or will be taken to correct the situation. Incident reports shall be reviewed by the project manager and returned to the company management.

J. Reporting Incidents Involving Chemical Spills

Diamond & Thiel Construction Co., Inc. contracts with Chemtrec to aid in the proper cleanup of any chemical spills. The phone number available 24 hours a day, 7 days a week, is 1-800-426-9300. Chemtrec has all SDS's on file.

K. Equipment and Vehicles

1. Do not use any broken or defective tools or equipment. Only proper tools or equipment are to be used for any job you do. Do not use equipment with defective grounds or frayed cords.

2. All workers must be seated while in moving trucks. Standing and riding with feet and legs extended outside of truck, or sitting on the edge of a pickup is prohibited.

3. Keep clear of swinging buckets, loads, and counterweights. Never walk behind or on blind side of equipment.

4. Only authorized/trained persons are permitted to operate specific equipment.

5. All construction vehicles will be equipped with flares, first aid kits, reflectors, fire extinguishers, Hazard Material Guide and shipping papers, if required.

6. All equipment should be inspected daily before use.

7. Machines are to be used only for what they are designed for.

8. Load capacity ratings shall not be exceeded.

9. Backup alarms are required on all bi-directional equipment. Equipment will be taken out of service and repaired if alarms are not working

10. No machinery is to be operated near power lines where it can be avoided.

K. Trenching

Before any excavation begins:

1. All underground utilities shall be verified prior to commencement of any operation.

2. Remove or adequately support objects in the excavation area that could create a hazard to employees. These include trees, rocks, sidewalks and other objects.

General requirements:

1. Employees exposed to public vehicular traffic must wear warning vests or other suitable garments made of reflectorized or high-visibility material.

2. A competent person must inspect the excavation and the adjacent areas on a daily basis for possible cave-ins, failure of protective systems and equipment, hazardous atmospheres, or other hazardous conditions. This will be accomplished prior to allowing workers into the trench & throughout the day. Inspections are also required after the occurrence of any natural or manmade event that could increase the potential for hazards.

3. Adequate protection must be provided to protect employees from falling rock, soil, or other materials and equipment.

4. While the excavation is open, underground installations must be protected, supported, or removed as necessary to safeguard employees. Adjacent structures must be supported to prevent possible collapse.

5. Employees will not be permitted to work in excavations where water has accumulated or is accumulating unless adequate precautions have been taken. Diversion ditches, dikes, or other means must be used to prevent surface water from entering an excavation to provide drainage to the adjacent area.

6. Sufficient means for exiting excavations 4 feet deep or more must be provided and must be within 25 feet of lateral travel for employees.

8. Guardrails must be provided if there are walkways or bridges crossing over an excavation.

9. Excavated or other material shall be stored and retained at least 2 feet from edge of excavation.

10. All trenches shall be closed at the end of the workday. If this is not feasible, steel plates will used to cover trench and/or fencing will be used to protect the area.

L. Electrical Protection

1. The Company is committed to elimination of electrical injuries resulting from tool and equipment malfunctions, improper grounding, and defective tools and equipment.

2. Lead cords, tools, and equipment will be inspected before use. Defective equipment will be tagged out of use or rendered inoperable, and reported to supervision.

3. Employees are not allowed to work near live parts of electrical circuits, unless the employees are protected by de-energizing and grounding the parts, guarding the part by insulation, or any other effective means.

4. In work areas where the exact location of underground electrical power lines is unknown, employees using jack hammers, bars, hand tools or other equipment that may contact the lines will not he allowed to work in this area until the exact location is made known.

5. Barriers or other means of guarding must be used to ensure that workspace for electrical equipment will not be used as a passageway during periods when energized parts of equipment are exposed.

6. Worn or frayed electrical cords or cables must not be used. Extension cords must not be fastened with staples, hung from nails, or suspended by wires.

7. Equipment or circuits that are de-energized must be rendered inoperative and must have tags attached at all points where the equipment or circuits could be energized.

8. Ground fault circuit interrupters should be used for electrical tools and equipment unless an assured equipment grounding conductor program is in place.

9. Cords should be kept clear of walkways and other locations where they may be subject to damage or present a tripping hazard.

10. Only qualified workers should be allowed to perform any type e of electrical work.

M. Confined Space

1. Employees will not enter a confined space before all hazards (atmospheric, engulfment, and mechanical) have been identified and procedures have been developed to deal with them.

2. The confined space will be isolated from unwanted energy sources or hazardous substances.

3. Proper mechanical ventilation will be maintained and ventilation equipment will not interfere with entry, exit, and rescue procedures.

4. Hazards such as welding, cleaning solvent, etc., will not be introduced into the confined space without first making provisions for these hazards and incorporating the provisions into the Written

Permit System.

5. Monitoring for atmospheric hazards (oxygen, combustibles, toxins) will be done prior to and during entry

6. Barriers will be setup to warn unauthorized personnel and to keep entrants safe from external hazards.

7. The confined space will not be reentered once the permit has been revoked until the conditions causing the revocation is eliminated.

11. Constant communication will be kept between entrants and outside attendants.

12. Personal protective equipment will be worn and properly maintained.

13. Only persons of a designated rescue team will attempt a rescue.

N. Welding and Cutting

1. General:
   a. You should be instructed in the safe use of welding equipment before using it.

   b. Each welder is responsible for containing sparks and slag and/or removing combustibles to prevent fire.

   c. All employees engaged in welding and burning operations should use a face shield, goggles, or appropriate welding helmet and welding gloves. No arc or flame welding operation is permitted in areas where the application of flammable paints is taking place or where combustible dust or flammable liquids are present.

   d. A suitable fire extinguisher should be located in welding areas at all times.

   e. When practical objects to be welded, cut or heated shall be moved to a designated safe on or, if the object to be welded, cut, or heated cannot be readily moved, all moveable fire hazards in the vicinity shall be taken to a safe place, or other wise protected.

2. Oxyacetylene Torches:
   a. All connections should be clean and free from grease and oil.

   b. Hoses should not be laid across traffic areas.

   c. Where a special wrench is required to operate the acetylene cylinder valve. The wrench should be kept in position on the valve to allow for emergency shutoff.

   d. For quick closing, valves on fuel gas cylinders should not be opened more than one and a half

turns. Check valves and flash arrests should be located at the torch.

3. Electric Arc welders:
   a. When electrode holders are left unattended, the electrodes should be removed and the holders placed or protected so that they cannot make contact with each other, conductive objects, or people.

   b. Arc welding and cutting operations should be shielded by noncombustible or flameproof shields to protect fellow employees from direct arc rays.

   c. All welding cable should be insulated completely. Any splices or repairs should have insulation with a resistance equal to or greater than the original insulation. No repairs are permitted within 10 feet of the electrode holder.

   d. Insulated boot covers or other suitable protection should be provided to protect terminals where welding cables are connected to arc welder.

4. Compressed Gas Cylinders:
   a. Valve protection caps should be in place when compressed gas cylinders are empty or are moved.

   b. Cylinder valves should be closed when work is finished and when cylinders are empty or are moved.

   c. Compressed gas cylinders should be secured in an upright position at all times, except if necessary for short periods of time when cylinders are actually being removed or carried.

   d. Cylinders should be kept at a safe distance or shielded from welding and cutting operations. Cylinders should be placed where they cannot become part of an electrical circuit.

   e. When oxygen cylinders are stored, they should be separated from other fuel, gas or highly combustible materials by 20 feet or by a noncombustible barrier (a wall at least 5 feet tall with a half-hour resistance).

O. <u>Hazard communication</u>

1. Be aware of hazardous chemicals being used on site.

2. Know where the hazard communication program hazardous materials list and safety data sheets (SDS) are maintained on site.

3. Employees should not work with a material until they have been informed of the hazards they may be exposed to and the steps personnel may take to protect themselves. Be knowledgeable of appropriate work practices. Emergency procedures protective equipment when working with hazardous chemicals.

4. Employees should be willing to share their knowledge of hazard communication and of materials with which they work with other employees and officials.

5. Notify prime contractor/project manager when you bring hazardous materials on site.

Q. Recordkeeping

Copies of incident reports, special investigation reports, and inspection reports will be forwarded immediately to the main office. Any reports required by the owner shall be forwarded to him/her without delay. A permanent record of these reports, other reports required by OSHA or the owner, and any other safety related material will be maintained on the jobsite for the duration of the job. Upon completion of the project, these records shall be returned to the contractor's home office.

In general, no unsafe working conditions will be permitted to exist. Any unsafe conditions will be reported to a project manager and site superintendent.

Diamond & Thiel Construction Co., Inc. in accordance with the recordkeeping requirements under the Occupational Safety & Health Act of 1970, prepares and maintains records of occupational injuries. All records must remain in the establishment for five (5) years after the year which they relate. Also, at the home office, the following is to be exhibited:

1. State/Federal "Job Safety/Health Protection" poster.
2. Emergency telephone numbers.
3. Copy of OSHA standards applicable to construction.

Responsibility belongs with every employee to ensure safe working conditions. Safety requirements are not to burden employers or employees, but to help us provide a safe working environment. Full assistance and cooperation is a must for the company and all employees. Any employee who willfully violates safety regulations will be given a written warning. If more than one warning occurs, worker can be removed from work without pay for a designated period of time, and can be subject to discharge.

THINK SAFETY, PRACTICE SAFETY, BECOME SAFE!

Pursuant to Section 110 of the NYS Workers' Compensation Law, every employer, required to provide benefits under the law, must keep a record of all injuries sustained by their employees in the course of employment. This is required even if the employer has not made a formal report of the incident.

This means that if an injury does not meet the reporting requirements for a C-2, you must still keep a permanent record of the injury for future reference.

Chapter 2

Responsibilities

Responsibilities

All employees of Diamond & Thiel Construction Co., Inc. are expected to do their part to ensure a safe workplace. To accomplish this all Diamond & Thiel Construction Co., Inc. employees must:

1. Abide by all federal, state, and local regulations.

2. Adhere to the safety policies and procedures of Diamond & Thiel Construction Co., Inc. and where appropriate those of the owners and contractors, for whom Diamond & Thiel Construction Co., Inc. has contracted to perform work. In cases where jobsite safety requirements exceed all Federal, State and local regulations, employees are required to follow the jobsite safety requirements.

3. Exercise good judgment in the application of Diamond & Thiel Construction Co., Inc. Corporate Safety Program.

4. Protect the public from potential hazards created by our activities

Responsibilities of Management

1. Establish work rules and programs to enhance safety awareness and inform all Diamond & Thiel Construction Co., Inc. employees of these established rules and programs.

2. Distribute the appropriate rules and regulations to all supervisors.

3. Provide job safety training for the Diamond & Thiel Construction Co., Inc. employees.

4. Impress on all Diamond & Thiel Construction Co., Inc. employees that their individual participation, responsibility and accountability is necessary to maintain an incident-free work environment.

5. Where required, provide appropriate protective equipment for Diamond & Thiel Construction Co., Inc. employees.

6. Document all violations that are observed and discipline any Diamond & Thiel Construction Co., Inc. employee disregarding this policy.

7. Investigate all incidents and provide training to prevent reoccurrence.

8. Require all contractors as a matter of contract and all material suppliers through purchase order terms to follow safety rules.

9. Provide for frequent and regular safety inspections of jobsites to ensure Diamond & Thiel Construction Co., Inc. safety rules are being followed by company Diamond & Thiel Construction Co., Inc. employees and contractors.

Responsibilities of Project Superintendents

1. Ensure that all work performed is done in accordance with established safety regulations through methods such as pre-planning, training and use of the company disciplinary policy.

2. Superintendents will follow-up on inspections performed to ensure proper corrective and disciplinary actions are taken.

3. Make safety devices and equipment are available to all Diamond & Thiel Construction Co., Inc. employees and ensure the equipment is used in the way and for the purpose for which it was designed.

4. Inform prime or subcontractor of our commitment to safety and of the need for them to manage their crews in a safe manner. Nothing less will be tolerated.

5. Review incidents, oversee the correction of unsafe conditions, and complete incident reports.

6. Conduct jobsite safety meetings and provide Diamond & Thiel Construction Co., Inc. employees with proper instruction on the safety requirements of their activities.

7. Require Diamond & Thiel Construction Co., Inc. contractors to perform all work in accordance with established safety regulations. In cases where jobsite safety requirements exceed all Federal, State and local regulations, employees are required to follow the jobsite safety requirements.

8. Notify Diamond & Thiel Construction Co., Inc. corporate office of any safety violations and complete all associated documentation for safety infractions.

9. Protect the public from potential hazards related to company operations.

10. Work with other contractors on site to ensure Diamond & Thiel Construction Co., Inc. employees are not endangered by the operations of others.

11. Execute the safety program at the work level.

12. Be knowledgeable of all safety requirements and safe work practices.

13. Conduct pre-task planning sessions to coordinate activities for the day and to anticipate unsafe conditions which may occur in the performance of those activities.

14. Ensure new Diamond & Thiel Construction Co., Inc. employees receive new hire orientation training covering the hazards associated with their duties.

15. Provide safety training to existing employees performing new tasks.

16. Make sure an adequate supply of protective equipment is available and used by Diamond & Thiel Construction Co., Inc. employees when required.

17. Make sure work is performed in a safe manner and no unsafe conditions or equipment are present.

18. Correct all hazards, including unsafe acts or conditions. Ensure no unsafe equipment is present on the jobsite that could be used by a Diamond & Thiel Construction Co., Inc. employee.

19. Report all near incidents so an investigation can be conducted to prevent a reoccurrence.

20. Secure prompt medical attention for any injured Diamond & Thiel Construction Co., Inc. employees.

21. Report all injuries and safety violations.

Responsibilities of Diamond & Thiel Construction Co., Inc. Employees

1. Follow company safety rules and works in a safe manner to ensure the safety of yourself, co-workers, and others.

2. When uncertain about how to perform any task, request assistance.

3. Correct any unsafe act or condition within the scope of your immediate work. Any hazard, which cannot be readily corrected, should be immediately reported to your supervisor.

4. Any unsafe condition corrected by a Diamond & Thiel Construction Co., Inc. employee should be reported to the appropriate supervisor by the employee(s) who corrected the hazard.

5. Report for work in good mental and physical condition so that assigned duties can be carried out in a safe manner.

6. Avail yourself of company and industry-sponsored programs.

7. Inspect, maintain, and use safety devices provided for your protection.

8. Properly use and maintain all tools under your control.

9. Look out for other Diamond & Thiel Construction Co., Inc. employees and assist them with safety requirements if an unsafe practice or condition is observed.

Responsibilities of All Personnel

1. Strive to make all operations safe to achieve an incident-free workplace.

2. Maintain mental and physical health conducive to working safely.

3. Keep all work areas clean and free of debris.

4. Do not perform work in a manner, which may be harmful to others. Assess the results of your actions on the entire workplace.

5. Do not let unsafe conditions imperil others. Prior to leaving work, replace or repair safety precaution signs removed or altered during the course of your work.

6. Abide by the safety rules and regulations of every construction site.

7. Work in strict conformance with Federal, State and local regulations. In cases where jobsite safety requirements exceed all Federal, State and local regulations, Diamond & Thiel Construction Co., Inc. employees are required to follow the jobsite safety requirements.

Contractors and Suppliers

1. Abide by all Federal, State, and local regulations. In cases where jobsite safety requirements exceed all Federal, State and local regulations, all personnel are required to follow the jobsite safety requirements.

2. If the activities of another contractor affect the health or safety of your employees, notify the appropriate project manager or superintendent of the hazardous condition.

3. Before entering the jobsite, inform a project manager or superintendent of your arrival.

4. Immediately inform the controlling contractor of all injuries to workers.

5. Any unsafe condition or action observed shall be reported to the controlling contractor so the hazard can be addressed.

6. Participate fully in the project Disciplinary Program

Architects, Engineers, Owners and Visitors

1. Follow all safety rules of the job site.

2. Inform site superintendent before entering the construction site. Personal protective equipment such as a hard hat, safety glasses, and safety boots are required at all times.

Chapter 3

Emergency Procedures

Emergency Procedures

1. In the event an emergency occurs on or at a company work site, the employee responsible for that site or the most senior employee on the site is responsible to follow the emergency procedures described in this section.

2. Emergencies are classified as life threatening, medical, or serious property damage.

3. Employees will receive documented emergency recognition and response training initial and periodically as conditions and potential hazards change.

4. In the event of a life-threatening emergency, incident, or medical emergency, the following actions are to be taken.

    a. Ascertain the nature of the emergency and the number of people affected.

    b. Immediately call emergency teams or designate one or two people to contact local police, fire, ambulance, Haz-Mat, utility, or other emergency response team(s) as quickly as possible.

    c. Designate one or more employees to contact people adjacent to the work site if they are or may be affected by the emergency. Have another employee contact the main office.

    d. Take control of the site and assign tasks as necessary. Survey the area to insure scene is free of hazards that could cause further injury (traffic, electrical hazards, etc.).

    e. Take measures to eliminate hazards that may exist and restrict access to the emergency area. Secure the scene and do not disturb anything unless needed.

    f. Provide whatever immediate and temporary relief possible until emergency personnel arrive at the scene (bring first aid equipment, blankets, etc.).

    g. The Supervisor will assign an authorized individual to accompany the injured party to the hospital or other medical provider for treatment.

    h. Perform an incident investigation before emergency area is disturbed. Take pictures as soon as possible and conduct an incident investigation following the procedures outlined in Diamond & Thiel Construction Co., Inc. health and safety program.

4. In the event of a property damage emergency, the following actions are to be taken:

    a. Determine if there is a danger to workers or persons adjacent to the site. If so, follow procedures outlined for a life-threatening emergency, incident, or medical emergency.

    b. If no danger exists to workers or persons adjacent to the site, immediately call the appropriate emergency response team(s) and report the property damage emergency. (911, police, fire,

Haz-Mat, utility, etc.).

c. Restrict access to the property damage emergency area. Secure the scene and do not disturb anything unless needed.

d. Notify the corporate office.

e. Document the emergency.

NOTE: In the event of any emergency, documentation of the incident is necessary. An incident investigation must be conducted following the guidelines provided in Diamond & Thiel Construction Co., Inc. health and safety program.

Chapter 4

Disciplinary Policy

Disciplinary Policy

Purpose

Safety on a jobsite requires constant attention and awareness from everyone involved. The success of a safety program is related to the efforts put forth by all employees involved in the project. It is for this reason that employees of Diamond & Thiel Construction Co., Inc. and its contractors are required to adhere to the safety rules and regulations of state, federal and local agencies, and the owner for whom work is being performed. Jobsite safety requirements may exceed applicable OSHA Standards. In these circumstances, employees are required to follow the jobsite safety requirements. In order to ensure active participation from each employee, we have developed a Disciplinary Policy to enforce these safety rules and regulations.

Responsibilities

The project manager is responsible for implementation of the Disciplinary Policy. This does not exclude these parties from following safety policies/practices or from disciplinary action resulting from safety violations.

Procedure

1. Employees are subject to one of the following disciplinary actions resulting from safety violations. Each violation (excluding the first verbal that will be documented in the supervisor's daily log) will be documented on the attached Safety Violation Form. This form will include the date of the violation and disciplinary action taken.

    a. First Violation: Verbal warning, to be documented in supervisor's daily log.

    b. Second Violation: Verbal warning, documented on Safety Violation Form.

    c. Third Violation: Mandatory two-day work suspension without pay, documented on Safety Violation Form.

    d. Fourth Violation: Termination, documented on Safety Violation Form.

2. When a safety violation is issued, the supervisor of the employee who is in violation will meet with that employee to discuss the safety infraction. The employee will be informed of the rule or procedure that was violated and the corrective measures that shall be taken to eliminate the hazard. The employee in violation shall fully understand the reason for and the associated risks pertaining to their violation prior to returning to work.

3. Nothing in this policy prohibits the immediate dismissal or removal from the jobsite of any

employee whose conduct constitutes a serious violation of safety requirements, which could cause serious danger to himself/herself, other employees, property or equipment.

4. Safety violations include but are not limited to: failure to follow verbal or written safety procedures, guidelines, and rules; horseplay; violence or possession of firearms; abuse of alcohol or illegal drugs; failure to wear personal protective equipment; failure to use or maintain fall protection; and failure to observe lockout/tagout procedures.

   Inspections of work areas will be conducted to ensure employee compliance with Diamond & Thiel's safety and health policies and procedures. If work site inspection by company management indicates a pattern of violations reflecting an overall lack of commitment to safety goals by site supervision, this will be considered a safety violation and site supervision will be subject to the provisions of this disciplinary policy.

A safety violation form is to be completed each time an employee violates a corporate safety rule. This form must be forwarded to the main office and added to the employee's personnel file.

Safety Violation Form

EMPLOYEE NAME:	POSITION WITH COMPANY:	DATE OF VIOLATION:
_____	_____	_____

DESCRIPTION OF VIOLATION:

CORRECTIVE ACTION TO BE TAKEN TO PREVENT A REOCCURENCE:

DISCIPLINARY ACTION TAKEN:

NOTHING IN THIS POLICY PROHIBITS THE IMMEDIATE DISMISSAL OR REMOVAL FROM THE JOBSITE OF ANY EMPLOYEE WHOSE CONDUCT CONSTITUTES A SERIOUS VIOLATION OF PROJECT SAFETY RULES, WHICH COULD CAUSE SERIOUS DANGER TO HIMSELF/HERSELF, OTHER EMPLOYEES, PROPERTY, OR EQUIPMENT. AS AN EMPLOYEE WORKING AT THIS CONSTRUCTION SITE, I UNDERSTAND THE NATURE OF MY SAFETY VIOLATION AND THE PROPER CORRECTIVE ACTIONS NECESSARY TO ELIMINATE THE HAZARD.

EMPLOYEE SIGNATURE: _____ DATE: _____

Chapter 5

New Employee/Short Service Employee Orientation

New Employee / Short Service Employee Orientation

All new employees or short service employees on reporting for work will be visually identified by supervision and shall be required to go through a safety orientation covering safety prevention, procedures and response measures. Safety orientation sets the tone for safety awareness and is an important element of Diamond & Thiel Construction Co., Inc. Safety Program.

New Hire Safety Orientations will be held at Diamond & Thiel Construction Co., Inc. corporate offices as needed.

During and at the conclusion of orientation, new / short service employees will be encouraged to ask questions to make sure that the safety procedures are fully understood. The new / short service employee will be asked some questions pertaining to job safety to confirm that he/she understands the safety goals of the company. A Safety Orientation Checklist shall be completed and signed by the individual(s) who conducted the orientation and the new / short service employee.

Following the orientation, new and short service employees will be assigned a mentor who will be an ongoing resource with regard to technical and EHS matters. Mentors will be responsible for monitoring performance (which may include remaining in direct contact in the case of safety-sensitive or hazardous tasks), answering questions, and informing supervision if the need for additional or retraining becomes evident.

NOTE: The new / short service employee(s) will be encouraged throughout the orientation to ask any safety questions that may arise relating to his/her work. Other employees who are not considered “new/ short service employees” will receive safety orientation where necessary.

Safety Orientation Checklist

The Safety Orientation Checklist is used to document safety training provided to all new and reassigned employees. Safety Orientation is intended to familiarize you with the Safety Program and to provide you with the information to help you recognize and avoid unsafe conditions in your workplace. This checklist includes the safety items to be covered during safety orientation. Employees are to check off each topic as it is covered.

Employee Name: _____ Date of Training: _____

Position: _____ Date of Hire: _____

General	**Check**		**Welding and Cutting**	**Check**
Housekeeping requirements			Handling and using compressed gas cylinders	
Where to locate mandatory posting requirements including emergency phone numbers			Compressed gas cylinder storage requirements	
Where to locate company safety program, hazard communication program and SDS's			Welding safety	
Company hazard communication program content, including Safety Data Sheets			**Electric**	
Employee responsibility for reporting incidents, near misses, and injuries			Extension cord types acceptable in use at construction sites	
Procedures to be taken in the event of a property damage site emergency			Inspecting extension cords	
Procedures to be taken in the event a person is injured at the jobsite			Ground fault circuit interrupters	
Company drug and alcohol policy			Construction electrical safety requirements	
Personal Protective Equipment			**Scaffolding**	
Company hard hat policy			Erecting and dismantling scaffolds	YES NO N/A
Company policy regarding the use of safety glasses			Using and maintaining scaffolds	YES NO N/A
Company hearing conservation program			Competent person requirements	
Company respiratory protection program			Providing safe access to scaffolds	
How to determine what personal protective equipment is needed for the job being performed			Platform construction and fall protection requirements	
Fire Protection			Electrical hazards associated with scaffold use	
Storage of gasoline in safety cans			Properly anchoring scaffolds	
Types of fire extinguishers and their proper use			Construction scaffold safety requirements	
Fire protection requirements for protected building areas			**Tools**	
Propane storage requirements			Inspecting tools to insure they are free of damage or defects	
Hot works permit requirements	YES NO N/A		Training requirements for using powder-activated tools	

Fall Protection	**Check**		**Excavations**	**Check**
Pre-planning for fall hazards			Underground electrical hazards. "Call before you Dig" – UFPO at 1-800-962-7962	
Construction safety requirements for fall protection			Protection of the public from excavated areas	
Guardrail erection and maintenance			Competent person requirements for excavations	
Installing covers on floor holes			Working in excavations and the hazards associated with it	
Use of fall arrest equipment	YES NO N/A		Safe access requirements	
Fall protection plans	YES NO N/A		Construction safety requirements for excavations	
STD 3-0.1A – Guidelines for Residential Fall Protection	YES NO N/A		Confined space hazards	
Motor Vehicles and Heavy Equipment			**Ladders**	
The use of seat belts while operating company equipment or vehicles			Electrical hazards associated with the use of ladders	
Safety requirements while fueling company equipment or vehicles			Determining the right ladder for the job	
Recharging batteries and the use of jumper cables			Using portable extension ladders to access upper levels	
Inspecting equipment daily to insure horn, back-up alarm, and brakes are in good working condition			Using step ladders properly	
Certification requirements for operating lulls, JLG's and similar equipment	YES NO N/A		Improper uses of portable and extension ladders	

When training is finished, employees are to complete the statement at the end of the checklist confirming attendance at a safety orientation training session. They are also encouraged to make any comments pertaining to the safety training orientation or if they have any safety concerns they wish to discuss with the corporate Safety Coordinator. Safety orientation checklists will be maintained at the main office. In some cases, copies of safety orientation checklists may be provided at the jobsite.

I, _____ understand fully all items discussed during my safety orientation.

Signature of Employee: _____ Date: _____

Signature of Trainer: _____ Date: _____

Employee Comments: _____

_____

_____

_____

_____

Safety Meetings

Purpose

Regular safety meetings provide information to employees, which is necessary in order for them to continue to work safely. Safety meetings are a valuable tool to heighten safety awareness on the jobsite.

Responsibilities

The project manager is responsible for conducting safety meetings with the project superintendent. This can be accomplished as a part of established production meetings. Project superintendents are responsible for weekly safety meetings with all of their employees. It is the responsibility of the project superintendent to see that weekly safety meetings are conducted in an orderly and productive manner. (Superintendent must make sure subcontractors are also performing safety meetings at least on a weekly basis.)

Procedure

Should the Job Superintendent have any Diamond & Thiel Construction Co., Inc. employees on-site, then:

1. During the project managers weekly meeting with the superintendent, the subject of the next meeting with employees must be decided and any information or materials shall be provided to the superintendent.

2. All superintendents must schedule weekly meetings with all employees.

    a. All of the employees must attend each safety meeting and sign in on a Tool Box Talk Attendance sheet.

    b. Attendance sheets must be kept on file at the jobsite and a copy must be forwarded to the main office.

3. Guidelines for safety meetings are as follows:

    a. Safety is the sole purpose of the meeting and other matters shall not be covered.

    b. Safety meetings should be held at least once a week and cover a topic pertinent to the work being performed. The suggested duration of the meeting is ten to fifteen minutes but can exceed that time frame if safety issues need to be addressed.

c. Superintendents shall pass on the information discussed with the employee to the project manager. The project manager shall discuss these issues, if any, with the superintendent and ask for comments and/or suggestions from employee and superintendent.

d. Comments and suggestions should be recorded for discussion at the next meeting with the job superintendent and employee(s).

e. Administrative matters not contributing to safety are not appropriate topics to be discussed at safety meetings.

f. A record should be maintained containing the subjects presented or discussed.

4. Subjects for the safety meetings may come from:

a. The insurance carrier

b. Local safety council

c. General Building Contractors of New York State

d. OSHA regulations

e. Fire department

f. Supervisors / Employees

g. Recent incidents

h. The customer

i. Consultant

Chapter 6

Posting Requirements

Posting Requirements

The following documents shall be posted in a location readily visible to all employees (i.e., inside job trailer, inside lid of a gang box, etc.):

1. OSHA

    a. A poster illustrating industry standard crane hand signals must be posted if any crane or hoisting activities are being performed.

    b. OSHA requires the OSHA 300 form to be posted from February 1 through February 28 each calendar year. Only columns 1- 13 need to be posted.

    c. OSHA Document 2203, The OSHA Poster.

2. State

    a. Employment of Minors, including Schedule of Permitted Hours.

    b. Fair Employment and Discrimination laws.

    c. Minimum Wage information.

    d. Notice of Compliance of Workers' Compensation Benefits.

    e. Notice of Unemployment Insurance.

3. Federal

    a. Occupational Safety & Health Act.

    b. Federal Minimum Wage Notice.

    c. Employee Polygraph Protection Notice.

    d. Equal Employment Opportunity Commission Discrimination.

    e. Family and Medical Leave Act.

The Occupational Safety and Health Act of 1970 provides job safety and health protection for workers by promoting safe and healthful working conditions throughout the Nation. Provisions of the Act include the following:

Employers

All employers must *furnish to* employee's employment and a place of employment free from recognized hazards that ate causing or are likely to case death or serious ham to employees. Employers must comply with occupational safely and health standards issued under the Act.

Employees

Employees *must* comply with all occupational safety and health standards, rules, regulations and orders issued under the Act ha apply to thei r own actions and conduct on the job. The Occupational Safety and Heath Administration (OSHA) the U.S. Department of Labor has the primary responsibility for administering the Act. OSHA issues occupational safety and health standards and Es Compliance Safety and Health Officers conduct jobsite inspections to help ensure compliment with the Act.

Inspection

The Act requires that a representative of the employer and *a* representative authorized by the employees be given at opportunity to accompany the OSHA inspector for tile purpose of aiding the

Where t here is no authorized employee representative the OSHA Compliance Officer must consult with a reasonable number of employees concerning safety and health conditions in the workplace

Complaint

Employees or their representatives have the right to file a complaint with the nearest OHSA office requesting in inspection If they believe unsafe or unhealthful conditions ha in thud workplace OSHA will withhold or request, *names* of employees complaining

The Act provides that employees may not be discharge or discriminated against in any way for filing safety and health complaints of for otherwise exercising their rights under the Act.

Employees who believe they have been discriminated against may file a complaint with their nearest OSHA office witting 30 days of the alleged discriminatory action

Citation

If upon inspection OSHA believes an employer has violated the Act, a citation alleging such violations will be issued to the employer Each citation will specify a lime period within which the alleged violation must be corrected

The OSHA citation must be prominently displayed at or n the place Of alleged violation for lives days or until it is corrected whichever is beer, to wan employees of dangers that may ha there

Proposed Penalty

The Act provides far mandatory civil penalties employer. Of up to $7,000 for each serious violation and for optional penalties of *up* to $7,000 for each nonserious violation.

Penalties of up to $7,000 per day may be proposed for *failure to* correct violations within the proposed time

— end for each day the violation continues beyond the prescribed maid dale. Also, any employer who willfully or repeatedly violates the Act may be assessed penalties of up to $70,000 for each each violation. A minimum penalty of $5.000 may be imposed for each willful violation. A violation of posting requirements can bring a penalty of up to $7,000.

There are also provisions for criminal penalties. Any willful violation resulting in the death of any employee, upon conviction, is punishable **by** a line of up to $250,000 (or $500.000 if the employer Is a corporation), or **by** imprlsoninent for up to six months, or both. A second conviction of an employer doubles the possible term of imprisonment Falsifying records. reports, or applications is punishable by a line of $1 0,000 or up to six months **in jail** or both.

Voluntary Activity

While providing penalties for violations. the Act also encourages efforts by labor and management, before an **OSHA inspection** to reduce workplace hazards voluntarily and to develop and improve safely aid health programs in all workplace. and industries. OSHA's Voluntary Protection Programs recogni ze outstanding efforts of tide nature OSHA has published Safety and Health Programs Management Guidelines to assist employers in establishing of perfecting programs to prevent or control employee exposure to workplace hazards. There are many public and private organizations that ma provide information and assistance in this effort if requested. Also, you local OSHA office can provide considerable help and advice on solving safety and health problems of can refer you to other sources for help such as training.

Consultation

Free assistance in identifying and correcting hazards and In Improving safety and health management Is available to employers, without citation or penalty, through OSHA-supported programs In each State These programs are usually administered by the State Labor or Health department or a State university.

Chapter 7

OSHA Recordkeeping Requirements

OSHA Recordkeeping Requirements

First Aid Treatment

Due to the potential difficulty understanding OSHA's requirements for documenting workplace injuries and illnesses, many contractors frequently include first aid cases on their OSHA 300 log. In doing so, contractors will increase their incidence ratios - ratios which are frequently used by private owners to pre-qualify contractors wishing to do work in their facility - thus damaging their ability to work for more safety-conscious owners.

To remain competitive, it is important to accurately complete your OSHA 300 Form (see attached form). OSHA does not require that first aid cases be recorded on your OSHA 300 log. This outline has been prepared to assist you in meeting OSHA's recordkeeping requirements and to help you understand what a first aid case is. NOTE: OSHA can and will issue fines for underreporting injuries, and severity of injuries, on your OSHA 300 log.

First aid cases include one-time treatment and subsequent observation of minor cuts, burns, splinters, and so forth, which do not ordinarily require medical care even though it may be provided by a physician or registered professional individual. Administration of a single dose of prescription medication on the first visit for a minor injury is first aid. Repeated use of a nonprescription medication, other than antiseptic, is a first aid case.

First aid cases do not include injuries that result in a loss of consciousness, restriction of work or motion, or transfer to another job. If the case is such that medical treatment was provided, or should have been provided, the case is recordable.

NOTE: OSHA 300 forms are required to be maintained at each establishment occupied by a company. By OSHA's definition, a construction project operating for a year or more is considered an establishment and must maintain its own OSHA 300 log.

Examples of First Aid Treatments

Abrasions:

Limited to cleaning wound, soaking, applying antiseptic, medication, and bandaging on first visit. Follow-up visits are restricted to observation and changing bandages.

Bruises:

Limited to a single soaking or applying cold compresses and any follow-up visits for observation of the injury.

Burns, Thermal and Chemical (resulting in destruction of tissue by direct contact):

Limited to cleaning or flushing the surface, soaking, applying cold compresses, antiseptic, medication, and bandaging on first visit. Follow-up visits are restricted to observation, changing

bandages, and nonprescription medication other than antiseptic. Cutting away dead skin (surgical debridgement) is considered medical treatment and is recordable.

Cuts and Lacerations:

Limited to cleaning wound, soaking, applying antiseptic, medication, and bandaging on first visit. Follow-up visits are restricted to observation and changing bandages. Application of sutures, or butterfly adhesive strips or steri-strips in lieu of sutures, is considered medical treatment and is recordable.

Eye Injuries:

Limited to irrigation, removal of foreign material, not imbedded in eye, and one-time treatment for minor corneal scratches and abrasions. Administration of non-prescription medication and single doses of prescription medications.

Inhalation of Toxic or Corrosive Gases:

Limited to removing employee to fresh air and one-time administration of oxygen for several minutes.

Splinters and Puncture Wounds:

Limited to cleaning wound, removing foreign objects by tweezers or other simple techniques, applying antiseptic, medication, and bandaging on first visit. Follow-up visits are limited to observation and changing bandages.

Sprains and Strains:

Limited to soaking, applying cold compresses or use of elastic bandages on first visit. Follow-up visits are restricted to observation and reapplying bandages.

Examples of Diagnostic Procedures Considered First Aid:

- Hospitalization for observation where no medical treatment is performed other than first aid. However, if the employee misses his entire next scheduled shift, the case becomes a Lost Workday Case.
- Visit to a physician or nurse for observation only is first aid.
- X-ray examination for fractures is diagnostic. Where the X-ray is negative, the case is first aid.

Examples of Preventive Procedures Considered First Aid:

- Tetanus shots are preventative and are first aid unless a reaction to the shot necessitates treatment.

Additional Procedures Considered as First Aid Only:

- Using hot or cold therapy
- Drilling of a fingernail or toenail to relieve pressure, or draining fluid from a blister
- Using finger guards
- Drinking fluids for relief of heat disorders

- Removing splinters or foreign material from areas other then the eyes by irrigation

Chapter 8

Incident Investigation & Reporting

Incident Investigation

Purpose

An incident investigation is necessary in order to determine the cause or causes of an incident. The investigation will enable Diamond & Thiel Construction Co., Inc. to take the appropriate measures to prevent similar situations from reoccurring and to protect our interests in case of litigation. All incidents will be investigated including "near miss" incidents. The difference between an incident and a near miss is often a matter of chance. Incidents will be investigated in detail appropriate to the severity of the incident.

When Is an Incident Investigation Conducted?

An incident investigation is conducted as soon as possible after the incident, while the details are still clear in the minds of the parties who observed or who were involved in the incident. As time passes, after the incident, it becomes more difficult to accurately obtain facts, and conditions that may have caused the incident may have changed. A prompt thorough investigation is crucial so the possibility of another incident due to the same faulty procedures or conditions is minimized.

Incidents generally are not caused by a single factor, but rather are the result of several conditions or actions. The purpose of the incident investigation is to gather information, which can improve the safety and health conditions in the work environment.

Incident Investigations

An Incident Investigation Report should be used to document the investigation. Consideration must be given to the types of equipment that may be needed to conduct an incident investigation, including but not limited to a camera and audio recorder or hand held device, measuring tape, notebook, and site control tools (flags, cones, etc.) as appropriate to the job site. It is important that this equipment be available so if an incident occurs the tools needed to do a thorough investigation are in place.

Responsibilities and Training

The Safety Coordinator will be responsible for oversight of the investigation program and will, upon assignment and in advance of a potential incident, train site supervision in first response and investigation procedures and will ensure that necessary equipment is immediately available. Employees will be trained at the awareness level and will be instructed that all incidents, regardless of severity, must be reported.

Investigation Procedures

1. First aid or medical care: The first priority in an incident is to provide first aid or medical care for the individual(s) injured. The next of kin should, in a serious incident, be notified that an incident has occurred.

2. Reporting incidents: Report serious incidents by telephone immediately to the main office. The main office will be responsible for reporting as soon as possible to the host employer, and to the Occupational Safety & Health Administration (OSHA) as follows: A fatality or hospitalization of 3 or more people within 8 hours; in-patient hospitalization of one person, amputation, or loss of an eye with 24 hours. The main office will assess whether the incident entails notification of other regulatory bodies.

3. Documenting the scene: It is important to record the scene of the incident as it exists at the time of the incident. The area should be isolated and restricted to authorized persons. Photographs should be taken and/or sketches drawn. When photographing the incident scene, make sure the camera or hand held device is equipped with a flash, if needed, and that proper film speed is being used. A description of the photograph and the name of the person who took the picture should be put on the back of the picture.

4. Evidence preservation: Conditions change rapidly due to factors such as weather conditions or the necessity to make the area suitable for work to resume. The area must be secured and blocked off from unauthorized personnel until the incident investigation is completed. Site supervision will document the positions of vehicles, people, equipment, tools, etc. at the time of the incident, and will secure witness statements and other paperwork, and will impound relevant materials and equipment.

5. Notes on people and physical conditions: Notes should be taken on physical conditions that may have contributed to the incident. Information on housekeeping, lighting, surface condition of roadways/walkways, visibility, traffic, weather (temperature, precipitation, etc.), defective scaffolding, ventilation, etc., should be recorded. Site supervision must also note the persons (including a description of work assignment, age, medical conditions, etc.) equipment, materials, etc., believed to be involved in the incident.

6. Vehicles: If the incident involved vehicles, measure distances and plot locations of the vehicles, skid marks, equipment, barricades, etc.

7. Injury type: Note the location and type of injury that occurred. The location of the injury would be left forearm, right thumb, lower back, etc.

8. Other notes: Notes should be taken as to where on the project the incident happened and at what time it occurred. Additional notes should be taken on any other related factors.

9. Interviewing employees/public: Trained site supervision and the Safety Coordinator will interview employees and members of the public who witnessed or were involved in the incident separately in an appropriate location away from the scene of the incident. To ensure unbiased testimony, get all sides and interview as many witnesses as possible; they should be interviewed separately. Questions such as: What activities were being done, method used, position of equipment and personnel, and any other unsafe acts observed should be asked. Ask witnesses to provide a detailed written statement to document what they observed. Obtain the names, social security numbers, license numbers, addresses, phone numbers, and insurance carriers of all witnesses. Explain that follow-up interviews will be needed as additional information arises.

10. Investigate employee training: Investigate if hazards and the appropriate safe work practices related to the incident were covered with the employee(s) involved in the incident through orientation, tool box talks, or by other means. Be sure to document any training that was provided that was applicable to work being performed when the incident occurred.

11. Physical and mental condition: Consider physical and mental conditions that may have contributed to the incident. Conditions such as blacking out, drugs or alcohol, medication, and other conditions should be addressed.

12. Maintain contact: Maintain contact with the injured party and their family.

13. Request copies of reports: If the police, emergency rescue squad, or the fire department are on site as a result of the incident, request a copy of their reports. They usually conduct an investigation and information they obtained may be helpful.

14. Information pertaining to the incident: Information pertaining to the investigation should not be provided to anyone (except OSHA, with prior approval from main office). All other interested parties who request information concerning the incident should be informed that an investigation is being conducted and that no information will be available until the findings have been made. Note: The main office must authorize the release of any information pertaining to an incident that occurred at a Diamond & Thiel Construction Co., Inc. jobsite.

15. Litigation: If an incident occurs that is of a serious nature, the incident may end up in litigation. It is important that the investigation be done correctly and documented. If technical matters are involved in the incident in which you do not have sufficient expertise, you should seek the assistance of a specialist.

Interviewing

The interviewer must be complete, correct, and must ask pertinent questions. It is important to listen carefully to the person being interviewed and to record all information that is given. The purpose of the interview is to obtain a comprehensive and accurate account of all pertinent information that relates to the incident under investigation. The interview must be conducted in a professional manner and the person interviewed should be encouraged to describe the incident as they observed it. There are simple questions that should be asked when conducting an interview. These questions are who, what, when, where, how, and why the incident occurred.
Interviews may be the primary source of information in an incident investigation. The interview must

be conducted in a thorough and efficient manner. Guidelines for accomplishing a high quality investigation are as follows:

1. Know where the interview is going to lead. If possible, prepare in advance.

2. Make sure you have an understanding of the equipment or process involved in the incident. This demonstrates knowledge and enables you to ask suitable questions.

3. Schedule interviews to allow for enough time at each interview to ask all questions.

4. Interviews should be held in private so there are no distractions. This allows you to focus your attention on what the interviewee has to say concerning the incident.

5. Be careful not to be overbearing in the tone of your voice or your mannerisms. When speaking to the interviewee use language that the employee can understand.

6. Remember that the purpose of the interview is to obtain information. If possible, avoid asking questions that suggest an expected answer or can only produce an answer of yes or no.

7. Keep control of the interview and let the person being interviewed talk. Keep the conversation from getting away from the subject at hand.

8. If you are interviewing witnesses, let the person describe what they observed. After they have given their description, ask your questions and record both versions. Do not ask leading questions. Allow the individual(s) to tell his/her own story.

9. Avoid using generalizations. Be specific.

10. Evaluate the evidence. Check what witnesses say with the conditions you observed at the incident scene. Investigate all clues and do not overlook any aspect of the incident.

11. Stress that you are not looking to place blame on someone but are seeking the cause to prevent a reoccurrence.

12. Close the interview in a courteous manner. Make sure what was said during the interview was documented and have the statement signed by the person being interviewed. Encourage the person to contact you if any other information concerning the incident comes to mind.

Analyzing the Testimony

When analyzing the testimony, remember that the individuals interviewed are human and are capable of being mistaken or they may be misleading, exaggerating, or withholding information. The investigator should determine how much valid factual evidence exists and how much of the testimony is conflicting. Only substantial testimony should be relied upon when determining the cause of the incident.

Documentation

1. Site supervision, with the guidance of the Safety Coordinator, will complete the Jobsite Incident Report. It will include a summary of the incident supported with photos, witness statements, drawings, etc. The report will describe investigation findings and will outline recommendations for corrective actions that are measureable, with parties responsible for corrective actions identified. Date(s) will be established by which corrective actions must be accomplished.

2. If the owner of the property where the incident occurred does not allow the taking of photographs/video, conduct the investigation without their use and document the owner's request.

3. Prior to taking any pictures/video, determine if the incident scene has been altered for rescue purposes or for any other reason. If the area has been changed since the incident, note what alterations were done and the individual's name and social security number referencing the change.

4. When taking pictures it is beneficial to incorporate a scale for the picture to indicate vertical or horizontal dimension. Obviously this is not always an option, but should be done if possible. A ruler or tape measure will suffice.

5. After developing or printing the photographs, the following information should be attached to or written on the back of each picture:
   a. Employer's name and address.
   b. Location on the jobsite in which the incident occurred.
   c. Month, day, time, and year picture was taken.
   d. A description of what the photograph is identifying.
   e. Signature and social security number of the person who took the picture.

Corrective Procedures

Determining the root cause or causes of an incident or incident is important to prevent similar occurrences from taking place in the future. A root cause analysis must be performed. Once root causes of an incident are identified, a training session will be held to implement new procedures and/or to provide awareness training to all appropriate field, yard, and management staff. Corrective recommendations must be quantifiable, measureable, steps. For example: "Retrain field employees in correct ladder inspection and use by (date)".

Completed incident reports, correspondence, and subsequent training attendance sheets that indicate what training was performed must be filed with the main office.

Jobsite Incident Report

Project

Job Name:		Job Phone:			
Street Address:					
City:		State:		Zip:	

Incident Information

Date and Time of incident:		Location:	
Incident information provided by: (Name, company, date)		Superintendent's Name:	
Description of incident and known injuries:			

Injured Person

Name of Injured:		SSN:		Birth date:	

Street Address:					
City:		State:		Zip:		Phone:	
Taken to medical facility:	Yes	No	Is Yes, by whom:		
Name and Address of Medical Facility:					
Job Title:		Years With Company:		Supervisor:	
Employer:				Phone Number:	
Was a written statement provided by injured: YES NO Was a verbal statement provided by the witness: YES NO				Was written statement filed properly: YES NO Was statement documented: YES NO	

Witness #1

Name:				Phone Number:	
Street Address:				SSN:	
City:		State:		Zip:		Employer:	
Was a written statement provided by injured: YES NO Was a verbal statement provided by the witness: YES NO				Was written statement filed properly: YES NO Was statement documented: YES NO	

Witness #2

Name:				Phone Number:	
Street Address:				SSN:	
City:		State:		Zip:		Employer:	
Was a written statement provided by injured: YES NO Was a verbal statement provided by the witness: YES NO				Was written statement filed properly: YES NO Was statement documented: YES NO	

Witness #3

Name:				Phone Number:	
Street Address:				SSN:	
City:		State:		Zip:		Employer:	
Was a written statement provided by injured: YES NO Was a verbal statement provided by the witness: YES NO				Was written statement filed properly: YES NO Was statement documented: YES NO	

Use additional incident report sheets provided for any additional information pertaining to the incident.

Incident Report Sheet

Project

Job Name:		Job Phone:			
Street Address:					
City:		State:		Zip:	

Incident Information

Date and Time of incident:		Location:	
Incident information provided by: (Name, company, date)		Superintendent's Name:	
Description of incident:			

Chapter 9

Hazard Assessment & Jobsite Safety Inspections

Hazard Assessment & Jobsite Safety Inspections

Diamond & Thiel will perform risk assessments using a Hazard Assessment Matrix (below), Job Hazard Analysis (below), and other tools, and will provide employee training on the use of these tools and on the proper use and maintenance of tools, equipment, and appropriate PPE. The company is committed to active enforcement to achieve compliance with safe systems of work as mandated in Company and host employer permits and procedures. Safe systems of work and risk assessments will be periodically reviewed and updated as necessary.

Prior to undertaking non-routine or especially hazardous tasks, or if there are changes in operations, products, or services, a job hazard analysis will be performed to ensure proper hazard recognition and control. The goal will be to break down tasks into component steps, identify the hazards associated with each step, and identify appropriate engineering, administrative, and personal protective equipment controls.

Frequent and regular jobsite safety inspections (below) are an important part of ongoing hazard and risk assessment. In addition to the inspection responsibilities of project superintendents outlined below, representatives of Diamond & Thiel Construction Co., Inc., our insurance carriers, and professional safety consultants may also perform jobsite inspections.

Subcontractors

Before the job begins subcontractors will perform job hazard analyses to allow hazard recognition and appropriate control measures. Specifically, they will be required as applicable to identify engineering, administrative, and PPE controls for job hazards.

Representatives from subcontractors must attend pre-job and start-up safety briefings held by Diamond & Thiel, the general contractor, and the owner, as required.

Subcontractors will deliver hazard recognition and control safety training to their employees, or will require them to attend Diamond & Thiel's tailgate meetings and new hire orientations.

Subcontractor foremen or their designated competent person will perform frequent and regular inspections of the job site to ensure ongoing compliance with safety policies and procedures. Instances of non-compliance will be documented and submitted to Diamond & Thiel, which will ensure proper response and closure of action items.

Project Superintendent Inspection Responsibilities

The project superintendent shall perform routine inspections on his jobsite. If the project superintendent is unavailable, a competent person who is familiar with the inspection process may be designated to conduct the inspection.

During the inspection, pre-planning should be done with project manager to discuss what safety requirements must be met to perform upcoming construction activities. The pre-planning process is important to address safety hazards prior to employee exposure. In cases where there are questions as to what safety measures are needed, the project superintendent should contact the main office. Available resources will be utilized to identify what safety measures will be taken to ensure employee safety.

Frequency

All jobsites must be inspected by the project superintendent at least once a week. The frequency of inspections may be increased as the job progresses, for specific areas of a job, or for special critical work.

Documentation

Project superintendent will complete the Jobsite Inspection Checklist (below) at the conclusion of each weekly inspection. A copy of the form, which must include any disciplinary action taken against employees, should be forwarded to the main office. Letters sent to subcontractors due to violations observed during a jobsite inspection must include a copy of the safety inspection form describing the violation.

Corrective Actions

If any concerns are observed during the inspection they must be immediately addressed and corrected. Correctives actions must be assigned to one or more specific individuals, must be measurable, and must be accomplished immediately or by a specific date. The employee(s) should be informed of what the violation is and made aware of acceptable work practices. The consequences for repeat or serious safety violations also need to be addressed with the employee(s) in accordance with Diamond & Thiel's Disciplinary Program. If there is a person or party responsible for any observed concern(s), that information must be documented on the inspection report form. All affected parties will as needed participate in remedial training.

Hazard Ranking Matrix

Hazards are ranked for severity and probability based on the matrix below using High (H), Medium (M), or Low (L) based on current site knowledge. Hazards that are not applicable will be left blank.

	Consequence		Probability				
	Property Damage	Injury	Frequent	Likely	Occasional	Seldom	Unlikely
S E V E R I T Y	>$100,000	Fatality	H	H	H	H	M
	>$10,000	Injury Requiring Hospitali-zation	H	H	H	M	L
	>$1,000	Injury Requiring Medical Treatment Beyond First Aid	H	M	M	L	L
	<$1,000	Injury Requiring First Aid	M	L	L	L	L

Biological		**Mechanical**		**Chemical/Radiation**	
	Biting/Stinging Insects		Cuts on equipment/tools		Not applicable
	Biting animals		Pinch points on equipment		Dust, toxic
	Poisonous plants		Burns from equipment		Dusts, nuisance
	Phys. damaging plants		Struck by equipment		Chemicals, corrosive
					Chemicals, explosive
Driving		**Motion**			Chemicals, flammable
	Night driving		Lifting/awkward body positions		Chemicals, oxidizing
	Off-road driving		Struck by vehicle/traffic		Chemicals, toxic
	Urban driving				Chemicals, reactive
	All terrain vehicle	**Personal Safety**			Radiation, ionizing
	Boat		Working late/night		Radiation, non-ionizing
			Working alone	**Gravity**	
Electrical			High crime area		Slip, trip, fall
	Wet environments	**Pressure**			Ladders
	Electrical panels				Scaffolds
	Electric utilities		Utilities (gas, water, etc.)		Fall from height
	Electric power tools		Compressed gas cylinders		Struck by falling objects
Environment			Compressed air/aerosols	**Sound**	
	Heat / Cold		Hydraulic systems		Equipment/tool noise
	Lightning				Traffic noise (vehicles, trains, etc.)
	Inclement weather/ High wind				

Job Hazard Analysis **Diamond & Thiel Construction Company, Inc.**		
Job site:	Date:	Analysis performed by:
Task or Process:	Location of Task or Process:	Page _____ of _____
Step By Step Sequence of Task or Process	**Potential Hazards**	**Controls / Preventive Actions**

Jobsite Inspection Checklist

Contractor: _____

Site: _____ Superintendent: _____

Inspector: _____ Date: _____

This checklist is to be used during weekly jobsite safety inspections. Check off the items below where employees' activities and jobsite conditions are in compliance with OSHA's and jobsite safety standards. Items that are not in compliance should be explained on the bottom of this page along with a description of abatement measures taken to correct any problems. Also indicate if any disciplinary action was taken as a result of safety infractions.

General	**Check**		**Welding and Cutting**	**Check**
Work areas are free of debris. Good housekeeping exists at the jobsite.			Fuel gas tanks are labeled, gauges and hoses are free of defects.	
Mandatory posting requirements are provided at the jobsite trailer.			If arc welding activities are being performed, screening is provided to shield arc.	
Company safety program, hazard communication program and SDS's are provided at trailer.			When being stored, oxygen cylinders are separated from combustible cylinders and material by 20 ft.	
Hazard chemical list is complete and up to date. List is posted at the jobsite trailer			**Electric**	
Safety program, hazard communication program and SDS's of subs are provided at jobsite trailer.			3-wire construction grade cords are being used that are free of damage or defects.	
All Diamond & Thiel Construction Co., Inc. employees have participated in a weekly tool box talk.			Ground fault circuit interrupters are provided	
Emergency phone numbers are posted.			Panel boxes are provided with a cover. No knockouts or blanks are missing from panel.	
No suspect materials have been encountered.			If overhead power lines exist, have measures been taken to address the hazard.	
Personal Protective Equipment			**Scaffolding**	
Hard hats are being worn by all employees			Does a competent person exist?	YES NO N/A
Safety glasses			Safe access is provided to all working levels.	
Ear protection provided			Guardrails are provided on working levels of 10 ft. or more in height.	
If a respirator is used, was the employee medically evaluated and fit tested within the last year?	YES NO N/A		Bases are provided on scaffold frame legs and mudsills (2x10 minimum) are provided.	
Protective clothing and equipment provided as per SDS's or task being performed.			Working platforms are fully planked.	
Fire Protection			Scaffolds are anchored properly.	
Safety cans are used to store gasoline. Plastic can for gasoline storage is prohibited.			Guardrails are maintained at loading areas.	
A fire extinguishers is provided for every 3000 sq. ft. of protected building.			**Fall Protection**	
Fuel storage areas are provided with an extinguisher rated 20-B:C or greater.			Guardrails provided and structurally sound.	

Burn permits up to date where necessary.			Floor holds covered, secured, and labeled "hole" or "covered".	
Propane is not stored inside. Hose are not exposed to damage.			Fall arrest systems properly implemented.	
Propane storage areas have "no smoking" signs posted and are barricaded by highly visible fence.			Upcoming fall hazards addressed and planned for.	
Tools	**Check**		**Excavations**	**Check**
Guards are provided for tools. Guards are not being secured in the up position.			Underground installations accounted for by contacting UFPO at 1-800-962-7962	YES NO N/A
Tools being used are free of damage or defects and the proper tools are being used for the job.			A competent person for excavations is on site.	
Operators of powder-actuated tools have a card indicating they have been trained in its use.			Daily inspections are being performed by a competent person.	
Motor Vehicles and Heavy Equipment			Excavation or trench is free of water, if not, are measures being taken to address and correct hazard?	YES NO N/A
Operators are wearing seat belts unless no roll over protection is provided.			Safe egress is provided from the excavation and travel distance to a ladder does not exceed 25 ft.	
Operators of lulls, JLG's, and similar equipment are certified by their employer as an operator.	YES NO N/A		Trench is sloped or shored properly as per the soil type.	
Backup alarms, horns, brakes are operational			Trench box is being used properly and employees are working inside protected areas.	
Cranes			**Ladders**	
Crane operator is licensed with New York State			Ladders used to access an upper level extend 3 ft. past that level and are secured from movement.	
Crane inspections are performed by the operator daily. Inspection information is on-site.			Portable extension ladders are used at a ratio of 4:vertical to 1: horizontal.	
Monthly state inspections are being performed and the annual federal inspection is complete.			Step ladders are not being used in the closed position.	
Accessible areas within the swing radius of the crane is barricaded to prevent employee access.			The top step or top of step ladders are not being used to work from.	
An illustration of ANSI hand signals is posted at the jobsite.			Ladders used as designed. Planks are not supported at both ends by ladders to create a work platform.	

Comments:

Chapter 10

Jobsite Safety Rules

Jobsite Safety Rules

A. General Safety Rules

1. Stop work and report unsafe conditions/acts to your supervisor.
2. Working alone: Diamond & Thiel employees who are performing high hazard tasks, including but not limited to confined space entry and elevated work, may not work alone. See your supervisor for assistance as appropriate.
3. The use, possession, or sale of alcohol or illegal drugs is prohibited.
4. If asbestos, lead, or PCBs or other potentially hazardous materials are encountered or suspected during operations, stop work immediately and notify a supervisor.
5. Be aware of the emergency response plan. Know the alarm signals, evacuation routes, and locations of emergency numbers.
6. All injuries, no matter how minor, should be immediately reported to the superintendent.
7. Do not enter barricaded areas and obey all warning signs.
8. Always remove nails from scrap lumber before stacking.
9. Do not stand under or beside suspended loads.
10. Horseplay of any kind is forbidden.
11. Firearms and weapons are forbidden.

B. Personal Protective Equipment (PPE)

1. Supervision will assess the hazards of the work site to determine which types of personal protective equipment are required; will ensure that employees have the requisite training in the use and maintenance of PPE; and will ensure that PPE is inspected, used, and maintained in a safe, reliable, and sanitary condition, whether employee-owned or provided by Diamond & Thiel.

2. Approved hardhats in good condition, shall be worn at all times during work hours on any jobsite that includes overhead work or use of elevated equipment.

3. All employees must wear approved safety glasses at all times on all Diamond & Thiel Construction Co., Inc. projects regardless of size. There are no exceptions to this policy. Failure of any supervisor to enforce this policy on a daily basis can result in disciplinary action/or dismissal.

4. Metal hard hats should never be worn near energized overhead power lines or other high voltage sources.

5. ANSI Z87.1 approved eye protection should be worn whenever operations present potential eye or face injury from physical, chemical, or radiation agents.

6. Additional protection such as face shield and goggles should be worn while performing high hazard tasks including grinding, chipping, overhead drilling and working with caustics.

7. Gas and electric welding and cutting require the use of burning goggles or a welder's hood with

lenses having the proper color density.

8. Earplugs should be worn in high noise-level areas and when using certain tools and equipment.

9. Approved safety shoes/boots in good condition should be worn at all times.

10. Where hand protection is needed, work gloves in good condition and suitable for the task to be performed should be worn.

11. Respirators are required in certain areas and while performing certain types of work. The type of respirator selected should be based on the requirements of the task at hand and applicable SDS.

12. PPE Training will include: when PPE is necessary, what PPE is necessary; how to properly don, doff, adjust & wear PPE; the limitations of PPE; the proper care, maintenance, useful life & disposal of PPE. Retraining of the employee will be done when the workplace changes, the type of PPE changes, or when the employee demonstrates lack of use, improper use, or insufficient skill or understanding. Training certification will include the employee name, the dates of training, and training content.

13. PPE shall be maintained in a sanitary and reliable condition. Damaged or defective PPE SHALL NOT be used. It must be discarded or removed from service until repaired. The Company is responsible for the adequacy, maintenance, and sanitation of employee-owned equipment.

14. PPE is selected based on a written hazard assessment. The hazard assessment must indicate a determination if hazards are present or are likely to be present, which necessitate the use of PPE; it will include the certifier's name, signature, date(s) & identification of assessment documents.

15. PPE will be fitted to individual employees, including proper donning, doffing, cleaning, and maintenance.

C. Housekeeping

1. Materials must be kept in neat stockpiles for easy access. Aisles must be kept clear of loose materials, tools, cords, and waste.

2. Remove waste from site on a frequent basis and dispose of it in a suitable manner. Failing to maintain a clean work area will not be tolerated and means will be taken to correct the condition.

3. Protruding nails must be removed from material and forms. Stack clean lumber in orderly piles.

D. Tools

Supervision will assess the need for eye and face protection in connection with tool use.

1. Hand Tools
   a. Every tool is designed for a certain job and must only be used for that purpose.

b. Keep tools in peak condition. Worn tools are dangerous.
c. Don't force tools beyond their capacity or use cheaters to increase leverage.

2. Portable Electrical & Power Tools
   a. Do not use power tools unless you are completely familiar with them.
   b. Before using a power tool, examine it for damaged parts, loose fittings, frayed or cut electric cords. Tag and remove defective tools from service.
   c. Do not use tools with improper or damaged guards, or with guards removed.
   d. When using power tools make sure Ground Fault Circuit Interrupter Protection (GFCI) is provided.
   e. Use bits and blades designed to handle the RPM's of the tool in use.

3. Powder Actuated Tools
   a. Only trained and qualified people may use power actuated tools. Training cards must be provided for employees indicating the training was completed.
   b. Eye, face, and hearing protection must be worn by operators.
   c. Tool must remain unloaded until ready for use. Do not leave loaded tool unattended.
   d. Do not drive fastener into hard or brittle material, or into material it will pass through.

4. Pneumatic Tools
   a. Use the proper hos and fittings of the correct diameter, and designed to resist abrasion
   b. Check hoses regularly for cuts, bulges, and abrasions, and tag out of service if encountered
   c. Do not operate the tool at a pressure above the manufacturer's rating
   d. Do not use compressed air to blow debris or to clean dirt from clothes

5. Abrasive Wheel Tools
   a. Ensure that guarding is intact and do not remove
   b. Inspect and perform a ring test before a new abrasive wheel is mounted
   c. Ensure that spindle speed does not exceed the maximum operating speed marked on the wheel

6. Tool ergonomics
   a. Maintain neutral wrist position
   b. Keep the tool and the work close enough to the body to prevent undue back stress
   c. Vary tasks to prevent repetitive motion injuries
   d. Report numbness, pain, or other symptoms related to tool use promptly to supervision

E. Electrical Safety

1. Ground fault circuit interrupters must be used for electrical tools and equipment. When using an extension cord off permanent power, the extension cord is considered to be temporary power and therefore must have GFCI protection.

2. Examine all cords prior to use. Cords that are frayed, worn, or contain exposed wires must not be used. Damaged cords must be tagged and removed from service immediately.

3. All cords must be of the three-wire type and designed for hard or extra-hard usage. Flat yellow extension cords and Romex extension cords are prohibited.

4. All live electrical installations, such as receptacles, switches, and panel boxes, must be protected by a faceplate or cover. Cardboard is not an acceptable cover.

5. Bulbs used for temporary lighting must be covered by protective cage guards.

6. Cords must be kept clear of walkways and other locations where they may be subject to damage or present a tripping hazard.

7. Protect cords from foot and vehicle traffic, and sharp corners and edges.

8. All electric equipment and materials must be of an approved type.

9. All plugs, outlets, switches, and panel boxes must be installed according to the national electric code. This includes assuring that receptacle boxes are permanently affixed, Romex type NM cable is not used in damp or wet locations, and that temporary wiring is located where it will not be subject to damage.

10. Only qualified workers must be allowed to perform any type of electrical work.

11. All ground fault circuit interrupters must be inspected on a regular basis.

12. Receptacles must be tested for polarity and continuity of the ground. Receptacles whose polarity is reversed or whose ground is not continuous must be tagged out until repaired.

13. Missing knockouts inside panel boxes, on receptacle boxes and on all other equipment containing live parts must be covered or otherwise protected.

F. Lockout Tagout

- See Lockout-Tagout Program for specific rules and procedures.

1. Locks and tags must be used to prevent operation of a switch, valve, or piece of equipment in cases where someone may get hurt or equipment may be damaged.

2. Never operate any tagged-out piece of equipment.

3. Place your lock personally; never have somebody else do it.

4. Do not remove someone else's tag.

5. All locks and tags must be labeled to identify their owner.

6. Follow all switching and locking procedures to remove a piece of equipment from service.

G. Material Handling, Storage and Disposal

1. By Hand
   a. Know the weight of any object to be handled. If it is too heavy or bulky, get help.

   b. Establish firm footing, keep your back straight and lift with your legs. Lift gradually; do not jerk or twist. Reverse the motion when setting the object down.

   c. Know the weight of the object to be handled, and the capacity of the equipment you intend to use.

   d. When placing blocks under raised loads, make sure blocking material is large enough to support the load safely. Additionally, ensure that the load is not released until employees have clearly moved away from the load.

2. Storage
   a. Store materials so as not to block exits, aisles and passageways, and access to fire extinguishers and electrical panels.

   b. Materials stored in tiers must be secured to prevent sliding, failing, and collapse.

   c. Materials stored inside must not be placed within 6 feet of any hoistway or inside storage area, or within 10 feet of an exterior wall that does not extend above the materials stored.

   d. Brick stacks shall not be more than 7 feet in height. Loose brick stacks shall be tapered back 2 feet in every foot above 4 feet level.

   e. When masonry blocks are stacked higher than 6 feet, measures must be taken to prevent employee exposure. A fence should be provided.

   f. Lumber must not be stacked more than 16 feet high if it is handled manually; 20 feet is the maximum stacking height if a forklift is used.

   g. Bags and bundles must be stacked in interlocking rows to remain secure. Bagged material must be stacked by stepping back the layers and cross-keying the bags at least every 10 feet.

   h. Drums, barrels, and kegs must be stacked symmetrically. If stored on their sides, the bottom tiers must be blocked to keep them from rolling. If stored on end, put planks, sheets of plywood, or pallets between each tier to make a firm, flat, stacking surface.

   i. Nails must be removed from used lumber prior to stacking, and from formwork being stripped.

3. Rigging
   a. Slings must be inspected before use.

b. Slings and other rigging equipment must be removed from service if damage or defects are visible.

c. Slings must not be shortened with knots, bolts, or other makeshift devices.

d. Slings must not be loaded beyond their rated capacity, according to the manufacturer's instructions.

e. Job or shop hooks and links, or makeshift fasteners, formed from bolts, rods, or other such attachments must not be used.

f. When wire rope clamps are used for eye splices, the U-bolt portion of the wire rope clamp shall be so applied so that the "U" section is in contact with the dead end of the wire rope. The saddle portion of the clamp must be on the live end of the wire rope. Make sure the proper number of clamps is provided for the gauge of wire rope being used. Refer to the diagram on the following page.

g. Refer to table 1 in following these instructions. Turn back specified amount of rope from thimble or loop. Apply first clip one base width from dead end of cope. Apply U-Bolt over dead end of wire rope live end rests in saddle. Tighten nuts evenly, alternate from one nut to the other until reaching the recommended torque.

h. When two clips are required, apply the second clip as near the loop or thimble as possible. Tighten nuts evenly, alternating until reaching the recommended torque. When more than two clips are required, apply the second clip as near the loop or thimble as possible, turn nuts on second clip firmly, but do not tighten. Proceed to Step 3.

i. When three or more clips are required, space additional clips equally between first two - take up rope slack - tighten nuts on each U-Bolt evenly, alternating from one nut to the other until reaching recommended torque.

Table 1

Clip Size Inches	Minimum No. Of clips	Amount of Rope to Turn Back in Inches	* Torque in Ft. Lbs.
1/8	2	3-1/4	4.5
3/16	2	3-3/4	7.5
¼	2	4-3/4	15
5/16	2	5-1/4	30
3/8	2	6-1/2	45
7/16	2	7	65
½	3	11-1/2	65
9/16	3	12	95
5/8	3	12	95
¾	4	18	130
7/8	4	19	225
1	5	26	225
1-1/8	6	34	225

1-1/4	7	44	360
1-3/8	7	44	360
1-1/2	8	54	360
1-5/8	8	58	430
1-3/4	8	61	590
2	8	71	750
2-1/4	8	73	750
2-1/2	9	84	750
2-3/4	10	100	750
3	10	106	1200
3-1/2	12	149	1200
If a pulley (sheave) is used for turning back the wire rope, Add one additional clip.			
* The tightening torque values shown are based upon the threads being clean, dry, and free of lubrication.			

IMPORTANT

Apply first load to test the assembly. This load should be of equal or greater weight than loads expected in use. Next, check and retighten nuts to recommended torque. In accordance with good rigging and maintenance practices, the wire rope end termination should be inspected periodically for wear, abuse, and general adequacy.

If a greater number of clips are used than shown in the table, the amount of turnback should be increased proportionately.

H. LPG Liquefied Petroleum Gas

1. Containers must be placed upright on firm foundations or otherwise firmly secured.

2. Storage of LPG within buildings is prohibited.

3. Storage locations must have at least one approved portable fire extinguisher, rated not less than 20-B:C.

4. A "No Smoking" sign must be posted at LPG storage areas.

5. LPG containers must be separated from oxygen cylinders a minimum distance of 20 feet or by a noncombustible barrier at least five feet high having a fire-resistance of at least one-half hour.

6. Take precautions to protect LPG hoses from damage caused by equipment, tools and employees.

7. Storage of LPG outside of buildings:
   a. Propane tanks shall be located away from the building in accordance with the following:

Quantity of LPG Stored	Distance (feet away from building)
500 lbs. or less	0

501 to 6,000 lbs.	10
6,000 to 10,000 lbs.	20
over 10,001 lbs.	25

8. LPG containers stored next to roads or in the areas where vehicles and heavy equipment are in use shall be barricaded or otherwise protected from damage.

I. Welding & Cutting

1. General
   a. You must be instructed in the safe use of welding equipment before using it.

   b. Each welder is responsible for containing sparks and slag and/or removing combustibles to prevent fire.

   c. All employees engaged in welding and burning operations must use a face shield, goggles, or appropriate welding helmet and welding gloves.

   d. No arc or flame welding operation is permitted in areas where the application of flammable paints is taking place or where combustible dust or flammable liquids are present.

   e. A suitable fire extinguisher must be located in welding areas at all times.

   f. When practical, objects to be welded, cut, or heated shall be moved to a designated safe location or, if the object to be welded, cut, or heated cannot be readily moved, all movable fire hazards in the vicinity shall be taken to a safe place, or otherwise protected.

2. Oxyacetylene Torches
   a. All connections must be clean and free from grease and oil.

   b. Hoses must not be laid across traffic areas.

   c. Where a special wrench is required to operate the acetylene cylinder valve, the wrench must be kept in position on the valve to allow for emergency shutoff.

   d. For quick closing, valves on fuel gas cylinders must not be opened more than one and a half turns.

   e. Check valves and flash arrestors must be located at the torch.

3. Electric Arc Welders
   a. When electrode holders are left unattended, the electrodes must be removed and the holders placed or protected so that they cannot make contact with each other, conductive objects, or

people.

b. Arc welding and cutting operations must be shielded by noncombustible or flameproof shields to protect fellow employees from direct arc rays.

c. All welding cable must be insulated completely. Any splices or repairs must have insulation with a resistance equal to or greater than the original insulation. No repairs are permitted within 10 feet of the electrode holder.

d. Insulated boot covers or other suitable protection must be provided to protect terminals where welding cables are connected to arc welder.

4. Compressed Gas Cylinders
   a. Valve protection caps must be in place when compressed gas cylinders are not in use.

   b. Cylinder valves must be closed when work is finished and when cylinders are empty or moved.

   c. Compressed gas cylinder gauges must be in good working order.

   d. Compressed gas cylinders must be secured in an upright position at all times, except if necessary for short periods of time when cylinders are actually being moved or carried.

   e. Cylinders must be kept at a safe distance or shielded from welding and cutting operations. Cylinders must be placed where they cannot become part of an electrical circuit.

   f. When oxygen cylinders are stored, they must be separated from other fuel gas or highly combustible materials by 20 feet or by a noncombustible barrier (a wall at least 5 feet tail with a half hour resistance).

J. Stairways & Ladders

1. General
   a. A stairway or ladder must be provided at all points of access where there is a change in elevation of 19” or more and no ramp, runway, sloped embankment or personnel hoist is provided.

   b. Diamond & Thiel employees may only use ladder that are compliant with OSHA/ANSI specifications. Ladder rungs, cleats, and steps must be parallel, level, and uniformly spaced when ladders are in use.

2. Stairways
   a. Stairways shall be kept free of hazardous projections such as nails and screws.

   b. Slippery conditions on stairways shall be eliminated before the stairways are used.

   c. Stairways greater than 30” high or with four or more risers must be equipped with a stair-rail

system along unprotected sides or edges.

d. Stairwell system toprails must be positioned between 36 and 37 inches high (in line with the face of the riser at the forward edge of the tread) and be capable of withstanding a 200 lb. load applied in a downward and outward direction. Midrails must be positioned in-between.

e. Stairways greater than 30" high, or with four or more risers, that do not have an unprotected edge must be provided with at least one handrail. Handrails must be positioned between 36 and 37 inches high as mentioned above. Handrails must maintain a clearance of 3 inches between the inside of the handrail to the wall.

f. A platform must be provided wherever a door opens directly into a stairway. The platform must extend 20" beyond the swing of the door and be protected by a standard guardrail system. This includes doors to field offices and storage trailers.

g. Except during construction, pan treads, stairs, and landings shall be filled with wood or other solid materials, and shall be installed the full width and depth if the stairs are going to accommodate any other foot traffic.

3. Ladders
   a. Do documented inspection of ladders before use and after any event that could affect the condition of a ladder. Ladders with broken or missing rungs, cleats or steps, broken or split rails, or corroded parts must be tagged out and removed from the jobsite immediately.

   b. Ladders used to access an upper floor or platform must extend three feet above the upper landing surface.

   c. When in position, a ladder must be securely tied at the top to prevent slipping or secured at the base by a fellow employee.

   d. Portable ladders must be erected at a ratio of 4:1: For every four feet of working length of the ladder, the base will be placed one foot from vertical.

   e. The area at the top and bottom of ladders must be kept clear at all times.

   f. Always face a ladder when ascending or descending and maintain at least three points of contact with the ladder at all times (example: two feet and one hand).

   g. Do not carry objects that could cause you to fall or that could cause an injury when moving up or down ladders.

   h. Make sure ladders are free from ice, snow, mud, or other slippery materials before use.

   i. Never use a ladder in a horizontal position as a platform or scaffold.

   j. A double cleated ladder or two or more separate ladders shall be provided if ladders are the only means of access/exit from a working area of 25 employees, or the ladder serves

simultaneously two-way traffic.

k. Ladders shall be used only for the purpose for which they were designed.

l. Ladder rungs shall not be used to support the ends of planks or other similar work platforms.

m. Ladders shall not be loaded beyond the maximum intended load for which they were built, nor beyond their manufacturer's rated capacity.

n. Ladders must be placed on a stable, level surface. Never try to gain elevation by placing a ladder on drums, crates, buckets, concrete block, etc.

4. Step Ladders
   a. Do not use ladders in the folded position, as a straight ladder would be used. Open the legs and secure the locking mechanism.

   b. Do not stand on the top or top step of a stepladder.

   c. Step ladders shall be used only for the purpose for which they were designed. Rungs between stepladders shall not be used to support the ends of planks or other similar work platforms.

K. Hazard Communications

- See attached Hazard Communication Program for specific information.

1. Be aware of hazardous chemicals being used on site.

2. Know where the hazard communication program, hazardous materials list and safety data sheets (SDS) are maintained on site.

3. Employees shall not work with a material until they have been informed of the hazards they may be exposed to and the steps personnel may take to protect themselves. Be knowledgeable of appropriate work practices, emergency procedures and personnel protective equipment when working with hazardous chemicals and refer to the Safety Data Sheet (SDS) for additional information.

4. Employees shall be willing to share their knowledge of Hazard Communication and of materials with which they work with other employees and officials.

5. Notify your supervisor if you bring hazardous materials on site.

6. The integrity of labels on the worksite shall be maintained by all personnel and should contain the chemical name and associated hazards.

L. Fire Protection and Prevention Program

1. Employees shall know where fire extinguishers are located and know how to operate them. Employees will receive training in types of extinguishers, inspection, and the "PASS" method of addressing a fire.

2. Only approved containers and portable tanks shall be used for the storage and handling of flammable and combustible liquids. Refer to SDS (Safety Data Sheet) for approved container type).

1. One 2A rated fire extinguisher shall be present for every 3000 square feet of protected building area. Travel distance to the nearest fire extinguisher shall not exceed 100'.

2. Firefighting equipment shall be conspicuously located.

3. Materials shall not be stored in front of fire extinguishers. Access to fire fighting equipment shall be maintained at all times.

4. Fire extinguishers shall be inspected on a regular basis and serviced annually.

5. No more than *25* gallons of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet. No more than 60 gallons of flammable or 120 gallons of combustible liquids shall be stored in any one-storage cabinet.

6. Flammable liquids shall be kept in closed containers when not actually in use.

Flammable Liquid - Having a flashpoint below 100 Degrees Fahrenheit.
(Refer to SDS)

Combustible Liquid - Having a flashpoint at or above 100 Degrees Fahrenheit.
(Refer to SDS)

M. Motor Vehicles

1. General
   a. Seat belts shall be worn at all times by employees operating or riding on motor vehicles or machinery. (Exception: equipment designed for standup operation.)

   b. Vehicles used to transport employees shall have seats firmly secured and adequate for the number of employees to be carried. Employees shall not ride on fenders or running boards of equipment.

   c. Horns shall be in working order on all bi-directional machinery.

   d. Motor vehicle equipment with an obstructed view to the rear shall not be operated unless the vehicle has a reverse signal audible above the surrounding sound or the vehicle is backed up

only when an observer signals that it is safe to do so.

e. Operators of all motor vehicle equipment are responsible for the safe operation of their vehicle at all times.

2. Forklift and Lull Operation
   a. Operators of forklifts and lulls must be certified to insure they are properly trained to operate the equipment.

3. Heavy Equipment Operation
   a. Heavy equipment such as backhoes and dump trucks will only be operated by authorized personnel.

   b. Unauthorized persons are not permitted to ride in the cabs of heavy equipment.

   c. Lower any movable buckets when you stop the vehicle.

   d. Always lockout/lockout any movable parts if it is being inspected or having maintenance.

   e. Report all operating malfunctions immediately.

   f. If the operator's compartment is designated a high noise level area; hearing protection must be worn.

   g. Maintenance or repairs must not be done with the engine running.

N. Cranes

1. Crane usage shall comply with the manufacturer's specifications and limitations where available.

2. As per New York State Code Rule 23, crane operations performed in New York State must have an operator who is licensed with the Department of Labor. Operators must posses a card indicating that they are licensed with the New York State

3. Rated load capacities recommended operating speeds, and special hazard warnings or instructions shall be conspicuously posted on all equipment. Instructions or warnings shall be visible from the operator's station.

4. Equipment shall be inspected daily by a competent person prior to and during use. A complete inspection must be performed annually. Documentation of daily, monthly, and annual inspections must be available upon request.

5. Accessible areas within the swing radius of the crane shall be properly barricaded.

6. A fire extinguisher rated 5:BC or better must be provided in the cab of the crane.

7. No one is permitted to ride loads.

8. Never operate equipment closer than 2 feet from the edge of an excavation. Cranes shall not be left near the edge of excavations or in an area that may become unstable.

9. Minimum clearance between power lines rated 50 KV. and below and any part of a crane shall be 10'. For power lines rated greater than 50 KV, the clearance shall be 10' plus 0.4" for every 1 KV. above 50 KV.

10. The operator shall avoid swinging load over workers and bystanders.

11. Taglines shall be used on all loads and shall be insulated to prevent shock.

12. Only one person shall be permitted to give signals to the operator.

NOTE: A copy of the standard hand signals is located on the following page. A copy of these hand signals must be posted at the jobsite trailer.

O. Concrete and Masonry Construction

1. All protruding reinforcement steel, onto or into which employees could fall shall be guarded to eliminate the hazard of impalement.

2. No employee shall work under concrete buckets while buckets are being elevated or lowered into position.

3. Formwork shall be designed, fabricated, erected, supported, braced, and maintained so that it will be capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork.

4. A limited access zone shall be constructed when a masonry wall is being constructed.

5. The limited access zone shall be established prior to the construction of the wall.

6. The limited access zone shall be equal to the height of the wall to be constructed plus four feet, and shall run the entire length of the wall.

7. The limited access zone shall be established on the side, of the wall without scaffolding.

8. The limited access zone shall be restricted to entry by workers actively engaged in constructing the wall. No other workers shall be permitted to enter.

9. The limited access zone shall remain in place until the wall is adequately supported.

10. All masonry walls over 5 feet in height shall be adequately braced unless the wall is supported by other means. The bracing shall remain in place until permanent supporting elements of the structure are in place.

11. Workers shall frequently wash exposed skin to prevent irritation from cement dust.

12. If respirators are used while working, employees must be part of Diamond & Thiel Construction Co., Inc. respiratory protection program.

P. Illumination

1. Adequate lighting conditions will be maintained in accordance with Subpart D of 29 CFR 1926.
2. Employees will inform supervision if they feel that they do not have adequate lighting to perform job tasks.
3. Temporary lighting bulbs will be protected with approved cages.
4. Tinted safety glasses will not be used indoors. (This does not apply to UV protection in connection with hot work.)

Chapter 11

Fall Protection

Fall Protection

Purpose

To establish fall protection requirements for Diamond & Thiel Construction Co. Inc. employees performing work activities on a horizontal or vertical walking/working surface that is 6 feet or more above lower levels. These requirements do not pertain to ladder use, working from scaffolds, or steel erection activities. These activities have their own fall protection criteria.

Responsibilities

The project superintendent is responsible for making sure that measures are taken to provide for fall protection. In the event of a fall-related incident, the Safety Coordinator (SC) will conduct an incident investigation and will update Diamond & Thiel's fall protection practices, procedures, and training as needed to prevent a recurrence.

Duty to Have Fall Protection

1. Employees on horizontal or vertical walking or working surfaces in excess of 6' above lower levels shall be protected from falls by one or more of the following:
   a. Guardrail Systems

   b. Safety Net Systems

   c. Personal Fall Arrest Systems (includes harnesses, safety lines, retractable lifelines, anchorage points, etc.)

2. Employees engaged in precast concrete, residential construction, or leading edge work 6' above lower levels should be protected by one or more of the systems listed above unless it can be demonstrated that the use of these systems is infeasible or creates a greater hazard. In these circumstances a site-specific fall protection plan will be developed by a qualified person to cover the work activities. (See Appendices A and B)

3. Employees working in hoist/loading areas 6' or more above lower levels shall be protected from falls by a guardrail system or personal fall arrest system. If guardrails are used, a removable system is recommended. In some circumstances, both a guardrail system and a personal fall arrest system will need to be utilized to safely perform activities at material handling areas.

4. Employees working on formwork or reinforcing steel six feet or more above adjacent levels shall be protected by personal fall arrest systems, safety net systems, or positioning device systems.

5. Ramps, runways, and other walkways 6 feet or more above lower levels shall be protected by guardrail systems. If multiple planks are used to create a walkway, cleats should be provided to

prevent displacement and uneven deflection.

6. Excavations six feet or more in depth whose edges are not easily seen shall be protected by guardrail systems, fences, or barricades. If fences or barricades are used, they musts be positioned at least six feet back from the excavation edge unless they are capable of withstanding the strength requirements for guardrail systems.

7. Wells, shafts, pits and similar excavations shall be protected by guardrail systems, fences, barricades or covers. Excavations six feet or more in depth whose edges are not easily seen shall be protected by guardrail systems, fences, or barricades. If fences or barricades are used, they must be positioned at least six feet back from the excavation edge unless they are capable of withstanding the strength requirements for guardrail systems. Covers must meet the requirements provided in the Fall Protection Systems section.

8. Overhand bricklaying operations must be protected by guardrail systems, safety net systems, personal fall arrest systems, or shall take place in a controlled access zone. Employees reaching more than 10" below the level on which they are working shall be protected by a guardrail system, safety nets, or fall arrest system.

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

9. Wall openings whose inside bottom edge height is 39", and whose outside edge height is six feet or greater shall be protected by guardrail systems, safety nets, or fall arrest systems. Areas such as window openings and door openings leading to a porch area must be checked to ensure fall protection is provided.

10. Low-slope roofs with unprotected sides and edges greater than six feet above a lower level shall be protected by guardrail systems, safety nets, slide guards, personal fall arrest systems, or warning line systems in conjunction with a safety monitor. A low slope is a roof having a slope less than or equal to 4 in 12 (vertical to horizontal). See the Fall Protection Systems section for specific requirements.

11. Steep roofs with unprotected sides and edges greater than six feet shall be protected by guardrail systems, safety nets, slide guards, or personal fall arrest systems. A steep roof is a roof having a slope greater than 4 in 12 (vertical to horizontal). See the Fall Protection Systems section for specific requirements.

12. Employees engaged in built-up roofing work on roofs with a ground-to-eave height greater than 6' shall be protected by one of the following:

    a. Motion Stopping System(s) (MSS) - MSS are fall protection using any one or more of the following: standard guardrails, scaffolds or platforms with guardrails, safety nets, and safety harness systems.

b. Warning Line Systems installed in accordance with OSHA standards.

c. Safety Monitoring System on roofs less than 50' wide where no mechanical equipment is being used.

13. Employees engaged in precast concrete erection at heights greater than six feet shall be protected by guardrail systems, safety nets, or personal fall arrest systems unless the use of these systems is infeasible or creates a greater hazard, in which case a written fall protection plan must be implemented. (See Appendix A)

14. When Diamond & Thiel purchases equipment and materials for use as part of a fall protection system, applicable ANSI and ASTM requirements will be met.

Floor Holes

1. Floor holes that employees may fall through shall be protected by guardrail systems, covers, or personal fall arrest systems.

2. Floor holes, which employees may trip in or step into shall be protected by covers.

3. Floor holes through which objects may fall shall be protected by covers.

Fall Protection Systems

1. Guardrail Systems

   a. Toprails shall be installed between 39 and 45 inches in height and shall not deflect below 39 inches under an outward and downward force of 200 pounds.

   b. Midrails shall be installed midway between the toprail and the walking/working surface. Midrails must be able to withstand 150 pounds of force applied in an outward and downward direction.

   c. If wire rope is used for toprails, it shall be flagged every 6 feet with highly visible materials. Wire rope toprails and midrails shall be at least 1/4" diameter.

   d. If 2x4's are used for guardrails, it is recommended that posts do not exceed 8 feet on center. Lumber used in the construction of guardrails shall be sound and shall not contain large or loose knots. All nails shall be driven in completely. Double-headed nails are not permitted. Using sinker nails or screws is recommended.

   Note: Prior to erecting any guardrail system, consider what height the guardrail should be positioned, taking into account the height of a slab that may be poured. Also consider how access and loading activities will be done so measures can be taken to accomplish these activities in a safe manner. Also consider where guardrails should be positioned so they do not interfere with future

operations.

2. Covers

   Covers shall be capable of withstanding two times the weight of any object or employee, which may pass over them, and be color coded or marked "hole" or "cover." Covers also must be secured from movement. Securing the cover to prevent access to a manhole, vault, or other similar opening is suggested where practical.

3. Controlled Access Zones (CAZ) for overhand bricklaying shall be erected as follows:

   a. The controlled access zone shall be defined by a control line not less than 10 feet, no more than 15 feet from the working edge.

   b. The control line shall extend a sufficient distance to completely enclose the overhand bricklaying operations including the ends of the controlled access area.

   c. The line shall be made of rope, wire, or tape with a minimum tensile strength of 200 lbs.

   d. Stanchions or some other means of support will be used to support the control line at a height no less than 39" and no more than 45". The control line will be flagged every 6 feet with high visibility material.

   e. On floors where guardrails have not yet been erected, the controlled access zone should be enlarged, as necessary, to enclose all points of access, materials handling areas, and storage areas.

   f. On floors where guardrails are already in place but need to be removed to allow overhand bricklaying work or other leading edge work to take place, only that portion of the guardrail necessary to accomplish the day's work shall be removed.

   Note: Employees removing guardrails or other fall protection devices are responsible for replacing those devices when their work is complete.

4. Warning line systems for roofing work

   a. Warning lines shall be erected along all sides of the low slope roof work area and positioned at least 6 feet from the roof edge when mechanical equipment is not being used. If mechanical equipment is being used, the warning line must be positioned at least 10 feet from the roof edge in the direction in which the equipment is being used.

   b. Mechanical equipment shall only be used on a low slope roof if it is inside a warning line system or in areas where employees are protected by a guardrail system or personal fall arrest system.

c. Warning lines shall be rigged and supported in such a way that its lowest point (including sag) is not less than 34 inches from the roof surface and its highest point is not higher than 39 inches from the roof surface.

d. Points of access, material handling areas, storage areas, and hoisting areas shall be shall be connected to the work area by an access path formed by two warning lines. Guardrails shall be provided along the perimeter of the roof where these activities are being performed.

e. No employee shall be allowed in the area between a roof edge and a warning line system unless guardrails, safety nets, personal fall arrest systems, or a safety monitor system is provided.

5. Safety Monitors

Safety monitors can only be used on low slope roofs (4 in 12 pitch or less - vertical to horizontal). Safety monitors cover work activities performed outside the warning line system and cannot be used if mechanical equipment is being used. Mechanical equipment is anything bigger than a mop cart or a wheelbarrow. Safety monitors can be used without warning lines if the roof is 50 feet or less in width.

Safety Monitors must be competent and comply with the following:

a. The safety monitor must be able to recognize fall hazards and be capable of warning employees when it appears an employee is unaware of a fall hazard or is acting in an unsafe manner.

b. The safety monitor must be on the same working 1evel and within visual sighting distance of employees. Safety monitors also must be close enough to communicate audibly to employees. This means on a multilevel roof, a safety monitor may be required at each roof level.

c. The safety monitor shall not have any other responsibilities, which could distract him/her from monitoring employees work activities.

d. No employees, other than those engaged in roofing work or covered by a fall protection plan, shall be in the area where the safety monitoring system is being utilized.

6. Personal Fall Arrest Systems

a. Lanyards, vertical lifelines, D-rings, and snap hooks shall have a 5000 lbs. tensile strength.

b. All lanyard snap-hooks shall be of the locking type.

c. Body belts, harnesses, lanyards and other fall protection equipment are not to be used for any purpose other than employee fall protection.

d. As of January 1, 1998, using body belts as part of a fall arrest system is prohibited.

e. Fall arrest anchorage points must be able to withstand 5000 lbs. per employee or must be designed as a system, which maintains a safety factor of at least 2.

f. Fall protection systems must be erected under the supervision of a competent person. Any employee who is unsure whether an anchorage point is appropriate should ask their supervisor.

g. The length of lanyard's and safety lines should be limited so as not to allow a free fall greater than 6 feet. Additionally, care should be given when designing a system to ensure that an employee will not strike lower levels prior to, or during, the activation of the fall arrest system. This is especially of concern when using shock-absorbing and retractable lanyards due to their elongation when arresting a fall.

h. Positioning devices should allow for a free fall of no more than 2 feet.

i. Employees climbing built-up walls of reinforcing steel must tie-off when they reach their work location. Continuous fall protection must be used when climbing above 24 feet vertically.

j. Diamond & Thiel will provide for prompt rescue of employees in the event of a fall, or will ensure that employees are able to rescue themselves.

Fall Protection Training

1. Each employee exposed to fall hazards will be trained in the following items:

   a. Recognition of the nature of fall hazards in the work area.

   b. The correct procedures for erecting, maintaining, disassembling and inspecting the fall protection systems to be used.

   c. The use and operation of guardrail systems, personal fall arrest systems, controlled access zones and other protection to be used.

   d. The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection.

   e. The role of employees in fall protection plans.

   Note: Employees engaged in built-up roofing operations will require additional training.

2. Written training certification records will be maintained showing who was trained, date(s) on which training occurred, the signature of the person providing the training, and the date the employer determined training was deemed adequate.

3. Re-training will be provided when the following are noted: Deficiencies in training; work place changes; or fall protection systems or equipment changes that render previous training obsolete.

The term "residential construction" applies to structures where the working environment, and the construction materials, methods, and procedures employed are essentially the same as those used in building a typical single-family home or townhouse. Residential construction is characterized by the use of wood framing; wooden floor joists; wooden roof structures; and traditional wood frame construction techniques.

When performing "residential construction" activities, and it can be demonstrated that it is infeasible or creates a greater hazard to comply with Diamond & Thiel Construction Co. Inc. standard fall protection plan, employees will utilize a fall protection plan similar to the following:

APPENDIX A

Sample Fall Protection Plan For Precast/Prestress Concrete Structures

Sample Fall Protection Plan A

Guidelines for Complying With 1926.502(k)

Employers engaged in leading edge work, precast concrete construction work and residential construction work who can demonstrate that it is infeasible or creates a greater hazard to use conventional fall protection systems must develop and follow a fall protection plan. Below are sample fall protection plans developed for precast concrete construction and residential work that could be tailored to be site specific for other precast concrete or residential job site. This sample plan can be modified to be used for other work involving leading edge work. The sample plan outlines the elements that must be addressed in any fall protection plan. The reasons outlined in this sample fall protection plan are for illustrative purposes only and are not necessarily a valid, acceptable rationale (unless the conditions at the job site are the same as those covered by these sample plans) for not using conventional fall protection systems for a particular precast concrete or residential construction worksite. However, the sample plans provide guidance to employers on the type of information that is required to be discussed in fall protection plans.

Sample Fall Protection Plans

Fall Protection Plan For Precast/Prestress Concrete Structures (This plan can be adapted for leading edge work.)

This Fall Protection Plan is specific for the following project:

Location of Job _____

Erecting Company _____

Date Plan Prepared or Modified _____

Plan Prepared By _____

Plan Approved By _____

Plan Supervised By _____

The following Fall Protection Plan is a sample program prepared for the prevention of injuries associated with falls. A Fall Protection Plan must be developed and evaluated on a site-by-site basis. It is recommended that erectors discuss the written Fall Protection Plan with their OSHA Area Office prior to going on a jobsite.

I. Statement of Company Policy

Diamond & Thiel Construction Co., Inc. is dedicated to the protection of its employees from on-the-job injuries. All employees of Diamond & Thiel Construction Co., Inc. have the responsibility to work safely on the job. The purpose of this plan is: (a) To supplement our standard safety policy by providing safety standards specifically designed to cover fall protection on this job and; (b) to ensure that each employee is trained and made aware of the safety provisions which are to be implemented by this plan prior to the start of erection.

This Fall Protection Plan addresses the use of other than conventional fall protection at a number of areas on the project, as well as identifying specific activities that require non-conventional means of fall protection. These areas include:

a. Connecting activity (point of erection).
b. Leading edge work.
c. Unprotected sides or edge.
d. Grouting.

This plan is designed to enable employers and employees to recognize the fall hazards on this job and to establish the procedures that are to be followed in order to prevent falls to lower levels or through holes and openings in walking/working surfaces. Each employee will be trained in these procedures and strictly adhere to them except when doing so would expose the employee to a greater hazard. If, in the employee's opinion, this is the case, the employee is to notify the project manager of the concern and the concern addressed before proceeding.

Safety policy and procedure on any one project cannot be administered, implemented, monitored and enforced by any one individual. The total objective of a safe, incident free work environment can only be accomplished by a dedicated, concerted effort by every individual involved with the project from management down to the last employee. Each employee must understand their value to the company; the costs of incidents, both monetary, physical, and emotional; the objective of the safety policy and procedures; the safety rules that apply to the safety policy and procedures and what their individual role is in administering, implementing, monitoring, and compliance of their safety policy and procedures. This allows for a more personal approach to compliance through planning, training, understanding and cooperative effort, rather than by strict enforcement. If for any reason an unsafe act persists, strict enforcement will be implemented.

It is the responsibility of Diamond & Thiel Construction Co., Inc. to implement this Fall Protection Plan. Diamond & Thiel Construction Co., Inc. is responsible for continual observational safety checks of their work operations and to enforce the safety policy and procedures. The project manager also is responsible to correct any unsafe acts or conditions immediately. It is the responsibility of the employee to understand and adhere to the procedures of this plan and to follow the instructions of the project manager. It is also the responsibility of the employee to bring to management's attention any unsafe or hazardous conditions or acts that may cause injury to either themselves or any other employees. Any changes to this Fall Protection Plan must be approved by (name of Qualified Person).

II. Fall Protection Systems to Be Used on This Project

Where conventional fall protection is infeasible or creates a greater hazard at the leading edge and during initial connecting activity, we plan to do this work using a safety monitoring system and expose only a minimum number of employees for the time necessary to actually accomplish the job. The maximum number of workers to be monitored by one safety monitor is six (6). We are designating the following trained employees as designated erectors and they are permitted to enter the controlled access zones and work without the use of conventional fall protection.

Safety monitor:	Bob Russell
Designated erector:	Kyle Machovec
Designated erector	Paul Edinger
Designated erector:	Dave Decker
Designated erector:	Spencer Plouffe
Designated erector:	Joe Thiel
Designated erector:	Dan Robinson

The safety monitor shall be identified by wearing an orange hard hat. The designated erectors will be identified by one of the following methods:

1. They will wear a blue colored arm band, or
2. They will wear a blue colored hard hat, or
3. They will wear a blue colored vest.

Only individuals with the appropriate experience, skills, and training will be authorized as designated erectors. All employees that will be working as designated erectors under the safety monitoring system shall have been trained and instructed in the following areas:

1. Recognition of the fall hazards in the work area (at the leading edge and when making initial connections-point of erection).

2. Avoidance of fall hazards using established work practices, which have been made known to the employees.

3. Recognition of unsafe practices or working conditions that could lead to a fall, such as windy conditions.

4. The function, use, and operation of safety monitoring systems, guardrail systems, body belt/harness systems, control zones and other protection to be used.

5. The correct procedure for erecting, maintaining, disassembling and inspecting the system(s) to be used.

6. Knowledge of construction sequence or the erection plan.

A conference will take place prior to starting work involving all members of the erection crew, crane crew and supervisors of any other concerned contractors. This conference will be conducted by the precast concrete erection supervisor in charge of the project. During the pre-work conference, erection

procedures and sequences pertinent to this job will be thoroughly discussed and safety practices to be used throughout the project will be specified. Further, all personnel will be informed that the controlled access zones are off limits to all personnel other than those designated erectors specifically trained to work in that area.

Safety Monitoring System

A safety monitoring system means a fall protection system in which a competent person is responsible for recognizing and warning employees of fall hazards. The duties of the safety monitor are to:

1. Warn by voice when approaching the open edge in an unsafe manner.

2. Warn by voice if there is a dangerous situation developing which cannot be seen by another person involved with product placement, such as a member getting out of control.

3. Make the designated erectors aware they are in a dangerous area.

4. Be competent in recognizing fall hazards.

5. Warn employees when they appear to be unaware of a fall hazard or are acting in an unsafe manner.

6. Be on the same walking/working surface as the monitored employees and within visual sighting distance of the monitored employees.

7. Be close enough to communicate orally with the employees.

8. Not allow other responsibilities to encumber monitoring, if the safety monitor becomes too encumbered with other responsibilities, the monitor shall
   a. Stop the erection process; and
   b. Turn over other responsibilities to a designated erector, or
   c. Turn over the safety monitoring function to another designated competent person.

   The safety monitoring system shall not be used when the wind is strong enough to cause loads with large surface areas to swing out of radius, or result in loss of control of the load, or when weather conditions cause the walking-working surfaces to become icy or slippery.

Control Zone System

A controlled access zone means an area designated and clearly marked in which leading edge work may take place without the use of guardrail, safety net or personal fall arrest systems to protect the employees in the area. Control zone systems shall comply with the following provisions:

1. When used to control access to areas where leading edge and other operations are taking place the controlled access zone shall be defined by a control line or by any other means that restricts access. When control lines are used, they shall be erected not less than 6 feet (1.8 m) nor more than 60 feet (18 m) or half the length of the member being erected, whichever is less, from the leading edge.

2. The control line shall extend along the entire length of the unprotected or leading edge and shall be approximately parallel to the unprotected or leading edge.

3. The control line shall be connected on each side to a guardrail system or wall.

4. Control lines shall consist of ropes, wires, tapes, or equivalent materials, and supporting stanchions as follows:
   a. Each line shall be flagged or otherwise clearly marked at not more than 6-foot (1.8 m) intervals with high-visibility material.

   b. Each line shall be rigged and supported in such a way that its lowest point (including sag) is not less than 39 inches (1 m) from the walking/working surface and its highest point is not more than 45 inches (1.3m) from the walking/working surface.

   c. Each line shall have a minimum breaking strength of 200 pounds (.88 kg).

Holes

All openings greater than 12 in. x 12 in. will have perimeter guarding or covering. All predetermined holes will have the plywood covers made in the precasters' yard and shipped with the member to the jobsite. Prior to cutting holes on the job, proper protection for the hole must be provided to protect the workers. Perimeter guarding or covers will not be removed without the approval of the erection project superintendent.

Precast concrete column erection through the existing deck requires that many holes be provided through this deck. These are to be covered and protected. Except for the opening being currently used to erect a column, all opening protection is to be left undisturbed. The opening being uncovered to erect a column will become part of the point of erection and will be addressed as part of this Fall Protection Plan. This uncovering is to be done at the erection project superintendent's direction and will only occur immediately prior to "feeding" the column through the opening. Once the end of the column is through the slab opening, there will no longer exist a fall hazard at this location.

III. Implementation of Fall Protection Plan

The structure being erected is a multistory total precast concrete building consisting of columns, beams, wall panels and hollow core slabs and double tee floor and roof members.

The following is a list of the products and erection situations on this job:

Columns

For columns 10 ft to 36 ft long, employees disconnecting crane hooks from columns will work from a ladder and wear a body belt/harness with lanyard and be tied off when both hands are needed to disconnect. For tying off, a vertical lifeline will be connected to the lifting eye at the top of the column, prior to lifting, to be used with a manually operated or mobile rope grab. For columns too high for the use of a ladder, 36 ft and higher, an added cable will be used to reduce the height of the disconnecting point so that a ladder can be used. This cable will be left in place until a point in erection that it can be removed safely. In some cases, columns will be unhooked from the crane by using an erection tube or shackle with a pull pin which is released from the ground after the column is stabilized.

The column will be adequately connected and/or braced to safely support the weight of a ladder with an employee on it.

Inverted Tee Beams

Employees erecting inverted tee beams, at a height of 6 to 40 ft, will erect the beam, make initial connections, and final alignment from a ladder. If the employee needs to reach over the side of the beam to bar or make an adjustment to the alignment of the beam, they will mount the beam and be tied off to the lilting device in the beam after ensuring the load has been stabilized on its bearing. To disconnect the crane from the beam an employee will stand a ladder against the beam. Because the use of ladders is not practical at heights above 40 ft, beams will be initially placed with the use of tag lines and their final alignment made by a person on a manlift or similar employee positioning systems.

Spandrel Beams

Spandrel beams at the exterior of the building will be aligned as closely as possible with the use of tag lines with the final placement of the spandrel beam made from a ladder at the open end of the structure. A ladder will be used to make the initial connections and a ladder will be used to disconnect the crane. The other end of the beam will be placed by the designated erector from the double tee deck under the observation of the safety monitor. The beams will be adequately connected and/or braced to safely support the weight of a ladder with an employee on it.

Floor and Roof Members

During installation of the precast concrete floor and/or roof members, the work deck continuously increases in area as more and more units are being erected and positioned. Thus, the unprotected floor/roof perimeter is constantly modified with the leading edge changing location as each member is installed. The fall protection for workers at the leading edge shall be assured by properly constructed and maintained control zone lines not more than 60 ft away from the leading edge supplemented by a safety monitoring system to ensure the safety of all designated erectors working within the area defined by the control zone lines.

The hollow core slabs erected on the masonry portion of the building will be erected and grouted using the safety monitoring system. Grout will be placed in the space between the end of the slab and face shell of the concrete masonry by dumping from a wheelbarrow. The grout in the keyways between the slabs will be dumped from a wheelbarrow and then spread with long handled tools, allowing the worker to stand erect facing toward the unprotected edge and back from any work deck edge.

Whenever possible, the designated erectors will approach the incoming member at the leading edge only after it is below waist height so that the member itself provides protection against falls.

Except for the situations described below, when the arriving floor or roof member is within 2 to 3 inches of its final position, the designated erectors can then proceed to their position of erection at each end of the member under the control of the safety monitor. Crane hooks will be unhooked from double tee members by designated erectors under the direction and supervision of the safety monitor.

Designated erectors, while waiting for the next floor or roof member, will be constantly under the control of the safety monitor for fall protection and are directed to stay a minimum of six (6) ft from the edge. In the event a designated erector must move from one end of a member, which has just been placed at the leading edge, they must first move away from the leading edge a minimum of six (6) ft and then progress to the other end while maintaining the minimum distance of six (6) ft at all times.

Erection of double tees, where conditions require bearing of one end into a closed pocket and the other end on a beam ledge, restricting the tee legs from going directly into the pockets, require special considerations. The tee legs that are to bear in the closed pocket must hang lower than those at the beam bearing. The double tee will be "two-lined" in order to elevate one end higher than the other to allow for the low end to be ducked into the closed pocket using the following procedure:

The double tee will be rigged with a standard four-way spreader off of the main load line. An additional choker will be attached to the married point of the two-legged spreader at the end of the tee that is to be elevated. The double tee will be hoisted with the main load line and swung into a position as close as possible to the tee's final bearing elevation. When the tee is in this position and stabilized, the whip line load block will be lowered to just above the tee deck. At this time, two erectors will walk out on the suspended tee deck at midspan of the tee member and pull the load block to the end of the tee to be elevated and attach the additional choker to the load block. The possibility of entanglement with the crane lines and other obstacles during this two lining process while raising and lowering the crane block on that second line could be hazardous to an encumbered employee. Therefore, the designated erectors will not tie off during any part of this process. While the designated erectors are on the double tee, the safety monitoring system will be used. After attaching the choker, the two erectors then step back on the

previously erected tee deck and signal the crane operator to hoist the load with the whip line to the elevation that will allow for enough clearance to let the low end tee legs slide into the pockets when the main load line is lowered. The erector, who is handling the lowered end of the tee at the closed pocket bearing, will step out on the suspended tee. An erection bar will then be placed between the end of the tee leg and the inside face of the pocketed spandrel member. The tee is barred away from the pocketed member to reduce the friction and lateral force against the pocketed member. As the tee is being lowered, the other erector remains on the tee, which was previously erected to handle the other end. At this point the tee is slowly lowered by the crane to a point where the tee legs can freely slide into the pockets. The erector working the lowered end of the tee must keep pressure on the bar between the tee and the face of the pocketed spandrel member to very gradually let the tee legs slide into the pocket to its proper bearing dimension. The tee is then slowly lowered into its final erected position.

The designated erector should be allowed onto the suspended double tee, otherwise there is no control over the horizontal movement of the double tee and this movement could knock the spandrel off of its bearing or the column out of plumb. The control necessary to prevent hitting the spandrel can only be done safely from the top of the double tee being erected.

Loadbearing Wall Panels: The erection of the loadbearing wall panels on the elevated decks requires the use of a safety monitor and a controlled access zone that is a minimum of 25 ft and a maximum of 1/2 the length of the wall panels away from the unprotected edge, so that designated erectors can move freely and unencumbered when receiving the panels. Bracing, if required for stability, will be installed by ladder. After the braces are secured, the crane will be disconnected from the wall using a ladder. The wall to wall connections will also be performed from a ladder.

Non-Loadbearing Panels (Cladding): The locating of survey lines, panel layout and other installation prerequisites (prewelding, etc.) for non-loadbearing panels (cladding) will not commence until floor perimeter and floor openings have been protected. In some areas, it is necessary because of panel configuration to remove the perimeter protection as the cladding is being installed. Removal of perimeter protection will be performed on a bay to bay basis, just ahead of cladding erection to minimize temporarily unprotected floor edges. Those workers within 6 ft of the edge, receiving and positioning the cladding when the perimeter protection is removed, shall be tied off.

Detailing

Employees exposed to falls of six (6) feet or more to lower levels, who are not actively engaged in leading edge work or connecting activity, such as welding, bolting, cutting, bracing, guying, patching, painting or other operations, and who are working less than six (6) ft from an unprotected edge will be tied off at all times or guardrails will be installed. Employees engaged in these activities but who are more than six (6) ft from an unprotected edge as defined by the control zone lines, do not require fall protection but a warning line or control zone lines must be erected to remind employees they are approaching an area where fall protection is required.

IV. Conventional Fall Protection Considered for the Point of Erection or Leading Edge Erection Operations

Personal Fall Arrest Systems

In this particular erection sequence and procedure, personal fall arrest systems requiring body belt/harness systems, lifelines and lanyards will not reduce possible hazards to workers and will create offsetting hazards during their usage at the leading edge of precast/prestressed concrete construction.

Leading edge erection and initial connections are conducted by employees who are specifically trained to do this type of work and are trained to recognize the fall hazards. The nature of such work normally exposes the employee to the fall hazard for a short period of time and installation of fall protection systems for a short duration is not feasible because it exposes the installers of the system to the same fall hazard, but for a longer period of time.

1. It is necessary that the employee be able to move freely without encumbrance in order to guide the sections of precast concrete into their final position without having lifelines attached which will restrict the employee's ability to move about at the point of erection.

2. A typical procedure requires 2 or more workers to maneuver around each other as a concrete member is positioned to fit into the structure. If they are each attached to a lifeline, part of their attention must be diverted from their main task of positioning a member weighing several tons to the task of avoiding entanglements of their lifelines or avoiding tripping over lanyards. Therefore, if these workers are attached to lanyards, more fall potential would result than from not using such a device.

   In this specific erection sequence and procedure, retractable lifelines do not solve the problem of two workers becoming tangled. In fact, such a tangle could prevent the lifeline from retracting as the worker moved, thus potentially exposing the worker to a fall greater than 6 ft. Also, a worker crossing over the lifeline of another worker can create a hazard because the movement of one person can unbalance the other. In the event of a fall by one person there is a likelihood that the other persons will be caused to fall as well. In addition, if contamination such as grout (during hollow core grouting) enters the retractable housing it can cause excessive wear and damage to the device and could clog the retracting mechanism as the lanyard is dragged across the deck. Obstructing the cable orifice can defeat the device's shock absorbing function, produce cable slack and damage, and adversely affect cable extraction and retraction.

3. Employees tied to a lifeline can be trapped and crushed by moving structural members if the employee becomes restrained by the lanyard or retractable lifeline and cannot get out of the path of the moving load. The sudden movement of a precast concrete member being raised by a crane can be caused by a number of factors. When this happens, a connector may immediately have to move a considerable distance to avoid injury. If a tied off body belt/harness is being used, the connector could be trapped. Therefore, there is a greater risk of injury if the connector is tied to the structure for this specific erection sequence and procedure.

   When necessary to move away from a retractable device, the worker cannot move at a rate greater than the device locking speed typically 3.5 to 4.5 ft/sec. When moving toward the device it is

necessary to move at a rate, which does not permit cable slack to build up. This slack may cause cable retraction acceleration and cause a worker to lose their balance by applying a higher than normal jerking force on the body when the cable suddenly becomes taut after building up momentum. This slack can also cause damage to the internal spring-loaded drum, uneven coiling of cable on the drum, and possible cable damage.

The factors causing sudden movements for this location include:

a. Cranes
   (1) Operator error.
   (2) Site conditions (soft or unstable ground).
   (3) Mechanical failure.
   (4) Structural failure.
   (5) Rigging failure.
   (6) Crane signal/radio communication failure.

b. Weather Conditions
   (1) Wind (strong wind/sudden gusting) - particularly a problem with the large surface areas of precast concrete members.
   (2) Snow/rain (visibility).
   (3) Fog (visibility).
   (4) Cold - causing slowed reactions or mechanical problems.

c. Structure/Product Conditions.
   (1) Lifting Eye failure.
   (2) Bearing failure or slippage.
   (3) Structure shifting.
   (4) Bracing failure.
   (5) Product failure.

d. Human Error.
   (1) Incorrect tag line procedure.
   (2) Tag line hang-up.
   (3) Incorrect or misunderstood crane signals.
   (4) Misjudged elevation of member.
   (5) Misjudged speed of member.
   (6) Misjudged angle of member.

4. Anchorages or special attachment points could be cast into the precast concrete members if sufficient preplanning and consideration of erectors position is done before the members are cast. Any hole or other attachment must be approved by the engineer who designed the member. It is possible that some design restrictions will not allow a member to be weakened by an additional hole; however, it is anticipated that such situations would be the exception, not the rule. Attachment points, other than on the deck surface, will require removal and/or patching. In order to remove and/or patch these points requires the employee to be exposed to an additional fall hazard at an unprotected perimeter. The fact that attachment points could be available anywhere on the structure does not eliminate the hazards of using these points for tying off as discussed above. A

logical point for tying off on double tees would be using the lifting loops, except that they must be cut off to eliminate a tripping hazard at an appropriate time.

5. Providing attachment at a point above the walking/working surface should also create fall exposures for employees installing their devices. Final positioning of a precast concrete member requires it to be moved in such a way that it must pass through the area that would be occupied by the lifeline and the lanyards attached to the point above. Resulting entanglements of lifelines and lanyards on a moving member could pull employees from the work surface. Also, the structure is being created and, in most cases, there is no structure above the members being placed.

    a. Temporary structural supports installed to provide attaching points for lifelines limit the space, which is essential for orderly positioning, alignment and placement of the precast concrete members. To keep the lanyards a reasonable and manageable length, lifeline supports would necessarily need to be in proximity to the positioning process. A sudden shift of the precast concrete member being positioned because of wind pressure or crane movement could make it strike the temporary supporting structure, moving it suddenly and causing tied off employees to fall.

    b. The time in man-hours, which would be expended, in placing and maintaining temporary structural supports for lifeline attaching points could exceed the expended man-hours involved in placing the precast concrete members. No protection could be provided for the employees erecting the temporary structural supports and these supports would have to be moved for each successive step in the construction process, thus greatly increasing the employee's exposure to the fall hazard.

    c. The use of a cable strung horizontally between two columns to provide tie off lines for erecting or walking a beam for connecting work is not feasible and creates a greater hazard on this multi-story building for the following reasons:

        (1) If a connector is to use such a line, it must be installed between the two columns. To perform this installation requires an erector to have more fall exposure time attaching the cable to the columns than would be spent to make the beam to column connection itself.

        (2) If such a line is to be installed so that an erector can walk along a beam, it must be overhead or below him. For example, if a connector must walk along a 24-in, wide beam, the presence of a line next to the connector at waist level, attached directly to the columns, would prevent the connector from centering their weight over the beam and balancing themselves. Installing the line above the connector might be possible on the first level of a two-story column; however, the column may extend only a few feet above the floor level at the second level or be flush with the floor level. Attaching the line to the side of the beam could be a solution; however, it would require the connector to attach the lanyard below foot level, which would most likely extend a fall farther than 6 ft.

        (3) When lines are strung over every beam, it becomes more and more difficult for the crane operator to lower a precast concrete member into position without the member becoming fouled. Should the member become entangled, it could easily dislodge the line from a column. If a worker is tied to it at the time, a fall could be caused.

6. The ANSI A 10.14-1991 American National Standard for Construction and Demolition Operations, Requirements for Safety Belts, Harnesses, Lanyards and Lifelines for Construction and Demolition Use, states that the anchor point of a lanyard or deceleration device should, if possible, be located above the wearer's belt or harness attachment. ANSI A 10.14 also states that a suitable anchorage point is one, which is located as high as possible to prevent contact with an obstruction below should the worker fall. Most manufacturers also warn in the user's handbook that the safety block/retractable lifeline must be positioned above the D-ring (above the work space of the intended user) and OSHA recommends that fall arrest and restraint equipment be used in accordance with the manufacturer's instructions.

   Attachment of a retractable device to a horizontal cable near floor level or using the inserts in the floor or roof members may result in increased free fall due to the dorsal D-ring of the full-body harness riding higher than the attachment point of the snaphook to the cable or insert (e.g., 6 foot tall worker with a dorsal D-ring at 5 feet above the floor or surface, reduces the working length to only one foot, by placing the anchorage five feet away from the fall hazard). In addition, impact loads may exceed maximum fall arrest forces (MAF) because the fall arrest D-ring would be 4 to 5 feet higher than the safety block/retractable lifeline anchored to the walking-working surface; and the potential for swing hazards is increased. Manufacturers also require that workers not work at a level where the point of snaphook attachment to the body harness is above the device because this will increase the free fall distance and the deceleration distance and will cause higher forces on the body in the event of an incidental fall.

   Manufacturers recommend an anchorage for the retractable lifeline, which is immovably fixed in space and is independent of the user's support systems. A moveable anchorage is one which can be moved around (such as equipment or wheeled vehicles) or which can deflect substantially under shock loading (such as a horizontal cable or very flexible beam). In the case of a very flexible anchorage, a shock load applied to the anchorage during fall arrest can cause oscillation of the flexible anchorage such that the retractable brake mechanism may undergo one or more cycles of locking/unlocking/locking (ratchet effect) until the anchorage deflection is dampened. Therefore, use of a moveable anchorage involves critical engineering and safety factors and should only be considered after fixed anchorage has been determined to be not feasible.

   Horizontal cables used as an anchorage present an additional hazard due to amplification of the horizontal component of maximum arrest force (of a fall) transmitted to the points where the horizontal cable is attached to the structure. This amplification is due to the angle of sag of a horizontal cable and is most severe for small angles of sag. For a cable sag angle of 2 degrees the horizontal force on the points of cable attachment can be amplified by a factor of 15.

   It is also necessary to install the retractable device vertically overhead to minimize swing falls. If an object is in the worker's swing path (or that of the cable) hazardous situations exist:

   a. due to the swing, horizontal speed of the user may be high enough to cause injury when an obstacle in the swing fall path is struck by either the user or the cable;

   b. the total vertical fall distance of the user may be much greater than if the user had fallen only vertically without a swing fall path.

With retractable lines, overconfidence may cause the worker to engage in inappropriate behavior, such as approaching the perimeter of a floor or roof at a distance appreciably greater than the shortest distance between the anchorage point and the leading edge. Though the retractable lifeline may arrest a worker's fall before he or she has fallen a few feet, the lifeline may drag along the edge of the floor or beam and swing the worker like a pendulum until the line has moved to a position where the distance between the anchorage point and floor edge is the shortest distance between those two points. Accompanying this pendulum swing is a lowering of the worker, with the attendant danger that he or she may violently impact the floor or some obstruction below.

The risk of a cable breaking is increased if a lifeline is dragged sideways across the rough surface or edge of a concrete member at the same moment that the lifeline is being subjected to a maximum impact loading during a fall. The typical 3/16-in. cable in a retractable lifeline has a breaking strength of from 3000 to 3700 lbs.

7. The competent person, who can take into account the specialized operations being performed on this project, should determine when and where a designated erector cannot use a personal fall arrest system.

Safety Net Systems

The nature of this particular precast concrete erection worksite precludes the safe use of safety nets where point of erection or leading edge work must take place.

1. To install safety nets in the interior high bay of the single story portion of the building poses rigging attachment problems. Structural members do not exist to which supporting devices for nets can be attached in the area where protection is required. As the erection operation advance, the location of point of erection or leading edge work changes constantly as each member is attached to the structure. Due to this constant change it is not feasible to set net sections and build separate structures to support the nets.

2. The nature of the erection process for the precast concrete members is such that an installed net would protect workers as they position and secure only one structural member. After each member is stabilized the net would have to be moved to a new location (this could mean a move of 8 to 10ft. or the possibility of a move to a different level or area of the structure) to protect workers placing the next piece in the construction sequence. The result would be the installation and dismantling of safety nets repeatedly throughout the normal workday. As the time necessary to install a net, test, and remove it is significantly greater than the time necessary to position and secure a precast concrete member, the exposure time for the worker installing the safety net would be far longer than for the workers whom the net is intended to protect. The time exposure repeats itself each time the nets and supporting hardware must be moved laterally or upward to provide protection at the point of erection or leading edge.

3. Strict interpretation of 1926.502(c) requires that operations shall not be undertaken until the net is in place and has been tested. With the point of erection constantly changing, the time necessary to install and test a safety net significantly exceeds the time necessary to position and secure the concrete member.

4. Use of safety nets on exposed perimeter wall openings and open sided floors, causes attachment points to be left in architectural concrete which must be patched and filled with matching material after the net supporting hardware is removed. In order to patch these openings, additional numbers of employees must be suspended by swing stages, boatswain chairs or other devices, thereby increasing the amount of fall exposure time to employees.

5. Installed safety nets pose an additional hazard at the perimeter of the erected structure where limited space is available in which members can be turned after being lifted from the ground by the crane. There would be a high probability that the member being lifted could become entangled in net hardware, cables, etc.

6. The use of safety nets where structural wall panels are being erected could prevent movement of panels to point of installation. To be effective, nets would necessarily have to provide protection across the area where structural supporting wall panels would be set and plumbed before roof units could be placed.

7. Use of a tower crane for the erection of the high rise portion of the structure poses a particular hazard in that the crane operator cannot see or judge the proximity of the load in relation to the structure or nets. If the signaler is looking through nets and supporting structural devices while giving instructions to the crane operator, it is not possible to judge precise relationships between the load and the structure itself or to nets and supporting structural devices. This could cause the load to become entangled in the net or hit the structure causing potential damage.

Guardrail Systems

On this particular worksite, guardrails, barricades, ropes, cables or other perimeter guarding devices or methods on the erection floor will pose problems to safe erection procedures. Typically, a floor or roof is erected by placing 4 to 10 ft wide structural members next to one another and welding or grouting them together. The perimeter of a floor and roof changes each time a new member is placed into position. It is unreasonable and virtually impossible to erect guardrails and toe boards at the ever-changing leading edge of a floor or roof.

1. To position a member safely it is necessary to remove all obstructions extending above the floor level near the point of erection. Such a procedure allows workers to swing a new member across the erected surface as necessary to position it properly without worrying about knocking material off of this surface.

   Hollow core slab erection on the masonry wall requires installation of the perimeter protection where the masonry wall has to be constructed. This means the guardrail is installed then subsequently removed to continue the masonry construction. The erector will be exposed to a fall hazard for a longer period of time while installing and removing perimeter protection than while erecting the slabs.

   In hollow core work, as in other precast concrete erection, others are not typically on the work deck until the precast concrete erection is complete. The deck is not complete until the leveling, aligning, and grouting of the joints is done. It is normal practice to keep others off the deck until at least the next day after the installation is complete to allow the grout to harden.

2. There is no permanent boundary until all structural members have been placed in the floor or roof. At the leading edge, workers are operating at the temporary edge of the structure as they work to position the next member in the sequence. Compliance with the standard would require a guardrail and toe board be installed along this edge. However, the presence of such a device would prevent a new member from being swung over the erected surface low enough to allow workers to control it safely during the positioning process. Further, these employees would have to work through the guardrail to align the new member and connect it to the structure. The guardrail would not protect an employee who must lean through it to do the necessary work, rather it would hinder the employee to such a degree that greater hazard is created than if the guardrail were absent.

3. Guardrail requirements pose a hazard at the leading edge of installed floor or roof sections by creating the possibility of employees being caught between guardrails and suspended loads. The lack of a clear work area in which to guide the suspended load into position for placement and welding of members into the existing structure creates still further hazards.

4. Where erection processes require precast concrete stairways or openings to be installed as an integral part of the overall erection process, it must also be recognized that guardrails or handrails must not project above the surface of the erection floor. Such guardrails should be terminated at the level of the erection floor to avoid placing hazardous obstacles in the path of a member being positioned.

V. Other Fall Protection Measures Considered for This Job

The following is a list and explanation of other fall protection measures available and an explanation of limitations for use on this particular jobsite. If during the course of erecting the building the employee sees an area that could be erected more safely by the use of these fall protection measures, the project manager should be notified.

1. Scaffolds are not used because:

    a. The leading edge of the building is constantly changing and the scaffolding would have to be moved at very frequent intervals. Employees erecting and dismantling the scaffolding would be exposed to fall hazards for a greater length of time than they would by merely erecting the precast concrete member.

    b. A scaffold tower could interfere with the safe swinging of a load by the crane.

    c. Power lines, terrain and site do not allow for the safe use of scaffolding.

2. Vehicle mounted platforms are not used because:

    a. A vehicle-mounted platform will not reach areas on the deck that are erected over other levels.

    b. The leading edge of the building is usually over a lower level of the building and this lower level will not support the weight of a vehicle-mounted platform.

    c. A vehicle-mounted platform could interfere with the safe swinging of a load by the crane, either by the crane swinging the load over or into the equipment.

    d. Power lines and surrounding site work do not allow for the safe use of a vehicle-mounted platform.

3. Crane suspended personnel platforms are not used because:

    a. A second crane close enough to suspend any employee in the working and erecting area could interfere with the safe swinging of a load by the crane hoisting the product to be erected.

    b. Power lines and surrounding site work do not allow for the safe use of a second crane on the job.

VI. Enforcement

Constant awareness of and respect for fall hazards, and compliance with all safety rules are considered conditions of employment. The project superintendent, as well as individuals in the Safety and Personnel Department, reserve the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the guidelines of this program.

VII. Incident Investigations

All incidents that result in injury to workers, regardless of their nature, shall be investigated and reported. It is an integral part of any safety program that documentation take place as soon as possible so that the cause and means of prevention can be identified to prevent a reoccurrence.

In the event that an employee falls or there is some other related, serious incident occurring, this plan shall be reviewed to determine if additional practices, procedures, or training need to be implemented to prevent similar types of falls or incidents from occurring.

VIII. Changes to Plan

Any changes to the plan will be approved by (name of the qualified person). This plan shall be reviewed by a qualified person as the job progresses to determine if additional practices, procedures or training needs to be implemented by the competent person to improve or provide additiona1 fall protection. Workers shall be notified and trained, if necessary, in the new procedures. A copy of this plan and all approved changes shall be maintained at the jobsite.

APPENDIX B

Sample Fall Protection Plan B
For Residential Construction and Leading Edge Work

Sample Fall Protection Plan B
For Residential Construction

This Fall Protection Plan Is Specific For The Following Project:

Location of Job _____

Date Plan Prepared or Modified _____

Plan Prepared By _____

Plan Approved By _____

Plan Supervised By _____

The following Fall Protection Plan is a sample program prepared for the prevention of injuries associated with falls. A Fall Protection Plan must be developed and evaluated on a site by site basis. It is recommended that builders discuss the written Fall Protection Plan with their OSHA Area Office prior to going on a jobsite.

I. Statement of Company Policy

Diamond & Thiel Construction Co., Inc. is dedicated to the protection of its employees from on-the-job injuries. All employees of Diamond & Thiel Construction Co., Inc. have the responsibility to work safely on the job. The purpose of the plan is to supplement our existing safety and health program and to ensure that every employee who works for Diamond & Thiel Construction Co., Inc. recognizes workplace fall hazards and takes the appropriate measures to address those hazards.

This Fall Protection Plan addresses the use of conventional fall protection at a number of areas on the project, as well as identifies specific activities that require non-conventional means of fall protection. During the construction of residential buildings under 48 feet in height, it is sometimes infeasible or it creates a greater hazard to use conventional fall protection systems at specific areas or for specific tasks. The areas or tasks may include, but are not limited to:

a. Setting and bracing of roof trusses and rafters;
b. Installation of floor sheathing and joists;
c. Roof sheathing operations; and
d. Erecting exterior walls.

In these cases, conventional fall protection systems may not be the safest choice for builders. This plan is designed to enable employers and employees to recognize the fall hazards associated with this job and to establish the safest procedures that are to be followed in order to prevent falls to lower levels or through holes and openings in walking/working surfaces.

Each employee will be trained in these procedures and will strictly adhere to them except when doing so would expose the employee to a greater hazard. If, in the employee's opinion, this is the case, the employee is to notify the competent person of their concern and have the concern addressed before proceeding.

It is the responsibility of (name of competent person) to implement this Fall Protection Plan. Continual observational safety checks of work operations and the enforcement of the safety policy and procedures shall be regularly enforced. The crew supervisor or project superintendent (insert name) is responsible for correcting any unsafe practices or conditions immediately.

It is the responsibility of the employer to ensure that all employees understand and adhere to the procedures of this plan and to follow the instructions of the crew supervisor. It is also the responsibility of the employee to bring to management's attention any unsafe or hazardous conditions or practices that may cause injury to either themselves or any other employees. Any changes to the Fall Protection Plan must be approved by (name of qualified person).

II. Fall Protection Systems to Be Used on This Job

Installation of roof trusses/rafters, exterior wall erection, roof sheathing, floor sheathing and joist/truss activities will be conducted by employees who are specifically trained to do this type of work and are trained to recognize the fall hazards. The nature of such work normally exposes the employee to the fall hazard for a short period of time. This Plan details how Diamond & Thiel Construction Co., Inc. will minimize these hazards.

Controlled Access Zones

When using the plan to implement the fall protection options available, workers must be protected through limited access to high hazard locations. Before any non-conventional fall protection systems are used as part of the work plan, a controlled access zone (CAZ) shall be clearly defined by the competent person as an area where a recognized hazard exists. The demarcation of the CAZ shall be communicated by the competent person in a recognized manner, either through signs, wires, tapes, ropes or chains.

Diamond & Thiel Construction Co., Inc. shall take the following steps to ensure that the CAZ is clearly marked or controlled by the competent person:

1. All access to the CAZ must be restricted to authorized entrants;

2. All workers who are permitted in the CAZ shall be listed in the appropriate sections of the Plan (or be visibly identifiable by the competent person) prior to implementation;

3. The competent person shall ensure that all-protective elements of the CAZ be implemented prior to the beginning of work.

Installation Procedures for Roof Truss and Rafter Erection

During the erection and bracing of roof trusses/rafters, conventional fall protection may present a greater hazard to workers. On this job, safety nets, guardrails and personal fall arrest systems will not provide adequate fall protection because the nets will cause the walls to collapse, while there are no suitable attachment or anchorage points for guardrails or personal fall arrest systems.

On this job, requiring workers to use a ladder for the entire installation process will cause a greater hazard because the worker must stand on the ladder with his back or side to the front of the ladder. While erecting the truss or rafter the worker will need both hands to maneuver the truss and therefore cannot hold onto the ladder. In addition, ladders cannot be adequately protected from movement while trusses are being maneuvered into place. Many workers may experience additional fatigue because of the increase in overhead work with heavy materials, which can also lead to a greater hazard.

Exterior scaffolds cannot be utilized on this job because the ground, after recent backfilling, cannot support the scaffolding. In most cases, the erection and dismantling of the scaffold would expose workers to a greater fall hazard than erection of the trusses/rafters

On all walls eight feet or less, workers will install interior scaffolds along the interior wall below the location where the trusses/rafters will be erected. "Sawhorse" scaffolds constructed of 46-inch sawhorses and 2x10 planks will often allow workers to be elevated high enough to allow for the erection of trusses and rafters without working on the top plate of the wall.

In structures that have walls higher than eight feet and where the use of scaffolds and ladders would create a greater hazard, safe working procedures will be utilized when working on the top plate and will be monitored by the crew supervisor. During all stages of truss/rafter erection the stability of the trusses/rafters will be ensured at all times.

Diamond & Thiel Construction Co., Inc. shall take the following steps to protect workers who are exposed to fall hazards while working from the top plate installing trusses/rafters:

1. Only the following trained workers will be allowed to work on the top plate during roof truss or rafter installation:

Spencer Plouffe	Dan Robinson
Paul Edinger	Kyle Machovec
Dave Decker	Richard Ackerman
Daniel Weeks	

2. Workers shall have no other duties to perform during truss/rafter erection procedures.

3 All trusses/rafters will be adequately braced before any worker can use the truss/rafter as a support.

4 Workers will remain on the top plate using the previously stabilized truss/rafter as a support while other trusses/rafters are being erected.

5 Workers will leave the area of the secured trusses only when it is necessary to secure another truss/rafter.

6 The first two trusses/rafters will be set from ladders leaning on sidewalls at points where the walls can support the weight of the ladder.

7 A worker will climb onto the interior top plate via a ladder to secure the peaks of the first two trusses/rafters being set.

The workers responsible for detaching trusses from cranes and/or securing trusses at the peaks traditionally are positioned at the peak of the trusses/rafters. There are also situations where workers securing rafters to ridge beams will be positioned on top of the ridge beam.

Diamond & Thiel Construction Co., Inc. shall take the following steps to protect workers who are exposed to fall hazards while securing trusses/rafters at the peak of the trusses/ridge beam:

1. Only the following trained workers will be allowed to work at the peak during roof truss or rafter installation:

Spencer Plouffe	Dan Robinson
Paul Edinger	Kyle Machovec
Dave Decker	Richard Ackerman
Daniel Weeks	

2. Once truss or rafter installation begins, workers not involved in that activity shall not stand or walk below or adjacent to the roof opening or exterior walls in any area where they could be struck by falling objects.

3. Workers shall have no other duties than securing/bracing the pusses/ridge beam.

4. Workers positioned at the peaks or in the webs of trusses or on top of the ridge beam shall work from a stable position, either by sitting on a "ridge seat" or other equivalent surface that provides additional stability or by positioning themselves in previously stabilized trusses/rafters and leaning into and reaching through the trusses/rafters.

5. Workers shall not remain on or in the peak/ridge any longer than necessary to safely complete the task.

Roof Sheathing Operations

Workers typically install roof sheathing after all trusses/rafters and any permanent truss bracing is in place. Roof structures are unstable until some sheathing is installed, so workers installing roof sheathing cannot be protected from fall hazards by conventional fall protection systems until it is determined that the roofing system can be used as an anchorage point. At that point, employees shall be protected by a

personal fall arrest system.

Trusses/rafters are subject to collapse if a worker falls while attached to a single truss with a belt/harness. Nets could also cause collapse, and there is no place to attach guardrails.

All workers will ensure that they have secure footing before they attempt to walk on the sheathing, including cleaning shoes/boots of mud or other slip hazards.

To minimize the time workers must be exposed to a fall hazard; materials will be staged to allow for the quickest installation of sheathing.

Diamond & Thiel Construction Co., Inc. shall take the following steps to protect workers who are exposed to fall hazards while installing roof sheathing:

1. Once roof sheathing installation begins, workers not involved in that activity shall not stand or walk below or adjacent to the roof opening or exterior walls in any area where they could be struck by falling objects.

2. The competent person shall determine the limits of this area, which shall be clearly communicated to workers prior to placement of the first piece of roof sheathing.

3. The competent person may order work on the roof to be suspended for brief periods as necessary to allow other workers to pass through such areas when this would not create a greater hazard.

4. Only qualified workers shall install roof sheathing.

5. The bottom row of roof sheathing may be installed by workers standing in truss webs.

6. After the bottom row of roof sheathing is installed, a slide guard extending the width of the roof shall be securely attached to the roof. Slide guards are to be constructed of no less than nominal 4" height capable of limiting the uncontrolled slide of workers. Workers should install the slide guard while standing in truss webs and leaning over the sheathing.

7. Additional rows of roof sheathing may be installed by workers positioned on previously installed rows of sheathing. A slide guard can be used to assist workers in retaining their footing during successive sheathing operations.

8. Additional slide guards shall be securely attached to the roof at intervals not to exceed 13 feet as successive rows of sheathing are installed. For roofs with pitches in excess of 9-in-12, slide guards will be installed at four-foot intervals.

9. When wet weather (rain, snow, or sleet) is present, roof-sheathing operations shall be suspended unless safe footing can be assured for those workers installing sheathing.

10. When strong winds (above 40 miles per hour) are present, roof-sheathing operations are to be suspended unless windbreakers are erected.

Installation of Floor Joists and Sheathing

During the installation of floor sheathing/joists (leading edge construction), the following steps shall be taken to protect workers:

1. Only the following trained workers will be allowed to install floor joists or sheathing:

Spencer Plouffe	Dan Robinson
Paul Edinger	Kyle Machovec
Dave Decker	Richard Ackerman
Daniel Weeks	

2. Materials for the operations shall be conveniently staged to allow for easy access to workers.

3. The first floor joists or trusses will be rolled into position and secured either from the ground, ladders or sawhorse scaffolds.

4. Each successive floor joist or truss will be rolled into place and secured from a platform created from a sheet of plywood laid over the previously secured floor joists or trusses.

5. Except for the first row of sheathing, which will be installed from ladders or the ground, workers shall work from the established deck.

6. Any workers not assisting in the leading edge construction while leading edges still exist (e.g. cutting the decking for the installers) shall not be permitted within six feet of the leading edge under construction.

Erection of Exterior walls

During the construction and erection of exterior walls, employers shall take the following steps to protect workers:

1. Only the following trained workers will be allowed to erect exterior walls:

Spencer Plouffe	Dan Robinson
Paul Edinger	Kyle Machovec
Dave Decker	Richard Ackerman
Daniel Weeks	

2. A painted line six feet from the perimeter will be clearly marked prior to any wall erection activities to warn of the approaching unprotected edge.

3. Materials for operations shall be conveniently staged to minimize fall hazards.

4. Workers constructing exterior walls shall complete as much cutting of materials and other preparation as possible away from the edge of the deck.

III. Enforcement

Constant awareness of and respect for fall hazards, and compliance with all safety rules are considered conditions of employment. The crew supervisor or project manager, as well as individuals in the Safety and Personnel Department, reserve the right to issue disciplinary warnings to employees, up to and including termination, for failure to follow the guidelines of this program.

IV. Incident Investigations

All incidents that result in injury to workers, regardless of their nature, shall be investigated and reported. It is an integral part of any safety program that documentation take place as soon as possible so that the cause and means of prevention can be identified to prevent a reoccurrence.

In the event that an employee falls or there is some other related, serious incident occurring, this plan shall be reviewed to determine if additional practices, procedures, or training need to be implemented to prevent similar types of falls or incidents from occurring.

V. Changes to Plan

Any changes to the plan will be approved by (name of the qualified person). This plan shall be reviewed by a qualified person as the job progresses to determine if additional practices, procedures or training needs to be implemented by the competent person to improve or provide additional fall protection. Workers shall be notified and trained, if necessary, in the new procedures. A copy of this plan and all approved changes shall be maintained at the jobsite.

Chapter 12

Scaffolding

Scaffolding

A. General

1. A competent person qualified by training and experience will assess the hazards of the scaffold work site, including falls, falling objects, and electrical, and will ensure appropriate use and load capacity.

2. The competent person will oversee erection and disassembling of scaffolding, and will determine the feasibility of using fall protection during the erection and dismantling of scaffolds and whether the use of fall protection creates a greater hazard. Precautionary measures, including fall protection, to be used during the erection and dismantling of scaffolds should be planned out prior to beginning work.

3. Scaffolding should be erected plumb and secure on sound rigid ground.

4. The competent person will inspect the scaffold system prior to and periodically during use and will tag the system as safe or, if defective equipment or unsafe condition are found, as unsafe to use. Employees will be instructed to comply with tag directions. No work shall occur on any scaffold until the competent person has certified the complete installation of all necessary fall protection and turned the scaffold over to the production crews. No person without scaffold user training will be permitted to use the scaffolding.

5. Training regarding hazards shall be provided to all employees who work on scaffolds by persons qualified in the subject matter. Hazards addressed in training will include fall protection, electrical safety, falling object protection, scaffold use and load capacity. Retraining will be provided in at least the following situations: Where changes at the worksite present a hazard about which an employee has not been previously trained; where changes in the types of scaffolds, fall protection, falling object protection, or other equipment present a hazard about which an employee has not been previously trained; or where inadequacies in an affected employee's work involving scaffolds indicate that the employee has not retained the requisite proficiency.

6. No scaffold modifications may be made by non-qualified persons, or without the approval of the competent person.

7. The front edge of all platforms shall not be more than 14" from the face of the work unless a guardrail system is erected along the front edge or personal fall arrest systems are used. The distance from the face for plastering and lathing operations shall not exceed 18".

8. Standard guardrails and toeboards are required on all open sides and edges of scaffolds greater than 10' tall. Cross bracing is acceptable in place of a midrail when the crossing point of two braces is between 20" and 30" above the work platform or as a toprail when the crossing point of the two braces is between 38" and 48" above the work platform. To utilize the cross braces as partial guardrail protection; the endpoints at each upright shall be no more than 48" apart.

9. Screen should be installed where tools or materials are stacked above the toeboard and workers are required to pass below scaffold (i.e., to access building).

10. A ladder, stair tower, ramp or other safe means should be used to access scaffold platforms more than 24" above or below a point of access. Climbing on end frames is prohibited unless the frames are designed with integral ladder frames. Integral ladder frames have a rung length of at least 8"; a uniform rung spacing of no more than 16 ¾" (non-uniform rung spacing caused by joining end frames together is allowed provided rung spacing does not exceed 16 ¾"); and rest platforms must be provided at 35' maximum intervals.

11. Ladders and stair towers shall be positioned such that their bottom step/rung is not more than 24" above the scaffold supporting level.

12. Cross braces on tubular welded scaffolds shall not be used as a means of access or egress.

13. Scaffold planks should overhang end supports and no less than 6" and no more than 12" unless cleated or otherwise secured in place. The 12" overhang may be exceeded where guardrails block the cantilevered portion of the platform or where the platform length exceeds 10" the maximum overhang increases to 18".

14. Any scaffolding component damaged or weakened by any cause should be braced and if possible removed or repaired.

15. All scaffold platforms shall be fully planked between the front uprights and the guardrail supports. Platforms shall be decked so that no space between the planks or scaffold supports exceeds 1". Where platforms must fit around scaffold uprights or similar components, the space between the platform and the uprights should not exceed 9 1/2".

16. Each scaffold platform and walkway shall be at least 18" wide. Exceptions to this rule are on ladder jack, pump jack, and top plate bracket scaffolds whose platform must be at least 12" wide. One further exception occurs where the area in which the scaffold is located is so narrow the platform or walkway cannot be at least 18" wide.

17. All planking should be scaffold grade or equivalent. Cracked or split planks should be immediately replaced.

18. Do not overload scaffold. Materials should be brought up as needed.

19. Unstable objects shall not be used as working platforms.

B. Supported Scaffolds (i.e., Tubular Welded Frame)

1. Scaffold legs should be set on adjustable bases or plain bases set on mudsills or foundations adequate to support the maximum rated load.

2. Where uplift may occur, panels should be locked together vertically by pins or other equivalent

means.

3. Scaffolds should be properly braced by cross-braces, diagonal braces or both.

4. Scaffolds shall be tied off at the closest horizontal scaffold member to a 4:1 height to minimum base dimension ratio, and then repeated every 26' vertically at locations of horizontal members. Ties and braces should be located at each end of a scaffold and at 30' intervals horizontally.

5. Scaffold ties shall brace the scaffold from moving into or away from the building structure. To accomplish this, ties should be constructed of tie wire to prevent movement away from the structure and a rigid "standoff" to provide compressive strength to prevent movement into the building. Other methods may be used to construct tie-offs provided they meet the above support requirements.

C. Mobile Scaffolds

1. The height of mobile scaffolds should not exceed four times their minimum base dimension.

2. Scaffolds shall be braced by cross, horizontal, and diagonal braces to prevent racking or collapse and to automatically square and align the vertical members.

3. Platforms should be tightly planked.

4. An access ladder should be affixed to the scaffold in a location where its usage will not have a tendency to tip the scaffold.

5. When in use, casters or wheels should be locked to prevent movement.

D. Suspension Scaffolds

1. Swing scaffold platforms should not be less than 18 inches nor more than 36 inches wide overall.

2. Roof irons should be of proper size and design and should be securely installed and anchored.

3. Secondary tiebacks equivalent in strength to the suspension ropes should be installed at right angles to the face of the building, whenever possible, and secured to a structurally sound portion of the building.

4. Counterweights should be made of a non-flowable material. Sand, gravel and similar materials are not permitted. Additionally, construction material such as masonry units and rolled roofing should also not be used at counterweight.

5. Counterweights shall be mechanically fastened to the outrigger beam to prevent displacement.

6. Workers shall be protected by appropriate safety harnesses and independent lifelines.

7. All supporting parts should be inspected prior to installation and periodically during use.

8. Check load limits prior to using scaffold and make sure those limits are not exceeded.

9. Guardrails should be installed on all open sides and ends of suspension scaffolds.

10. All power operated gears and brakes should be enclosed.

E. Ramps and Walkways

1. Ramps and walkways 6' or more above a lower level shall be equipped with a standard guardrail system.

2. No ramp or walkway should be sloped greater than 1 vertical to 3 horizontal.

3. If the slope of the ramp or walkway is steeper than 1:8, cleats shall be securely fastened to the walkway spaced no further than 14" apart to provide footing.

Appendix A

Code of Safe Practices for
Frame Scaffold, System Scaffolds,
Tube and Clamp Scaffolds & Rolling Scaffolds

Developed for Industry by
Scaffold Industry Association, Inc.

Code of Safe Practices for
Frame Scaffold, System Scaffolds,
Tube and Clamp Scaffolds & Rolling Scaffolds

Developed for Industry by
Scaffold Industry Association, Inc.

It shall be the responsibility of all users to read and comply with the following common-sense guidelines that are designed to promote safety in the erecting, dismantling and use of scaffolds. These guidelines do not purport to be all-inclusive, nor to supplant or replace other additional safety and precautionary measures to cover usual or unusual conditions. If these guidelines in any way conflict with any state, local, federal or other government statute or regulation, said statute or regulation shall supersede these guidelines and it shall be the responsibility of each user to comply therewith

GENERAL GUIDELINES

A. POST THESE SCAFFOLDING SAFETY GUIDELINES in a conspicuous place and be sure that all persons who erect, dismantle or use scaffolding are aware of them.
B. FOLLOW ALL STATE, LOCAL AND FEDERAL CODES, ORDINANCES AND REGULATIONS pertaining to scaffolding.
C. SURVEY THE JOB SITE. A survey shall be made of the job site for hazards, such as untamped earth fills, ditches, debris, high tension wires, unguarded openings, end other hazardous conditions created by other trades. These conditions should be corrected or avoided as noted in the following sections.
D. INSPECT ALL EQUIPMENT BEFORE USING. Never use any equipment that is damaged or defective in any way. Remove it from the job site.
E. SCAFFOLDS MUST BE ERECTED IN ACCORDANCE WITH DESIGN AND/OR MANUFACTURERS' RECOMMENDATIONS.
F. DO NOT ERECT, DISMANTLE OR ALTER A SCAFFOLD unless under the supervision of a qualified person.
G. DO NOT ABUSE OR MISUSE THE SCAFFOLD EQUIPMENT.
H. ERECTED SCAFFOLDS SHOULD BE CONTINUALLY INSPECTED by users to be sure that they are maintained in safe condition. Report any unsafe condition to your supervisor.
I. NEVER TAKE CHANCES! IF IN DOUBT REGARDING THE SAFETY OR USE OF THE SCAFFOLD, CONSULT YOUR SCAFFOLD SUPPLIER.
J. NEVER USE EQUIPMENT FOR PURPOSES OR IN WAYS FOR WHICH IT WAS NOT INTEDED.
K. DO NOT WORK ON SCAFFFOLDS if your physical condition is such that you feel dizzy or unsteady in any way.

GUIDELINES FOR ERECTION AND USE OF SCAFFOLDS

A. SCAFFOLD BASE MUST BE SET ON AN ADEQUATE SILL OR PAD to prevent slipping or sinking and fixed thereto where required. Any part of a building or structure used to support the scaffold shall be capable of supporting the maximum intended load to be applied.

B. USE ADJUSTING SCREWS or other approved methods instead of blocking to adjust to uneven grade conditions.

C. BRACING, LEVELING & PLUMBING OF FRAME SCAFFOLDS -
   1. Plumb and level all scaffolds as the erection proceeds. Do not force frames or braces to fit. Level the scaffold until proper fit can easily be made.
   2. Each frame or panel shall be braced by horizontal bracing, cross bracing, diagonal bracing or any combination thereof for securing vertical members together laterally. All brace connections shall be made secure, in accordance with the manufacturer's recommendations.

D. BRACING, LEVELING & PLUMBING OF TUBE & CLAMP AND SYSTEM SCAFFOLDS -
   1. POSTS SHALL BE ERECTED PLUMB in all directions, with the first level of runners and bearers positioned as close to the base as feasible. The distance between bearers and runners shall not exceed manufacturer's recommended procedures.
   2. PLUMB, LEVEL AND TIE all scaffolds as erection proceeds.
   3. FASTEN ALL COUPLERS AND/OR CONNECTIONS securely before assembly of next level.
   4. VERTICAL AND/OR HORIZONTAL DIAGONAL BRACING MUST BE INSTALLED according to manufacturer's recommendations.

E. TIE CONTINUOUS (RUNNING) SCAFFOLDS TO THE WALL OR STRUCTURE at each end and at least every 30 feet of length when scaffold height exceeds the maximum allowable freestanding dimension.

   Begin ties or stabilizers' when the scaffold height exceeds that dimension, and repeat at vertical intervals not greater than 16 feet. The top anchor shall be placed no lower than four (4) times the base dimension from the top of the completed scaffold. Anchors must prevent scaffold from tipping into or away from wall or structure. Stabilize circular or irregular scaffolds in such a manner that completed scaffold is secure and restrained from tipping.

   When scaffolds are partially or fully enclosed or subjected to overturning loads, specific precautions shall be taken to insure the frequency and accuracy of ties to the wall and structure. Due to increased loads resulting from wind or overturning loads, the scaffolding component to which ties are subjected shall be checked for additional bids.

F. WHEN FREE STAINDING SCAFFOLD TOWERS exceed four (4) times their minimum base dimension vertically, they must be, restrained from tipping. (CAL/OSHA and some government agencies require stricter ratio of 3 to 1)

G. DO NOT ERECT SCAFFOLDS NEAR ELECTRICAL POWER LINES UNLESS PROPER PRECAUTIONS ARE TAKEN. Consult the power service company for advice.

H. A MEANS OF ACCESS TO ALL PLATFORMS SHALL BE PROVIDED.

I. DO NOT USE ladders or makeshift devices on top of scaffolds to increase the height.

J. PROVIDE GUARDRAILS AND MID-RAILS AT EACH WORKING PLATFORM LEVEL where open sides and ends exist, and toeboards where required by code.

Chapter 13

Excavations and Trenching

Excavations and Trenching

Purpose

The purpose of this program is to protect all of Diamond & Thiel Construction Co., Inc. employees that are exposed to hazards associated with excavation and trenching or ground disturbance activities.

Policy

When Diamond & Thiel Construction Co., Inc. is performing excavation or trenching activities, our designated competent person will be responsible for classifying soil type as well as performing daily inspections.

Training

Employees will complete documented training in the identification of utility locations, excavation hazards and controls, soil classification, and the role of the competent person.

Specific Requirements

1. CALL BEFORE YOU DIG!! Prior to opening an excavation, the exact location of underground utilities shall be determined. Call 811 for Dig Safely New York before you dig or drill. Utility lines must be properly marked before work begins.

2. Excavations exceeding 20 feet in depth must have protective systems designed by a registered professional engineer.

3. Benching/Sloping: All excavations and trenches 5 feet or deeper shall be sloped or benched wide enough to achieve stable bank conditions according to the following ratios (Horizontal: Vertical).

    a. Type C soil, at least 1½:1
    b. Type B soil, at least 1:1
    c. Type A soil, at least ¾:1
    d. Or, if it is not possible to cut back to the angles prescribed, all trenches 5 feet or more in depth shall be shored or shielded.
    e. Unclassified soils must be sloped or benched at least 1½:1.
    f. For instructions on how to classify soil, refer to Appendix A, Soil Classification, or Subpart P Excavations, 29 CFR 1926.650-652.

4. Inspections: No employee shall enter an excavation until it has been inspected by a competent person and declared safe to enter. Excavations shall be inspected daily before employees are allowed to enter and after every rainstorm or other hazard-causing occurrence.

    * Definition: *Competent Person* means one who is capable of identifying existing and predictable

hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

5. Access/Egress: A stairway, ladder, ramp or other safe means of egress shall be located in excavations that are 4' or more in depth so as to allow no more the 25' of lateral travel for employees. Earthen ramps shall be sloped so that employees do not have to climb on hands and feet when accessing or egressing an excavation or trench.

6. Loose Debris: Spoil piles, loose rock and soil, tools, and other debris shall be kept at least 2' back from excavation edges, secured or removed to prevent it from falling into excavation where it could cause injuries.

7. Vehicular Traffic: All employees working near traffic shall wear vests or garments made of or marked with reflective or high visibility material.

8. Falling Loads: No employee shall be permitted beneath a load handled by loading or digging equipment, and operators remaining in their vehicles must have adequate canopy protection.

9. Fall Protection: Trenches which are not readily visible will be protected by barricades, covers or other suitable means. Also, where ramps or walkways are utilized to cross over excavations and a fall hazard of 6 feet or more exists, guardrails or some other form of fall protection will be provided.

10. Hazardous Atmosphere: When it is expected or reasonably predictable to expect that a hazardous atmosphere exists, or an atmosphere containing less than 19.5% oxygen, precautions necessary to ensure employee safety will be taken. Examples include:

    a. Ventilation
    b. Air purifying respirators will be provided in accordance with Respirator Program.
    c. Supplied air respirators will be provided in accordance with Respirator Program.
    d. When a hazardous atmosphere exists, refer to the Confined Space section of this program.

11. Water Accumulation: Employees will not be permitted to work in excavations where water is accumulating. The designated competent person must determine what safeguards will be taken to protect against the hazards of water accumulation.

12. Mechanical Equipment: When mechanical equipment is operated adjacent to an excavation and the operator does not have a clear view of the edge barricades, stop logs or someone providing signals will be utilized.

13. Surface Encumbrances: Sidewalks, trees, and other miscellaneous surface encumbrances whose stability may be weakened by excavation operations should be braced, secured or removed to prevent their falling into the open excavation.

14. Stability of Adjacent Structures: Whenever excavating operations could weaken adjoining buildings, wall or structures, support systems such as shoring, bracing or underpinning will be utilized.

15. Stormwater: Appropriate erosion control will be used to prevent contamination of storm water during any ground disturbance or digging activities.

Support Systems

1. Timber Shoring: All timber shoring systems will be designed in accordance with appendices A and C of Subpart P – Excavations from 29 CRF 1926 Standards for Construction.

2. Aluminum Hydraulic Shoring (AHD): All aluminum hydraulic shoring systems will be designed from *Manufacturers Tabulated Data* or when not available in accordance with Appendix D of Subpart P – Excavations from 29 CRF 1926 Standards for Construction.

   Aluminum hydraulic shoring systems designed from the manufacturer's tabulated data will be in accordance with the manufacturer's recommendations, specifications and limitations.

   a. Important: Any deviation from the manufacturer's recommendations or specifications must be approved by the manufacturer.
   b. Altered systems with the manufacturer's approval shall have a written copy of that approval on site during construction of the system and a copy kept at the main office.

3. Registered Professional Engineer: Systems designed by a registered professional engineer shall include the following:

   a. A plan indicating the sizes, types and configurations of the materials to be used in the protective system; and
   b. The identity of the professional engineer designing the system.
   c. A copy of the design shall be kept on site during the construction of the system and a copy will be kept at the main office.

4. Trench Boxes: Trench Boxes will be used in accordance with the loads from which they were designed.

   a. Trench Boxes shall be installed to prevent lateral movement in the event of cave-ins, etc.
   b. Employees shall not enter or exit a trench box from any part of the trench that is unprotected.
   c. Employees will not be allowed inside of trench boxes when they are being installed, removed or moved vertically.
   d. Trench boxes must extend at least 18 inches above the top of the vertical side to prevent tools and/or debris from falling into the excavation/trench.
   e. Excavations of earth material to a level not greater than two feet below the bottom of the shield or trench box shall be permitted, but only if the shield or support system is designed to resist the forces calculated for the full depth of the trench, and there are no indications of soil movement from behind the shield or support system.

DAILY EXCAVATION CHECKLIST

Competent Person(s) _____ Date _____

Use one or more of the following Comment Codes listed below to describe your trench inspection. Use a "check mark" to indicate yes, or fill in blank with applicable information or description. Leave blank if not applicable.

DESCRIPTION:	(G) Good	(P) Poor	(S) Stable	(U) Unstable
SOIL TYPE:	Rock	"A"	"B"	"C"
MOISTURE CONDITIONS:	(M) Moist (D) Dry	(SA) Saturated (PS) Partial Saturation	(R) Rain	

JOB SITE DESCRIPTION

LOCATION _____ AREA CONGESTED _____

BLUE STAKE DATE _____ LOG # _____ RIGHT-OF-WAY & CLEARANCE OK _____

TRENCH DEPTH _____ WIDTH _____ LENGTH _____ INTERSECT or ANGULAR ____

CROSSING TRENCH: LINES _____ ROAD/ALLEY _____

PARALLEL TO TRANCH: LINES _____ ROAD/ALLEY _____ BUILING(s) _____

POLE BRACING _____ OVERHEAD LINES _____ STRUCTURAL BRACING _____

OPEN DATE/TIME _____ JOB # _____

RPE CONSULTED _____ REASON: _____

TRENCH/EXCAVATION INSPECTION COMMENTS

Describe any changing conditions, plans, or shoring equipment damage in space below using COMMENT CODES defined above.

Soil Type _____ Time(s) Inspected _____ _____ _____

EMPLOYEE & PUBLIC SAFETY INSPECTION

Air Quality Test ____	Cones ____	Ladders ____	Steel Plating ____
Barricades ____	Emergency Equipment ____	Ramp/Employee ____	Traffic Control ____
Barricade Tape ____	Fencing ____	Ramp/Equipment ____	Water Removal ____
			Weekend Protection ____

PROTECTION SYSTEM SELECTION

Installed according to Excavation Safety Resource Manual

HYDRAULIC UPRIGHTS:	SLOPING:	COMPOUND SLOPE:	OTHER:
No Sheeting ____	Simple Slope____ H: ____ V	Upper Slope____ H: ____ V	Hydraulic Wales ____
Closed Sheeting ____	Slope/Bench ____ H: ____ V	Lower Slope____ H: ____ V	Timber Shores ____
Spaced Sheeting ____	Multiple Benches ____		Trench Shield ____
	Slope With Support ____		Unsupported Wall ____

SOIL CONDITIONS

Results (circle one type) of Visual & Manual tests indicate soil it Type.....Rock A B C
If no Manual & Visual tests performed, trench shall be shored for Type "C" soil (ESRM) _____

MANUAL TESTS (OSHA requires one or more)

		Cohesive Fissured	Cohesive Unfissured	Granular
1)	PLASTICITY/PAT		_____	_____
2)	DRY STRENGTH	_____	_____	_____
3)	DRYING	_____	_____	_____
4)	THUMB PENETRATION			

Type "A", ¼" or less _____ Type "B", ¼" to 1" _____ Type "C", 1" or more _____
5) POCKET PENETROMETER _____
6) OTHER tests _____

VISUAL TESTS (OSHA requires one or more. Do as many as possible)

	Cohesive Soil Presence indicates more stability	Granular Soil Presence indicates less stability
1) Spoil Pile:	Remains in clumps _____ (Fine Grained Clay)	Breaks up easily _____ (Course grained sand or gravel: silt)
2) Trench Sides:	Stands vertical _____ for over 2 hours (Fine-grained clay)	Sloughs into trench _____ (Course grained sand or gravel: silt)

Presence indicates less trench stability

3) Fissures: Cracks or spalls.....trench side _____ trench top _____
4) Soil layers slope into trench estimated at 4H:1V or steeper..... _____
5) Rock layer above soil layer..... _____
6) Sloughing or caving of sides into trench during excavation ..... _____
7) Seepage into trench from.....sides _____ surface _____ bottom _____
8) Water up to bottom half of trench within last 24 hours..... _____
9) Vibration sources near trench may affect stability ..... _____
11) Prior or existing excavation.....crossing the trench _____ parallel to trench _____
10) Organics present in soil can result in trench failure or hazardous air..... _____

CONSTRUCTION/DESIGN COMMENTS

Tailboard _____ On-site review with construction supervisor & design _____

The "Competent Person" is responsible for all items in checklist
CP has authority to make prompt, corrective decisions to remedy any existing or predictable hazard.

SELECTION OF PROTECTIVE SYSTEMS

The following figures are a graphic summary of the requirements for excavations 20 feet or less in depth. Protective systems for use in excavations more than 20 feet in depth must be designed by a registered professional engineer in accordance with § 1926.652(b) and (c).

Figure 1. Preliminary Decisions

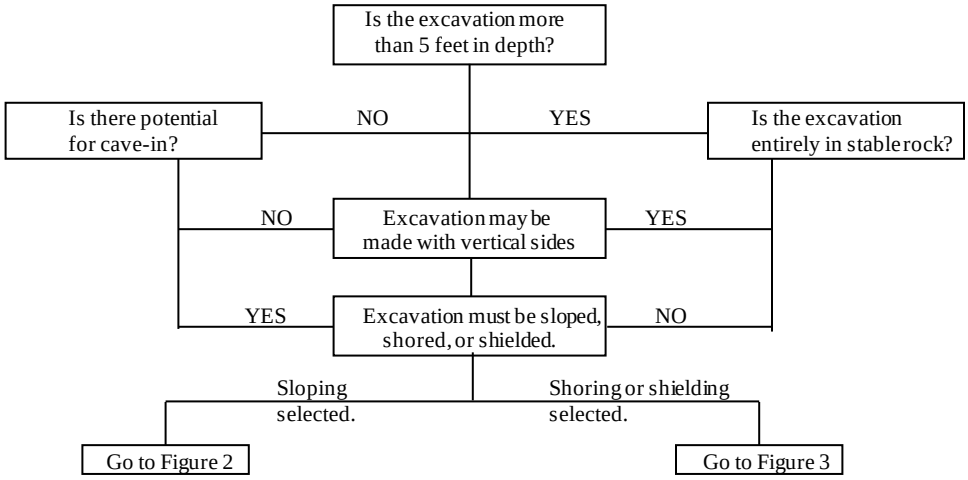
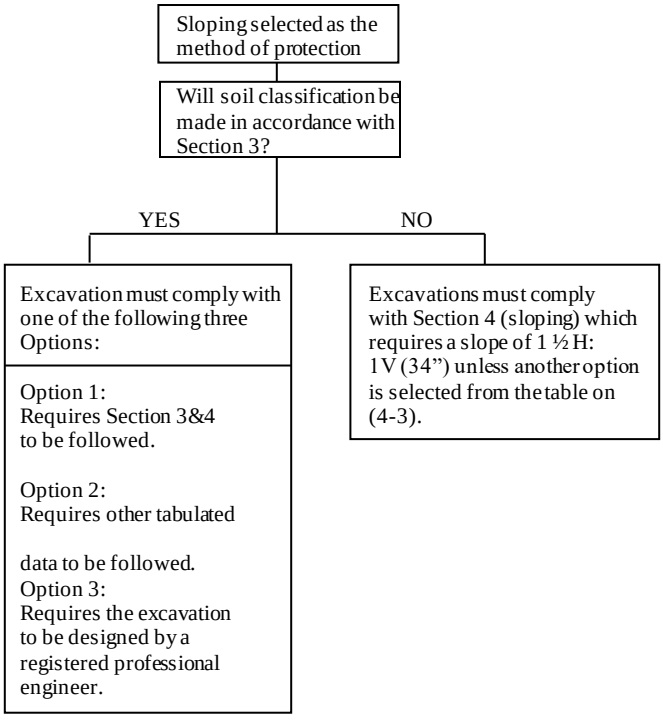
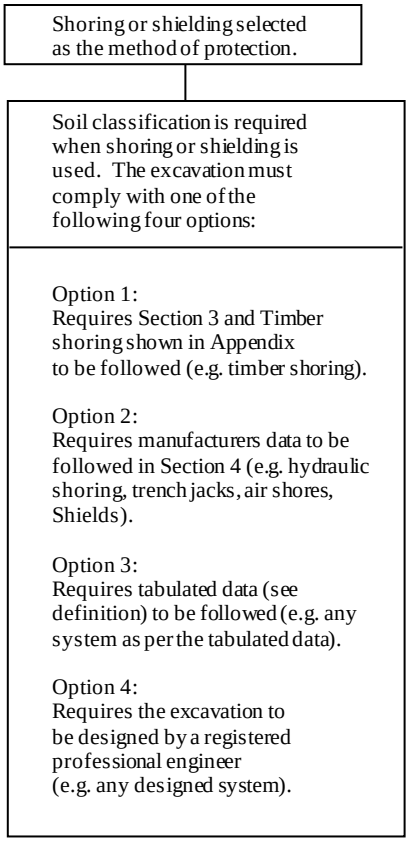


Figure 2. Sloping Options



EXCAVATION STANDARD

Figure 3. Shoring and Shielding Options



Appendix A

Excavation Inspection Checklist and Diagrams

Chapter 14

Hazard Communication

Hazard Communication

General Information

This written hazard communication program shall be developed, implemented, and maintained at every job site, and will be available at the worksite job trailer to any interested employee, employee representative, or OSHA and NIOSH personnel. This program was written to educate the employees concerning jobsite hazards relating to chemical exposure, and reflects OSHA's adoption of the Globally Harmonized System of Classification (GHS). Dale Russell has been designated to manage this program. This program has been broken into the following easily referenced sections to assist superintendents, foremen and all other employees.

1. List of hazardous chemicals
2. Container labeling
3. Safety data sheets (SDS)
4. Employee information and training
5. Hazardous non-routine tasks
6. Informing contractors / multi-employer workplaces

This program covers any chemicals and materials known to be present at the workplace to which employees and/or contractors may be exposed under normal as well as foreseeable emergency conditions.

Inventory of Hazardous Chemicals

This section of the hazard communication program contains a list of all known or potentially hazardous chemicals used at the jobsite. A hazardous chemical is any chemical that poses a physical or health hazard. It is required that each hazardous chemical used on the jobsite be recorded on a hazardous chemical list. The chemical identity used on the list of hazardous chemicals shall be consistent with the name found on the label, which will be the same as that shown on the Safety Data Sheet for that product.

The project superintendent shall be responsible for maintaining the list of hazardous chemicals. When products are brought onto the jobsite, the list shall be checked. If the product is not on the list, it will be added and the project superintendent shall confirm that an appropriate SDS for that product is obtained. In the event that an SDS is not readily available for a product arriving on site, the project superintendent shall contact the manufacturer and request an SDS for that product and indicate the date on which the call was made on the list of hazardous chemicals.

The form to be used to maintain the list of hazardous chemicals is located at the end of this section. This list of hazardous chemicals form has a designated area for SDS's on file for the corresponding chemical. This will enable the project superintendent to ensure that there is an SDS for each product on the list of hazardous chemicals.

Container Labeling

The project superintendent will verify that all stationary tanks, drums, vessels, and portable containers, and bulk materials are labeled as follows:

1. Container shall be clearly labeled as to contents and associated hazards. Labels may not be defaced or removed.

2. The label used to identify the chemical shall coincide with the chemical name used on the Safety Data Sheet (SDS) for that product, and will include a signal word, pictogram(s), hazard warnings, precautionary statements, and manufacturer or distributor name and contact information as required under the GHS guidelines.

3. If an employee dispenses a product from a labeled container, the secondary container in which the product is put for use must be properly labeled as to contents and hazards. The employee who removes the product is responsible to ensure that all secondary containers are labeled. The project superintendent shall review the labeling system in place on the jobsite, and provide additional training as needed.

4. Secondary container hazard warnings may include words, pictures, symbols, or combination thereof, which provide at least general information regarding the hazards of the chemicals, and which, in conjunction with the other information immediately available to employees under the hazard communication program, will provide employees with the specific information regarding the physical and health hazards of the hazardous chemical.

Safety Data Sheets (SDS)

The project superintendent shall be responsible for obtaining and maintaining current SDSs for each chemical used at the jobsite. If an SDS is missing for a particular product, the manufacturer of the chemical shall be contacted by the project superintendent so an SDS can be obtained. If the manufacturer cannot get the SDS to the jobsite that day, then the date the call was made shall be documented, as well as when the SDS is expected to arrive at the jobsite.

Copies of SDSs for all hazardous chemicals to which employees may be exposed will be kept at Diamond & Thiel Construction Co., Inc. job trailer and/or in the foreman or superintendent's vehicle.

SDSs will be available for review to all employees during each work shift. If SDSs are not available or new chemicals in use do not have SDSs, immediately contact a supervisor.

If during the course of construction an employee is required to perform any task that involves the use of a hazardous chemical, the SDS shall be referred to prior to using that chemical so the proper safety measures are taken.

A sample Safety Data Sheet is included in the hazard communication program for employee review.

Hazards of Non-Routine Tasks

During the course of construction, there are times when employees are required to perform hazardous non-routine tasks. Prior to starting work on such projects, each affected employee will be given information and training by the project superintendent about hazardous chemicals to which the employee(s) may be exposed during such activity.

The information and training that shall be covered for hazardous non-routine tasks include:

1. Specific chemical hazards, including those associated with chemicals in unlabeled pipes in the work area

2. Protective/safety measures that can be utilized to reduce the exposure.

3. Measures Diamond & Thiel Construction Co., Inc. has taken to reduce the hazards, which may include ventilation, personal protective equipment, presence of another employee, and emergency procedures.

Employee Training

Employees will be provided with effective documented information and training on hazardous chemicals in their work area at the time of their initial assignment, and whenever a new physical or health hazard the employees have not previously been trained about is introduced into their work area. Chemical-specific information will always be available through labels and Safety Data Sheets.

Training will include information on the OSHA standard, hazardous chemical present in the work area, physical and health risks of those chemicals, symptoms of overexposure, how to determine the presence of chemicals in the work area, how to reduce or prevent chemical exposure, steps the company has taken to reduce or prevent exposures, procedures to follow if employees are overexposed, how to read labels and SDS's, and location of the SDS file and written Hazard Communication program.

Before December 1, 2013, employees will be trained in the revised Hazard Communication label elements and SDS format that align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Currently, all Diamond & Thiel employees speak and understand English. If in the future the company has non-English-speaking employees, training will be provided in an effective manner to those employees with the aid of translators.

Multi-Employer Workplaces / Multiple Job Sites

All employers/contractors shall review appropriate hazard communication materials such as the written program, list of hazardous chemicals, container labeling and Safety Data Sheets. Any necessary

precautionary measures shall be taken to protect employees during normal operating conditions and foreseeable emergencies prior to commencement of work.

Where employees must travel between work sites during a single shift, the written program may be found at the primary work site or in the foreman or superintendent's vehicle.

Inventory of Hazardous Chemicals

Project Name: _____

Date: _____

	Common Name	Manufacturer Common Name	SDS On File Yes/No	Date Obtained*
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

* Date Obtained section should be used to indicate the date on which the SDS is received. In the event that an SDS is not readily available for a product arriving on site, the project superintendent shall contact the manufacturer and request an SDS for that product and indicate in this section the date the call was made.

Chapter 15

Respiratory Protection Program

Respiratory Protection Program

Purpose

The primary objective of this program is to protect employees from inhalation and ingestion of harmful levels of air contaminants.

Policy

Employees who may be exposed to air contaminants such as particulates or harmful gases and vapors which exceed the limits detailed in OSHA's permissible exposure limits will be provided at no cost to the employees with the appropriate NIOSH-approved respiratory protection. Diamond & Thiel employees may not work in oxygen-deficient atmospheres and are not permitted to use a self-contained breathing apparatus (SCBA).

The Safety Coordinator (SC) will serve as the program administrator. The SC is knowledgeable about the complexity of the program, is able to conduct evaluations, and has training appropriate to his role.

Scope

This policy applies to all personnel in the performance of their jobs with Diamond & Thiel Construction Co., Inc.

Procedures for Selecting Respiratory Protection

1. Determination of Need for Respiratory Protection

    a. The project superintendent of any operation involving the release, or possible release, of airborne contaminants such as dusts, gases, fumes, mists, etc. should contact the project manager and the SC for advice on precautions to be taken.

    b. The project superintendent shall evaluate the hazard and determine if exposure to contaminants can be eliminated by engineering controls. Example: Substitution of a less hazardous procedure or material, use of general and local ventilation, or enclosing or isolating the operation(s).

    c. When effective engineering controls have reduced exposures to the lowest possible level and the air quality still exceeds a PEL (Permissible Exposure Limit), the project superintendent will determine the need for respirators based on Safety Data Sheets, industrial hygiene monitoring, medical experience, and/or other pertinent information.

    d. If engineering controls are not feasible, or in emergency situations where there is a reasonable expectation of high contaminant exposure, respirators will be provided that are appropriate to

the situation.

2. Operations Requiring Respiratory Protection

   a. All employees performing jobs that are designated mandatory respirator jobs shall be informed of this requirement. This shall be done through:

      Specifying the correct respirator in the Job Specifications report or other such written procedures for the Job and/or Project Safety meetings.

      Postings at the worksite or signs in the area where the job exists.

   b. Diamond & Thiel employees may not work in atmospheres that are Immediately Dangerous to Life and Health (IDLH).

3. Selection and Procurement of Respirators

   a. Respirators shall be selected according to the hazard(s) to which workers are exposed, keeping in mind the physical and chemical properties of the air contaminant(s) and concentration(s) likely to be encountered. Respirators will be provided at no cost to affected employees.

   b. Prior to donning a respirator, Diamond & Thiel Construction Co., Inc. employees are required to be medically evaluated and fit-tested. After successfully passing the medical examination and the fit-test, respirators will be provided by Diamond & Thiel Construction Co., Inc. and will be permanently assigned to employees that require their use routinely. Respirators for operations involving short-term use will be temporarily assigned to employees and returned to the facility upon completion of the task, where they will be cleaned and properly stored for future use. Replacement air purifying respirators will be issued when needed.

   c. The respirators utilized by Diamond & Thiel Construction Co., Inc. are NIOSH-approved Air Purifying Respirators that remove particulate or gaseous contaminants by passing ambient air through the air purifying filter, cartridge, or canister. Air purifying respirators must not be used in atmospheres containing less than 19.5% oxygen by volume.

   d. In cases where air purifying respirators are not utilized due to the presence of a hazardous atmosphere, contaminant hazards have not been identified, or employee exposure and protection needed has not been identified or reasonably estimated, the atmosphere shall be considered to be IDLH (Immediately Dangerous to Life and Heath) and Diamond & Thiel employees may not work in the area.

NOTE: Respiratory protection can be achieved through good work practices and the use of air purifying half-face or full-face respirators provided that respirator limitations are not exceeded. Use of a Self-Containing Breathing Apparatus or a Supplied Air Respirator typically does not apply to construction activities.

4. Respirator Approval

   a. Only National Institute for Occupational Safety and Health (NIOSH) approved (tested and certified) respirators should be used. Respirators shall be used only for the substances for which they are designed.

5. Medical Approval

   a. Employees will not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work while wearing a respirator. Persons who will be assigned to the mandatory use of respirators will have their medical history reviewed by a medical professional before starting employment. The medical status of those required to use respirators should be reviewed periodically thereafter. Based on the overall health of the individual, a doctor or licensed health care professional shall determine if the employee is to be restricted from wearing respiratory protective equipment. If a restriction is applied, supervision is notified and this fact is indicated on the employee's medical records.

   b. Employees required to wear any respirator will be required to fill out a medical questionnaire (see Appendix A to this Chapter) that will be sent to a physician after it is completed. The physician will review the questionnaire and determine whether a medical examination is needed. The employee will then be given an opportunity to discuss the questionnaire and the examination results with the physician during normal working hours at a convenient time in a language understandable to the employee.

   c. Employees who voluntarily wear filtering facepieces (dust masks) and are not exposed to a PEL (Permissible Exposure Limit) will not be required to be medically evaluated. Employees who voluntarily wear any other type of respirator will be required to be medically evaluated.

6. Training

   a. Employees required to use a respirator shall be trained initially before they are allowed to wear a respirator, and at least annually by the respiratory protection program administrator, Dale Russell. Additional training will be provided when needed. This training must be documented and shall include:

      (1) Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effects of the respirator. (A copy of how to perform a positive and negative pressure check will be given to the employee.)

      (2) What the limitations and capabilities of the respirator and the air purifying filters, cartridges, and canisters are.

      (3) How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions.

      (4) The fact that tight-fitting respirator wearers may not wear more than one day's growth of beard. Facial hair or anything else that interferes with the respirator seal, such as glasses,

ear buds, etc. is prohibited.

(5) How to inspect, put on and remove, use, and check the seals of the respirator.

(6) What the procedures are for maintenance and storage of the respirator. (A copy of respirator cleaning procedures will be given to the employee.)

(7) How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.

(8) Employees must leave the respirator use area if they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece.

(9) Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations.

(10) Procedures to ensure adequate air quality.

(11) Instructions to employees who voluntary use filtering facepieces (dust masks) when not required to. (A copy of information pertaining to respirator use when not required will be given to the employee.) (See Appendix B to this Chapter.)

(12) Instructions from respirator manufacturer.

Fit Testing

1. Qualitative Fit Test

   a. Prior to initial use of any tight-fitting respirator, each employee will be fit tested with the same make, model, style, and size of the respirator they will be using. Fit testing will be done annually or when changes in the employee's physical condition could affect respirator use. This is done to ensure that each employee is able to obtain a good facepiece-to-face seal. The fit test will be performed by the respiratory program administrator following protocol established under Appendix A. to 1910.134: Fit Testing Procedures. (See Appendix C to this Chapter.)

   b. Documentation of fit tests performed will be maintained at Diamond & Thiel's main office. The records will contain information in accordance with the record-keeping requirements set forth in 1910.134(m)

2. Positive and Negative Pressure Tests

   a. Respirator users shall be trained in how to perform positive and negative pressure tests and should use them each time the respirator is donned as a means of quickly checking respirator fit. (See Appendix D to this Chapter.)

b. Positive Pressure Test: This test is performed by closing off the respirator exhalation valve using the palm of the hand and exhaling gently into the facepiece. The fit is considered satisfactory if slight positive pressure can be built up inside the facepiece without any evidence of outward leakage.

c. Negative Pressure Test: In this test, the user closes off the air inlet of the respirator by covering it so that it cannot pass air; inhales gently so that the facepiece collapses slightly; and holds breath for about 10 seconds. If the facepiece remains slightly collapsed and no inward leakage is detected, a suitable fit exists.

3. Inspecting, Cleaning, Storing, and Maintaining Respirators

a. Employees must inspect their respirator before use and during cleaning for proper function, including checking inhalation and exha1ation valves, facepiece, and wear and condition of head straps. Rubber elastomer parts shall be inspected for pliability and signs of deterioration. Respirators to be used only in emergency situations must be inspected at least monthly and in accordance with manufacturer requirements, and must be checked for proper function before and after each use. Emergency escape-only respirators will be inspected before being carried into the workplace for use.

b. Filter, cartridge, or canister life must not be exceeded. Gas and vapor cartridges must be equipped with an ESLI (end of service life indicator) certified by NIOSH. When this type of cartridge is not available, they must be replaced before the end of their service life. The superintendent on site will determine this.

c. Respirators permanently assigned must be thoroughly cleaned with a sanitizing solution by the employee after each use. Respirators issued for temporary use will be cleaned when they are returned. Respirator cleaning procedures will follow the manufacturer's guidelines or the following protocol as per Appendix B-2 to 1910.134 will be utilized. (See Appendix E to this Chapter.)

d. Clean respirators should be stored either in a clean bag, a big can, or in a clean storage cabinet. Respirators must be stored properly to prevent deformation of the facepiece and exhalation valve. To prevent damage, respirators should not be stored in toolboxes unless they are in carrying cases or cartons. Also protect respirators from dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals.

e. A selection of replacement parts, cartridges, and filters is available from your supervisor. Any repairs or replacement of parts must be done in accordance with the manufacturer's specifications and done by a trained person using NIOSH-approved parts designed for the respirator.

When repairs are made on respirators, NIOSH-approved repair parts must be used which are designed for that specific respirator. Interchanging between different models will void the respirator's certification and may cause dangerous air leaks or equipment failure.

4. Program Evaluation

   a. The program administrator must address appropriate surveillance, and ensure employees leave the area to wash, change cartridges, or if they detect break-through or resistance. Random inspections should be conducted regularly by the supervisor to ensure that respirators are properly selected, used, cleaned and maintained. Deficiencies will be noted and corrective measures taken. Failure to wear a respirator when required will result in disciplinary action as per Diamond & Thiel Construction Co., Inc. Disciplinary Program.

Appendix A

OSHA Respirator Medical Evaluation Questionnaire

OSHA Respirator Medical Evaluation Questionnaire
(Mandatory)
Appendix C to § 1910134

To the employer: Answers to questions in Section 1, and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee: Can you read (circle one): Yes/No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

Company _____

1. Your name: _____ 2. Today's date: _____
3. Your age (to nearest year): _____ 4. Sex (circle one): Male/Female
5. Your height: ft.___ in. ___ 6. Your Weight: ____ lbs.
7. Your job title: _____
8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the area code): _____
9. The best time to phone you at this number: _____
10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one):..... Yes/No
11. Check the type of respirator you will use (you can check more than one category):
    a. N, R, or P disposable respirator (filter-mask, non-cartridge type only).
    b. Other type (for example, half or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).
12. Have you worn a respirator (circle one): ..... Yes/No

    If "yes," what type(s):

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month:..... Yes/No
2. Have you ever had any of the following conditions?
   a. Seizures (fits): ..... Yes/No
   b. Diabetes (sugar disease):..... Yes/No
   c. Allergic reactions that interfere with your breathing: ..... Yes/No
   d. Claustrophobia (fear of closed-in places): ..... Yes/No
   e. Trouble smelling odors: ..... Yes/No
3. Have you ever had any of the following pulmonary or lung problems?
   a. Asbestosis: ..... Yes/No
   b. Asthma:..... Yes/No
   c. Chronic bronchitis:..... Yes/No
   d. Emphysema:..... Yes/No
   e. Pneumonia:..... Yes/No
   f. Tuberculosis:..... Yes/No
   g. Silicosis:..... Yes/No
   h. Pneumothorax (collapsed lung): ..... Yes/No
   i. Lung cancer:..... Yes/No
   j. Broken ribs:..... Yes/No
   k. Any chest injuries or surgeries:..... Yes/No
   l. Any other lung problem that you've been told about: ..... Yes/No
4. Do you currently have any of the following symptoms of pulmonary or lung illness?
   a. Shortness of breath:..... Yes/No
   b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline:..... Yes/No
   c. Shortness of breath when walking with other people at an ordinary pace on level ground:..... Yes/No
   d. Have to stop for breath when walking at your own pace on level ground: ..... Yes/No
   e. Shortness of breath when washing or dressing yourself:..... Yes/No
   f. Shortness of breath that interferes with your job:..... Yes/No
   g. Coughing that produces phlegm (thick sputum):..... Yes/No
   h. Coughing that wakes you early in the morning: ..... Yes/No
   i. Coughing that occurs mostly when you are lying down:..... Yes/No
   j. Coughing up blood in the last month:..... Yes/No
   k. Wheezing: ..... Yes/No
   l. Wheezing that interferes with your job:..... Yes/No
   m. Chest pain when you breathe deeply: ..... Yes/No
   n. Any other symptoms that you think may be related to lung problems: ..... Yes/No
5. Have you ever had any of the following cardiovascular or heart problems?
   a. Heart attack:..... Yes/No
   b. Stroke:..... Yes/No
   c. Angina:..... Yes/No
   d. Heart failure: ..... Yes/No
   e. Swelling in your legs or feet (not caused by walking): ..... Yes/No
   f. Heart arrhythmia (heart beating irregularly):..... Yes/No
   g. High blood pressure: ..... Yes/No
   h. Any other heart problem that you've been told about: ..... Yes/No

6. Have you ever had any of the following cardiovascular or heart symptoms?
   a. Frequent pain or tightness in your chest: ..... Yes/No
   b. Pain or tightness in your chest during physical activity: ..... Yes/No
   c. Pain or tightness in your chest that interferes with your job: ..... Yes/No
   d. In the past two years, have you noticed your heart skipping or missing a beat: ..... Yes/No
   e. Heartburn or indigestion that is not related to eating: ..... Yes/No
   f. Any other symptoms that you think may be related to heart or circulation problems: ..... Yes/No
7. Do you currently take medication for any of the following problems?
   a. Breathing or lung problems: ..... Yes/No
   b. Heart trouble: ..... Yes/No
   c. Blood pressure: ..... Yes/No
   d. Seizures (fits): ..... Yes/No
8. If you've used a respirator, have you ever had any of the following problems?
   (If you've never used a respirator, check the following space and go to question 9:)
   a. Eye irritation: ..... Yes/No
   b. Skin allergies or rashes: ..... Yes/No
   c. Anxiety: ..... Yes/No
   d. General weakness or fatigue: ..... Yes/No
   e. Any other problem that interferes with your use of a respirator: ..... Yes/No
9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire: ..... Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ever lost vision in either eye (temporarily or permanently): ..... Yes/No
11. Do you currently have any of the following vision problems?
    a. Wear contact lenses: ..... Yes/No
    b. Wear glasses: ..... Yes/No
    c. Color blind: ..... Yes/No
    d. Any other eye or vision problem: ..... Yes/No
12. Have you ever had an injury to your ears, including a broken eardrum: ..... Yes/No
13. Do you currently have any of the following hearing problems?
    a. Difficulty hearing: ..... Yes/No
    b. Wear a hearing aid: ..... Yes/No
    c. Any other hearing or ear problem: ..... Yes/No
14. Have you ever had a back injury: ..... Yes/No
15. Do you currently have any of the following musculoskeletal problems?
    a. Weakness in any of your arms, hands, legs, or feet: ..... Yes/No
    b. Back pain: ..... Yes/No
    c. Difficulty fully moving your arms and legs: ..... Yes/No
    d. Pain or stiffness when you lean forward or backward at the waist: ..... Yes/No
    e. Difficulty fully moving your head up or down: ..... Yes/No
    f. Difficulty fully moving your head side to side: ..... Yes/No
    g. Difficulty bending at your knees: ..... Yes/No
    h. Difficulty squatting to the ground: ..... Yes/No

i. Climbing a flight of stairs or a ladder carrying more than 25 lbs: ..... Yes/No
j. Any other muscle or skeletal problem that interferes with using a respirator: ..... Yes/No

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,090 feet) or in a place that has lower than normal amounts of oxygen: ..... Yes/No
   If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: ..... Yes/No
2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals: ..... Yes/No
   If "yes," name the chemicals if you know them: _____
3. Have you ever worked with any of the materials, or under-any of the conditions, listed below:
   a. Asbestos: ..... Yes/No
   b. Silica (e.g., in sandblasting): ..... Yes/No
   c. Tungsten/cobalt (e.g., grinding or welding this material): ..... Yes/No
   d. Beryllium: ..... Yes/No
   e. Aluminum: ..... Yes/No
   f. Coal (for example, mining): ..... Yes/No
   g. Iron: ..... Yes/No
   h. Tin: ..... Yes/No
   i. Dusty environments: ..... Yes/No
   j. Any other hazardous exposures: ..... Yes/No
   If "yes," describe these exposures: _____
4. List any second jobs or side businesses you have: _____
5. List your previous occupations: _____
6. List your current and previous hobbies: _____
7. Have you been in the military services? ..... Yes/No
   If "yes," were you exposed to biological or chemical agents (either in training or combat): ..... Yes/No
8. Have you ever worked on a HAZMAT team? ..... Yes/No

8 Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications): ..... Yes/No
If "yes," name the medications if you know them: _____

10. Will you be using any of the following items with your respirator(s)?
    a. HEPA Filters: ..... Yes/No
    b. Canisters (for example, gas masks): ..... Yes/No
    c. Cartridges: ..... Yes/No
11. How often are you expected to use the respirator(s)?
    (Circle "yes" or "no" for all answers that apply to you)
    a. Escape only (no rescue): ..... Yes/No
    b. Emergency rescue only: ..... Yes/No
    c. Less than 5 hours per week: ..... Yes/No
    d. Less than 2 hours per day: ..... Yes/No
    e. 2 to 4 hours per day: ..... Yes/No
    f. Over 4 hours per day: ..... Yes/No
12. During the period you are using the respirator(s), is your work effort:
    a. Light (less than 200 kcal per hour): ..... Yes/No
    If "yes," how long does this period last during the average shift: ___ hrs. ___ mins.

Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

    b. Moderate (200 to 350 kcal per hour): ..... Yes/No
    If "yes," how long does this period last during the average shift: ___ hrs. ___ mins.

Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. Heavy (above 350 kcal per hour): ..... Yes/No
    If "yes," how long does this period last during the average shift: ___ hrs. ___ mins.

Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator: ..... Yes/No
    If "yes," describe this protective clothing and/or equipment: _____
14. Will you be working under hot conditions (temperature exceeding 77º F): ..... Yes/No
15. Will you be working under humid conditions: ..... Yes/No
16. Describe the work you'll be doing while you're using your respirator(s): .....
17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases): _____
    _____

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):
    Name of the first toxic substance: _____
    Estimated maximum exposure level per shift: _____
    Duration of exposure per shift: _____
    Name of the second toxic substance: _____
    Estimated maximum exposure level per shift: _____
    Duration of exposure per shift: _____
    Name of the third toxic substance: _____
    Estimated maximum exposure level per shift: _____
    Duration of exposure per shift: _____
    The name of any other toxic substances that you'll be exposed to while using your respirator:
    _____
19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security): _____
    _____
    _____

Appendix B

Information for Employees Using Respirators When Not Required Under the Standard

Information for Employees Using Respirators When Not Required Under the Standard

Appendix D to § 1910.134
(Non-Mandatory)

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator se is encouraged, even when exposures are below exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.

2. Choose respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.

3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

Appendix C

Fit Testing Procedures

Fit Testing Procedures
(Mandatory)
Appendix A to § 1910.134

Part I. OSHA-Accepted Fit Test Protocols

Fit Testing Procedures - General Requirements

The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA-accepted fit test methods, both QLFT and QNFT.

1. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.

2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.

3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.

4. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.

5. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.

6. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator
   a. Position of the mask on the nose
   b. Room for eye protection
   c. Room to talk
   d. Position of mask on face and cheeks

7. The following criteria shall be used to help determine the adequacy of the respirator fit:
   a. Chin properly placed;
   b. Adequate strap tension, not overly tightened;
   c. Fit across nose bridge;
   d. Respirator of proper size to span distance from nose to chin;
   e. Tendency of respirator to slip;
   f. Self-observation in mirror to evaluate fit and respirator position.

8. The test subject shall conduct a user seal check, either the negative and positive pressure seat checks described in Appendix B-1 of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B-1. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and re-tested if the test subject fails the user seal check tests.

9. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.

10. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.

11. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be re-tested.

12. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least *5* minutes before the start of the fit test.

13. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use that could interfere with respirator fit.

14. Test Exercises.
   a. The following test exercises are to be performed for all fit testing methods prescribed in this appendix, except for the CNP method. A separate fit testing exercise regimen is contained in the CNP protocol. The test subject shall perform exercises, in the test environment, in the following manner:

      (1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

      (2) Deep breathing. In a normal standing position, the subject shall breathe slowly and

deeply, taking caution so as not to hyperventilate.

(3) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between-the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.

(4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).

(5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

Rainbow Passage
When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(6) Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)

(7) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.

(8) Normal breathing. Same as exercise (1).

b. Each test exercise shall be performed for one minute except for the grimace exercise, which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

Bitrex™ (Denatonium Benzoate) Solution Aerosol Qualitative Fit Test Protocol

The Bitrex™ (Denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

1. Taste. Threshold Screening. The Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex.

    a. During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M-hood assembly, parts #14 and #15 combined, is adequate.

    b. The test enclosure shall have a 3/4 inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

    c. The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste.

    d. Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This Nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

    e. The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.

    f. To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.

    g. An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

    h. If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

    i. If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste

during the third set often squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

j. The test conductor will take note of the number of squeezes required to solicit a taste response.

k. If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.

l. If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

m. Correct use of the nebulizer means that approximately I ml of liquid is used at a time in the nebulizer body.

n. The nebulizer shall be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.

2. Bitrex Solution Aerosol Fit Test Procedure.

a. The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

b. The fit test uses the same enclosure as that described in 4. (a) above.

c. The test subject shall don the enclosure while wearing the respirator selected according to section I. A. of this appendix. The respirator shall be properly adjusted and equipped with any type particulate filter(s).

d. A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

e. The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCI) solution in warm water.

f. As before, the test subject shall breathe through his or her slightly open mouth with tongue extended, and be instructed to report if he/she tastes the bitter taste of Bitrex.

g. The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.

h. After generating the aerosol, the test subject shall be instructed to perform the exercises in section 1. A. 14. of this appendix.

i. Every 30 seconds the aerosol concentration shall be replenished using one half the number of

squeezes used initially (e.g., 5, 10 or 15).

j. The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

k. If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

Appendix D

User Seal Check Procedures

User Seal Check Procedures
(Mandatory)
Appendix B-1 to § 1910.134

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure checks listed in this appendix or the respirator manufacturers recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

I. Facepiece Positive and/or Negative Pressure Checks

A. Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

B. Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

II. Manufacturer's Recommended User Seal Check Procedures

A. The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

Appendix E

Respirator Cleaning Procedures

Respirator Cleaning Procedures
Appendix B-2 to § CFR 1910.134:
(Mandatory)

These procedures are provided for employer use when cleaning respirators. They are general in nature, and the employer as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed here in Appendix B-2. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in Appendix B-2, i.e., must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

I. Procedures for Cleaning Respirators

A. Remove filters, cartridges, *or* canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.

B. Wash components in warm (43° C [110º F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

C. Rinse components thoroughly in clean, warm (43º C [110º F] maximum), preferably running water. Drain.

D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:

1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one tablespoon of laundry bleach to one gallon of water at 43° C (110° F); or,
2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6-8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43º C (110° F); or,
3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.

E. Rinse components thoroughly in clean, warm (43° C [110° F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

F. Components should be hand-dried with a clean lint-free cloth or air-dried.

G. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.

H. Test the respirator to ensure that all components work properly.

Chapter 16

Confined Space Program

Confined Space Program

Purpose
To provide maximum protection for employees assigned to enter and work in confined spaces, in compliance with 29 CFR 1926 Subpart AA, Confined Spaces in Construction.

Definitions
A confined space is any space having the following characteristics:

- Is large enough and so configured that an individual can bodily enter and perform assigned work; and
- Has limited or restricted means of entry or exit; and
- Is not designed for continuous employee occupancy.

A permit-required confined space has one or more of the hazards described below.

Confined spaces may include but are not necessarily limited to:

Boilers	Manholes	Tank Cars
Pits	Vaults	Wells
Tunnels	Sewers	Cisterns
Furnaces	Diked Areas	Digesters
Silos	Septic Tanks	Pumping Stations
Storage Bins	Hoppers	Vessels
Process Vessels		

Hazards
1. Hazards Of Confined Spaces

   a. Hazardous atmospheres
      - Oxygen deficiency or oxygen enrichment
      - Combustible/flammable/explosive gases and vapors
      - Toxic gases or vapors
      - Combustible dust

   b. Engulfment hazards

   c. Entrapment or configuration hazards

   d. Mechanical hazards

   e. Any other recognized hazards, including but not limited to:
      - Corrosive chemicals
      - Electrical
      - Access with ladders

- Lighting (poor visibility)
- Temperature extremes
- Falling/tripping/insecure footing
- Falling objects
- Weather conditions

2. How Confined Space Hazards Occur

   a. Confined space hazards occur as a result of both natural and man-made sources.
   b. Sources of confined space hazards include but are not limited to:
      - Chemical reactions from products stored in vessels.
      - Oxidation/reduction reactions (i.e., rusting of metals)
      - Decomposition of organic matter
      - Cleaning reagents (solvents, acids)
      - Welding, spray painting, grinding, brazing, sandblasting
      - Ignition with non-flammable gases
      - Fire and explosion hazards from organic hydrocarbon based substances
      - Ignition sources from static electricity, hot work operations, electrical equipment
      - Lack of proper training
      - Loose materials stored in tank (grain, sawdust, etc.)
      - Pyrophoric chemicals

Identification of Confined Spaces

1. Existing Facilities

   If work is to be performed in an existing facility, the host employer shall have the responsibility of identifying confined spaces within that facility and communicating locations and hazards to the controlling contractor, who in turn will convey the information to all subcontractors. The competent person (there may be a common competent person for multiple contractors) will ensure that permit-required confined spaces are labeled. Communication between the host employer, controlling contractor, and subcontractors will include any known hazards the host employer has experienced within the confined spaces and of any precautions that have been instituted by the host employer to protect employees in or near the permit space.

   The activity of all contractors involved in a space will be coordinated pre- and post-entry by the controlling contractor.

   All information pertaining to confined spaces should be provided by the host employer to Diamond & Thiel Construction Co., Inc. in writing.

   At the conclusion of activities within a confined space, personnel should be prepared to brief the host employer on any hazards encountered or created while working in the confined space.

2. New Construction

Diamond & Thiel Construction Co., Inc.'s competent person will be responsible for identifying and labeling confined spaces. Spaces that fall within the definition of a permit-required confined space will be subject to the entry procedures outlined below.

Entry Procedures

No person shall enter a confined space without first being instructed as to the nature of the hazards involved the necessary precautions to be taken, and in the use of protective and emergency equipment required. The following procedures must be followed to provide for the safety of all personnel working within a confined space.

NO EMPLOYEE MAY ATTEMPT AN ENTRY RESCUE.

1. Authorization

All persons assigned to enter a confined space must first obtain instruction from the entry supervisor and a Confined Space Entry Permit Form. The permit is to be entirely completed and reviewed and signed by the entry supervisor to authorize entry before any work in a confined space begins. The duration of the permit shall not exceed the time required to complete the task. Should the job last longer than one shift, a new permit must be issued at the beginning of each shift. The permit's duration can be stated in terms of a specific task to be performed; for example, the removal and installation of a relief valve. The permit must be posted outside the confined space to inform others that an employee is working inside. All permits must be filed in the jobsite office upon their expiration. Permits must be maintained for a period of one year to allow for an annual review of this Confined Space Entry Program.

2. Atmospheric Testing

The atmosphere in the confined space must be tested prior to entry and continuously monitored while the confined space is occupied. Only personnel trained in the use of air-monitoring equipment and its limitations will be permitted to perform pre-entry testing. Air-monitoring equipment such as gas meters must be calibrated as specified by its manufacturer. Before entry into the confined space, the atmosphere must test within the acceptable ranges as outlined below. It is important to remember that due to the intrinsic limitations of air monitoring devices, testing must be performed in the order listed below.

NOTE: Confined space entrants or their authorized representative, shall be provided an opportunity to observe calibration, pre-entry or periodic testing results.

Order	Substance	Acceptable Level
1.	Oxygen	19.5%-23.5%
2.	Explosive gas or vapor	<10% LFL
3.	Explosive dust	<LFL *(5* ft. visibility)
4.	Carbon monoxide (CO)	50 ppm
5.	Hydrogen sulfide	10 ppm

1% =10,000ppm (Parts Per Million)

Initial readings should be recorded on the entry permit, and continuous monitoring results will also be recorded periodically. If any values fall outside the acceptable range, appropriate corrective actions should be taken. Where additional substances may exist, the appropriate tubes and testing equipment should be used to assure airborne concentrations are within the acceptable range. This range, referred to as the PEL or TWA, can usually be found on the SDS for the material generating the airborne substance.

Where testing reveals an unsafe atmosphere or there is the potential for such an atmosphere, appropriate equipment must be used to purge and ventilate the space. If readings cannot be brought into acceptable levels then the confined space entry supervisor shall notify the main office as to the site conditions. Confined spaces in which the air quality is unsafe, despite purging and ventilation efforts, may require the use of a self-contained breathing apparatus (SCBA) and other specialized equipment, and appropriately trained personnel. Employees are prohibited from using such equipment unless they have received the necessary training and are authorized to use it by the main office.

In the event the audible alarm or flashing lights on the monitor are activated while working in a confined space, the entrant must exit the confined space immediately.

NOTE: If work is performed in a confined space hi which a flammable atmosphere exists, employees must use spark-proof hand tools and explosion-proof equipment. Diamond & Thiel Construction Co., Inc. employees are only permitted to work in such conditions if the entry supervisor has utilized all means to get the air quality in the confined space within acceptable levels and has received clearance from the main office.

3. Completion of Entry Permit

Entry permits must be completed prior to entering a confined space. The confined space entry permit provided with Diamond & Thiel Construction Co., Inc. confined space program must be completed in it's entirety and must be signed by the entry supervisor before any Diamond & Thiel Construction Co., Inc. employee is permitted to enter the space.

The confined space entrant shall be given the opportunity to review the permit prior to their entry and may request that additional monitoring be performed if they feel the evaluation of the space may not be accurate. When possible, observations necessary to complete the entry permit should be

made from outside the confined space. In circumstances where this in not possible, the main office shall be notified as to the site conditions.

The following are procedures that must be completed and logged onto the permit prior to confined space entry:

a. Before working in the confined space, flange off all incoming and outgoing pipes and lockout all valves and electrical equipment. Lockout and tag all valves in accordance with the lockout-tagout procedure.

b. All mechanical equipment must also be tagged out and/or blocked to prevent incidental startup of equipment.

c. Once an entrance cover is removed, the opening must be promptly guarded by a railing, temporary cover, temporary fences, or other temporary barriers to prevent individuals from falling into a space and to protect the entrant from falling materials.

d. A means of communication between the entrant and the attendant must be established. Communication may be by voice, radio, visual, or rope.

e. Appropriate personal protective equipment must be selected to protect the entrant from any hazards inside the space.

f. Appropriate non-entry rescue equipment must be provided for use in emergency situations.

g. Names and numbers of emergency response services must be provided.

h. An adequate lighting source must be provided which is appropriate for conditions inside the space.

NOTE: Canceled entry permits shall be retained for at least one year to facilitate the review of the confined space permit program. Any problems encountered during an entry operation shall be noted on the pertinent permit so that appropriate revisions to the confined space program and entry permit can be made.

4. Duties of Authorized Entrants

a. Review entry permits to assure calibrations, monitoring results and engineering controls implemented are acceptable and request a re-evaluation if needed.

b. Know the hazards that may be faced during: entry, including information on the mode, signs or symptoms and consequences of exposure.

c. Properly use the equipment provided. (Harness, air monitors, ventilation, communication, etc.).

d. Communicate with the attendant as necessary to enable the attendant to monitor the entrant's status and alert entrant of the need to evacuate.

e. Alert the attendant of any warning sign or symptom of exposure to a dangerous situation or prohibited condition.

f. Exit from the permit space as quickly as possible if the attendant or entry supervisor gives the order; if a warning sign or symptom of exposure to a dangerous situation or prohibited condition exists; or if an evacuation alarm is activated.

5. Duties of Attendants

a. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms and consequences of exposure.

b. Be aware of possible behavioral effects of hazard exposure in authorized entrants.

c. Maintain an accurate account of all authorized entrants in the permit space.

d. Remain outside the permit space during entry operations until relieved by another attendant.

e. Communicate with authorized entrant to monitor their status and to alert the entrant of need to evacuate.

f. Order an evacuation of the space if:
- A prohibited condition is detected
- A behavioral effect or hazard exposure is detected in the entrant
- A situation outside the space could endanger the entrant
- Attendant duties cannot be effectively and safely performed

g. Summon rescue and other emergency services if entrant may need assistance to escape from the permit space hazards.

h. Prevent unauthorized persons from approaching or entering a permit space while entry is underway.

i. Perform no other duties that may interfere with primary duty of protecting the authorized entrant.

j. Perform non-entry rescues as per Diamond & Thiel Construction Co., Inc. confined space program. (i.e. Using retrieval systems)

6. Duties of Entry Supervisor

   a. Know the hazards that may be faced during entry, including information on the mode, signs or symptoms and consequences of exposure.

   b. Verify that the appropriate entries have been made on the permit prior to endorsing the permit and allowing entry to begin.

   c. Terminate entry and cancel the permit when the entry operations covered by the permit are completed or a condition that is not allowed under the entry permit arises in or near the permit space.

   d. Verify that rescue services are available and that the means for summoning them are operable.

   e. Remove unauthorized individuals who enter or attempt to enter the permit space during entry operations.

   f. Determine if entry operations remain consistent with terms of the entry permit and that acceptable entry conditions are maintained.

7. Emergency Rescue Procedures

   Under no circumstances do we expect personnel to enter a permit space where hazards have not been eliminated or effectively controlled. Additionally, we understand that unexpected situations might arise that prevent entrants from self-rescue. In response, the following rescue and emergency action plan has been developed and will be strictly enforced. Non-entry rescue shall be the first and primary option for emergency rescue.

   Vertical Confined Spaces: When entering a vertical confined space over 5 feet in depth, a retrieval system such as a tripod and winch will be utilized to rescue employees. The system will be operated by the attendant responsible for the confined space and the entry supervisor will confirm that the necessary rescue equipment is in place and that employees are trained in their use. The authorized entrant shall wear a full body harness with the winch snap hook securely fastened to the D-ring located on the entrant's back between the shoulders.

   The use of the retrieval system will be the primary means of rescue. However, off-site rescue entry services will be notified in advance of the entry as a safety precaution. The entry supervisor is responsible for notifying third party rescue services to discuss the permit required work that needs to be performed and to conduct a site walk-through with the rescue service to assure they are capable of performing such a rescue and first aid in a timely manner.

   Horizontal Confined Space During horizontal confined space entry, the entry supervisor is responsible for notifying third party rescue services to discuss the permit required work that needs to be performed and to conduct a site walk-through with the rescue service to assure they are capable of performing such a rescue and first aid in a timely manner.

NOTE: Each member of the rescue service team shall practice making a permit required space rescue at least every 12 months. Each member of the rescue service team shall be trained and hold a current certification in basic first aid and cardiopulmonary resuscitation (CPR).

The rescue service must agree to notify the entry supervisor if it becomes unable to respond in the event of an emergency. A fire department, for example, may be obliged to devote all its resources to an event in its community, making it unable to respond to perform an entry rescue. If so notified, the entry supervisor will immediately terminate the entry.

8. Smoking

Smoking is prohibited inside of and within twenty (20) feet of the confined space.

9. Welding Within a Confined Space

If welding is to be performed in confined spaces that did or does now contain combustibles, all residues including dry scale or sediment must be removed. If it is not possible to remove all combustible materials, they must be covered by a noncombustible blanket.

The following specific procedures are required when welding is performed in a confined space:

a. Welding electrodes must be removed from their holders during suspension of work (e.g., during lunch or overnight). The welding machine must be disconnected from its power source.

b. Mechanical ventilation must be provided.

c. Compressed gas cylinders and welding machines must be left outside the confined space.

d. Portable equipment on wheels must be secured to prevent incidental movement.

e. Gas welding and cutting equipment, such as hoses, connections, torches, etc., must be inspected and tested to ensure their integrity.

f. Means must be available for the quick removal of a welder in the event of an emergency. A full body harness must be used whenever their use will facilitate rescue.

g. An attendant with a pre-planned rescue procedure must be stationed outside the space.

h. Torch valves must be closed and the fuel gas and oxygen supply positively shut off at some point outside the space when the torch is not being used for substantial amount of time. Additionally, the torch and hose must also be removed from the confined space where practicable.

i. Warning signs should be posted warning of hot metal after welding is completed.

j. Welders and helpers must use appropriate respiratory protection when ventilation controls are insufficient.

k. Never use oxygen to ventilate a confined space.

10. Multi-Employer Permit Space Entry Operations

Where employees of Diamond & Thiel Construction Co., Inc. and those of another employer are required to work simultaneously within a confined space, such work will be coordinated by the controlling contractor.

11. Fire Protection

At least one 20 lb. ABC multi-purpose fire extinguisher must be available for instant use in a confined space containing flammable gases or vapors.

12. Training

Every individual involved in confined space entry will receive training in a language and vocabulary that they understand. Training will be provided before initial assignment, before there is a change in the worker's assignment, when there is a change in permit space entry operations that introduces a new hazard, or when the worker's actions show inadequacies in the worker's knowledge or use of entry procedures. The training will be specific for the duties the employee will perform and the procedures and practices necessary to protect them from the dangers of the permit space. Training records will include the worker's name, the trainer's signature, and the date(s) of the training, and must be made available upon request to workers or their authorized representatives.

All personnel involved in confined space entry will receive training in:

a. Types of confined space hazards.

b. Components of the confined space program.

c. Components of the entry permit system.

d. Safe confined space welding practices.

e. The need for prompt guarding of the entrance opening.

f. Atmospheric testing equipment including its use, calibration, and maintenance.

g. Atmospheric testing protocol:
- Oxygen, combustibles, toxics
- Pre-entry, frequent or continuous testing
- Check all levels of the space

h. Methods for the control or elimination of any atmospheric hazards:

- Draining and rinsing
- Purging and cleaning
- Continuous forced air ventilation

i. Procedures employees must follow if they detect a hazard.

j. The evaluation process to be used for reentry if hazards are detected.

k. Train employees on the use of entry equipment

l. Personal protective equipment required:
   - Full body harness
   - Respiratory protection
   - Eye and face equipment
   - Protective clothing

Confined Space Permit

Date and Time: _____ Project Name: _____
Permit Expiration Date/Time: _____
Permit Space Location & Description: _____

_____

Purpose of Entry: _____

_____

Pre-Entry checklist:

Note: Entire form must be completed prior to entry into a confined space

1. Atmospheric Testing: To be completed in following order

A. Order	Substance	Acceptable Level	Readings	Acceptable	
1.	Oxygen	19.5%-23.5%		Yes	No
2.	Explosive gas/vapor	<10%LEL		Yes	No
3.	Explosive Dust	<LEL (5ft visibility)		Yes	No
4.	Carbon Monoxide	<35 PPM		Yes	No
5.	Hydrogen Monoxide	<10 PPM		Yes	No
6.	Other			Yes	No
7.	Other			Yes	No

B.	Continuous forced air ventilation in place where required	N/A	Yes	No
C.	C. Are explosion-proof tools/equipment required?	N/A	Yes	No
D.	Is a 20 lb. ABC extinguisher present where required?	N/A	Yes	No
2.	Control of Hazardous Energy			
A.	Are all lines to vessel locked out, broken, capped, or blanked	N/A	Yes	No
B.	Are all switches and valves locked or tagged out?	N/A	Yes	No
C.	Is all mechanical equipment locked out or tagged to prevent incidental startup?	N/A	Yes	No
3.	Is opening to confined space adequately protected?			
4.	Is a means of communication established between entrant and attendant?	N/A	Yes	No
5.	Is entrant equipped with a harness and lifeline for emergency rescue operations?	N/A	Yes	No
6.	Is entrant equipped with appropriate personal protective equipment?	N/A	Yes	No
7.	Are the name and numbers of emergency rescue services readily available	N/A	Yes	No
8.	Is an adequate lighting source, safe for conditions in the space, provided?	N/A	Yes	No
9.	Will welding operations be performed within the space? If "yes" a Confined Space Hot Work Permit must be completed	N/A	Yes	No
10.	Have all personnel received the appropriate training for their duties?	N/A	Yes	No

IF NO IS MARKED FOR ANY OF THE ABOVE ITEMS, ENTRY OPERATIONS MAY NOT PROCEED.

Superintendent Entry Authorization: _____
Signature of Attendent: _____
Signature of Entrants: _____

Chapter 17

Lockout/Tagout Program

Lockout-Tagout Program

Introduction

This document establishes the requirements and procedures for isolating potentially hazardous energy during installation, service, or maintenance of machines and equipment in which the unexpected startup or the release of stored energy could cause injury to employees. These machines will be tagged or locked out before any employee performs any service or maintenance if unexpected startup or release of stored energy could cause injury. All potential sources and types of energy will be addressed, including electrical, hydraulic, pneumatic, stored energy, equipment under tension, steam, and gravity.

Responsibility

The project superintendent will have overall responsibility for the lockout-tagout program, and is in charge of the lockout-tagout procedure including helping other employees locate, lock and tag valves, switches, etc.

Supervisors are responsible for the enforcement of all jobsite safety rules. All shop employees are traveling maintenance personnel, including new or transferred employees, shall be trained in the scope, identification, and significance of the lockout procedures.

Training

Each employee who will be involved in lockout-tagout shall be given training by the designated project superintendent before performing work on any mechanical, electrical, pressurized, etc. system.

Preparation for Lockout-Tagout

The project superintendent should conduct a survey to locate and identify all energy isolating devices. They could be certain switches, valves, or other isolating devices apply to the equipment. The lockout-tagout procedure involves but is not limited to, electricity, motors, steam, natural gas, compressed air, hydraulic systems, digesters, sewers, etc.

Lockout Tagout Restrictions

1. The isolating devices locked and tagged must include all of the devices that control energy, must be singularly identified, and must not be used for any other purpose.

2. Lock, hasps, and tags must be able to withstand any kind of adverse environment in which they may be used. Tags which are to be located in adverse conditions must not deteriorate to a point where they become illegible.

3. Lockout requirements are not met by the removal of fuses.

4. Locks and tags are not to be removed by any person other than the individual who applies the lock.

5. No employee shall rely on another employee's lock or tag.

Procedures of Lockout-Tagout System

1. The lockout tag is to be completed before any work is performed. The tag shall consist of the following information:

    a. Date and time lock was installed
    b. Name of employee who applied the lock and tag
    c. Name of employee's employer
    d. Phone number
    e. Review and compare visual identification data with the specific written procedures for the equipment and machinery
    f. More than one energy source may be involved

2. Notify all affected employees that a lockout-tagout system is going to be used and the reason for it. The authorized employee shall know the type and magnitude of energy connected to the machine or equipment and understand the hazards.

3. If the machine or equipment is operating shut it down by normal stopping procedure.

4. Operate all switches, valves, or other energy isolating devices so that the equipment is totally isolated from its energy sources. Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding, disconnecting, etc.

5. Place a lock on each energy isolating device. Only authorized employees may attach the locks. The locks must hold the energy isolating devices in a "safe" or "off" position. Attach "Danger Do Not Operate" tags to each lock. On the tag write the name of the employee, employer, date and time of attachment, and phone number.

6. If more than one individual is required to lockout and tag the equipment, each person must place a separate lock or tag on each energy isolating device. When an energy isolating device cannot accept multiple locks or tags, a multiple lock hasp must be used. Individual locks are removed, as each person no longer needs to maintain lockout protection.

7. If multiple groups of workers are involved a lockout, a system such as a communal lockbox, in which a supervisor's keys for lockout are placed in a box which is secured by the locks of all participants at risk, or an equivalently safe alternative, shall be used.

8. No Employee May Remove The Lock Of Another Employee.

9. After verifying that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.

10. The system is now properly locked out. CAUTION: Return operating control(s) to "neutral" or "off" position after the test.

11. Implement a tagout system if a lock cannot be utilized. The tag is to be attached so it will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited. Employees are to be trained in the following limitations of the tagout system:

    a. Tags are warning devices and do not provide the physical restraint a lock does.
    b. Tags are not to be removed without authorization of the authorized person responsible for them.
    c. Tags must be legible, understandable and made of a material that will withstand the environmental conditions.
    d. Tags are to be securely attached so that they cannot be inadvertently or incidentally detached during use.

12. Where a tag cannot be attached directly to the energy isolating device, the tag is to be located as close as safety possible to the device in a position immediately obvious to anyone attempting to operate the device.

Sequence For Restoring Machines To Normal Operation

1. When working on equipment that requires "inching" or "jogging" to move parts for adjustment or maintenance, special attention at the energy source must be continued until work is completed. Special attention involves an employee stationed at the primary disconnect switch (the energy source) during "inching" or "jogging." In the event the secondary switch should fail, he would switch the primary disconnect off.

2. After servicing and/or maintenance is complete and equipment is ready for normal operating, check the areas around the machines or equipment to ensure that no one is exposed.

3. After checking that all tools have been removed from the machines or equipment, guards have been reinstalled and employees are in the clear, notify the designated lockout/tagout coordinator before the removal of the tag and lock.

4. After authorization is given, remove all locks and tags. Operate the energy isolating devices to restore energy to the machine or equipment.

If An Employee Forgets To Remove a Lock or Tag

No employee may remove the tag or lock of another employee. The only exception to this is if an employee has forgotten to remove the lock and is not available to do so. The designated lockout-tagout coordinator is the only person who may remove a lock or tag and then only after he/she verifies that:

1. It is safe to restore the energy to the machine or equipment,

2. The authorized employee who applied the device is not at the facility,

3. All reasonable efforts are made to contact the authorized employee, and

4. The authorized employee knows his or her lock and tag was removed before he or she resumes work at the facility.

Definitions

Affected Employee: An employee whose job requires operation or normal use of a machine or piece of equipment which may be locked out, or one whose job requires work in an area where a machine or piece of equipment is locked out.

Authorized and Designated Lockout-Tagout Coordinator: A person authorized and designated by the project manager or project superintendent for contacting the owner's representative to identify all systems to be locked-tagged out, and then assist other authorized employees to locate and lockout-tagout valves, switches, etc.

Authorized Employee: A person who locks out and tags, or tags out a machine or piece of equipment to order to perform service or maintenance on that piece of equipment. An authorized employee and an affected employee may be the same person when the affected employee's duties also include performing maintenance or service on a machine that must be locked out.

Capable of Being Locked Out: An energy isolating device is capable of being locked out:

- If it can be held in the off or safe position by placing a lock, hasp, or similar part into it.
- If it has a built-in lock which holds the device in the off or safe position.
- If a lock can be placed to hold the device in the "off" or "safe" position without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energy Isolating Device: A mechanical device that physically prevents the transmission or release of energy, such as valves, manually operated electrical switch boxes, disconnect switches, blocks, and any similar device used to block or isolate energy. The term does not include push button, selector switch, and other devices.

Energy Source: Any electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Lockout: The placement of a lock and tag on an energy isolating device, in accordance with established procedure, so the energy isolating device and the equipment being controlled cannot be operated until the lock is removed.

Service and/or Maintenance: Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, maintaining, and servicing machines or equipment. These activities include lubrication, cleaning, unjamming, adjustments or tool changes, where the employee may be exposed to unexpected energizing, start up, or a release of hazardous energy.

Tag: A prominent warning device that can be securely fastened to any energy isolating device to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag is removed. The tag must include the name of the employer, name of employee, and date of attachment.

Chapter 18

Hot Work

Hot Work

Purpose

To establish the requirements for safe welding, cutting, soldering, heating, etc.

Responsibilities

The job superintendent is responsible for all aspects of the hot work program.

General

1. All combustible materials must be removed or protected by a welding blanket from the place where the flame or the arc is to be:
   a. 15 feet horizontally
   b. 45 feet below
   c. 10 feet above

2. No arc or flame operation is permitted in an area where painting is being done or where combustible dusts or flammable liquids are present.

3. A fire watch with proper extinguishers must be posted during all flame or electric arc work and for thirty minutes after such work. A fire watch must also be posted for 25 minutes after use of temporary heaters.

4. Mechanical ventilation and/or respirators must be provided when welding, cutting or heating:
   a. Hazardous materials such as stainless steel, cyanides, zinc, cadmium, heavy metals, etc.
   b. In confined spaces.

Oxy-Acetylene Torches

1. Fuel gas and oxygen hoses must be easily distinguishable and connections cannot be interchangeable.
2. All connections must be clean and free of grease or oil.
3. Back flow valves must be installed at the mixing tube of all torches.
4. Hoses shall not be laid across traffic areas.
5. All gas cylinders must be secured in an upright position. When in storage the protective cap must be on the cylinder.

Propane Torches

1. Hoses shall not be laid across traffic areas.
2. All gas cylinders must be secured in an upright position. When in storage the protective cap must be on the cylinders and the cylinders protected against mechanical damage.

Electric Arc Welding

1. All arc welding must be protected by non-combustible shields or curtains to prevent personnel or bystanders from viewing the arc.

2. When electrode holders are left unattended, the electrodes must be removed and the holders placed or protected so they cannot make contact with each other, conductive objects or people.

3. All welding cable must be insulated completely. Any splices or repairs must have insulation with a resistance equal to or greater than the original insulation.

Propane Fired Heaters

1. The propane fuel tank must be located 20 feet from the burner.

2. All gas cylinders must be secured in an upright position. When in storage the protective cap must be on the cylinders and the cylinders protected against mechanical damage.

3. Hoses shall not be laid across traffic areas.

Liquid Fueled Heaters

1. All liquid fuels must have a flash point of 100 degrees F or more.

2. Refueling shall only be done after the heater has been off for 15 minutes or more.

3. Fuel storage must be located well away from any heat source and protected from mechanical damage.

Chapter 19

Regulated Materials

Regulated Materials

Diamond & Thiel Construction Co., Inc. will not make use of, make contact with, or work in an area containing state or federally regulated materials, including lead, cadmium, or metals. In the event regulated materials are suspected of being present in a work area, all work will stop immediately and a supervisor will be notified.

The supervisor will notify the owner or contractor for whom Diamond & Thiel Construction Co., Inc. is performing work for confirmation and/or inspection of the area. Work will resume only after Diamond & Thiel Construction Co., Inc. is notified in writing that the suspect material has been declared safe or, if the suspect material is found to be hazardous, the material has been removed and the area declared sale for entry and the resumption of work.

Lead and other regulated materials in Construction

Prior to beginning demolition of any structure, or portions of any structure, constructed prior to 1980, testing shall be conducted to determine the presence of lead or asbestos. The activities at the facility will be investigated to determine whether cadmium, mercury, or other contaminants could be present, and appropriate notifications and abatement made prior to the commencement of work.

Pre-Planning

Diamond & Thiel Construction Co., Inc. estimating staff should verify whether lead is present prior to bidding on any project involving demolition of buildings, structures, or portions thereof constructed prior to 1980.

Chapter 20

Sanitation

Sanitation

Potable Water

1. An adequate supply of potable water shall be provided in all places of employment.

2. Potable containers used to dispense drinking water shall be capable of being tightly closed and equipped with a tap.

3. Common drinking cup is prohibited.

Toilets

Toilets shall be provided for employees according to the following table:

NUMBER OF EMPLOYEES	MINIMUM NUMBER OF FACILITIES
20 or less	1 toilet
20 or more	I toilet seat and 1 urinal per 40 workers.
200 or more	1 toilet seat and 1 urinal per 50 workers.

Jobsites not provided with a sanitary sewer shall be provided with one of the following toilet facilities unless prohibited by local codes:

1. Privies (where their use will not contaminate ground or surface water)

2. Chemical toilets

3. Recirculating toilets

4. Combustible toilets

Chapter 21

Signs, Signals, & Work Zone Safety

Signs, Signals, & Work Zone Safety

Signs

Signs and symbols shall be visible at all times when work is being performed, and shall be removed or covered promptly when the hazard no longer exists. The types of signs and their use are as follows:

- Danger signs: Danger signs shall be used only where an immediate hazard exists.
- Caution signs: Caution signs shall be used only to warn against potential hazards or to caution against unsafe practices.
- Exit signs: Exit signs, when required, shall be placed at all exits.
- Traffic signs: Construction areas shall be posted with legible traffic signs at points of hazard.

Signals and Work Zone Safety

When operations are being performed and signs, signals, and barricades do not provide the necessary protection on or adjacent to a highway or street, flagmen or other appropriate traffic controls shall be provided. Signaling requirements are as follows:

- Signaling directions by flagmen shall conform to ANSI and Federal MUTCD requirements.
- Flagmen will use Stop/Slow paddles. Hand signaling will be used only in emergency situations and will involve use of red flags at least 18 inches square or sign paddles, and in periods of darkness, red lights.
- Flagmen shall be provided with and shall wear a high-visibility warning garment while flagging of a class appropriate to traffic speed and volume. Warning garments worn at night shall be of a retroreflective material.

NOTE: Signs, signals, and barricades are to be used to warn and protect employees and the public from jobsite hazards. These warning measures shall remain in place at the end of the workday if the public is exposed to the hazard.

Chapter 22

Powered Industrial Truck (Forklift) Operation

Powered Industrial Truck Operation

Purpose

To ensure equipment operators have the knowledge and skills needed to operate a powered industrial truck safely:

Definition

Powered Industrial Truck - A mobile, power-driven vehicle used to carry, push, pull, lift, stack and tier material.

Classes of Powered Industrial Trucks

Class 1 Electric motor, sit-down rider, counterbalanced trucks (solid, pneumatic tires).
Class 2 Electric motor, narrow aisle trucks (solid tires).
Class 3 Electric motor hand trucks or hand/rider trucks (solid tires).
Class 4 Internal combustion engine trucks (solid tires).
Class 5 Internal combustion engine trucks (pneumatic tires).
Class 6 Electric and internal combustion engine tractors (solid, pneumatic tires).
Class 7 Rough terrain forklift trucks (pneumatic tires).

As of December 1, 1999, operators of power industrial trucks must be certified by their employer that they have successfully completed training in the use of the equipment being utilized. Training shall consist of a combination of formal instruction (lecture, discussion, interactive learning, written material), practical training (demonstrations performed by the trainer and practical exercises performed by the trainee), and evaluation of the operator‘s performance in the work place. All training will be conducted by a person who has the knowledge, training, and experience to train powered industrial truck operators and evaluate their competence.

Operators will perform daily pre-use inspections in accordance with manufacturer guidelines.

Training Program Content

Powered industrial truck operators shall receive initial training in the following topics unless they are not applicable to the safe operation of the truck in the workplace.

Truck Related Topics to be Covered During Training:

1. Differences between a powered industrial truck and an automobile.

2. Operating instructions, warnings, and precautions for the type of truck the operator will operate.

3. Truck controls and instrumentation: where they are located, what they do, and how they work.

4. Engine and motor operation.

5. Steering and maneuvering.

6. Visibility, including restrictions due to loading.

7. Fork and attachment adaptation, operation, and use limitations.

8. Vehicle capacity and stability.

9. Vehicle inspections and maintenance that must be performed by the operator.

10. Refueling and/or charging and recharging of batteries.

11. Operating limitations.

12. Operating instructions, warnings, or precautions listed in the operator's manual for the types of vehicle that the employee is being trained to operate.

Workplace topics to be covered during training:

1. Surface conditions where the vehicle will be operated.

2. Composition of loads to be carried and load stability.

3. Load manipulation, stacking, and unstacking.

4. Pedestrian traffic in areas where the vehicle will be operated.

5. Narrow aisles and other restricted places where the vehicle will be operated.

6. Hazardous locations where the vehicle will be operated.

7. Ramps and other sloped surfaces that could affect the vehicle's stability.

8. Closed environments and other areas where insufficient ventilation or poor vehicle maintenance could cause a buildup of carbon monoxide or diesel exhaust.

9. Other unique or potentially hazardous environmental conditions in the workplace that could affect safe operation.

Training Frequency

Training shall be provided prior to an employee operating a powered industrial truck and shall, at a minimum, be conducted at least every three years. Refresher training in relevant topics shall be provided to the operator when:

- The operator is observed to operate the vehicle in an unsafe manner.
- The operator has been involved in an incident or a near-miss incident.
- The operator has received an evaluation that reveals that the operator is not operating the powered industrial truck safely.
- The operator is assigned to drive a different type of powered industrial truck.
- A condition in the workplace changes in a manner that could affect the safe operation of the powered industrial truck.

NOTE: If an operator has previously received training, and such training is appropriate to the powered industrial truck and working conditions encountered, additional training in that topic is not required if the operator has been evaluated and found competent to operate the truck safely.

Certification
Diamond & Thiel Construction Co., Inc. shall certify that each operator has been trained and evaluated. The certification shall include the name of the operator, the date of the training, the date of the evaluation, and the identity of the person(s) performing the training evaluation. A copy of the training material used to train Diamond & Thiel Construction Co., Inc. employees shall be maintained at the main office.

Chapter 23

Hearing Conservation

Hearing Conservation

Purpose

To establish procedures and methods that will be utilized by all Diamond & Thiel Construction Co., Inc. employees who are exposed to noise levels that exceed the Time Weighted Average (TWA) of 85 decibels or more.

General

Exposure to high noise levels can cause hearing loss or impairment. There is no cure for noise-induced hearing loss, making prevention of excessive noise exposure the only way to avoid hearing damage. Earplugs are available at each site for employees to use to help reduce exposure. Other forms of hearing protection, such as earmuffs, are available if activities being performed require protection with a higher Noise Reduction Rate (NRR).

Control Methods

When employees are required to work with or near tools or equipment that produce sounds that exceed permissible amounts, engineering controls shall be utilized. If the use of the engineering controls fails to reduce the sound to permissible levels, then hearing protection equipment shall be used to reduce noise exposure to acceptable levels.

Hearing Protection

There are many different types of hearing protection, which provide different protection factors. Manufacturers of hearing protection designate protection factors in terms of NRR, Noise Reduction Rate. The higher the NRR, the better the protection. These values are based on the hearing protection fitting the user perfectly. Obviously, the hearing protection will not always provide a perfect fit for all users, so the NRR may be lower.

Consideration must be taken for what type of work will be performed while wearing hearing protection. For instance, if work is being performed near vehicle traffic and hearing protection is being used, the wearer may not hear a warning signal from a piece of machinery. When conditions warrant hearing protection but the use of this protection creates an additional hazard, measures must be taken to address this hazard.

Performing activities such as jackhammering, pile driving, and operating certain tools or equipment can expose an employee to higher decibel levels than are permitted over an eight-hour time period. If these activities are only performed for a short duration, the Time Weight Average (TWA) may not exceed permissible exposure limits but hearing protection use is encouraged provided its use does not create an additional hazard.

A chart demonstrating limits for employee exposure to noise is provided at the end of the Hearing Conservation Program.

HEARING CONSERVATION PROGRAM

1. All employees exposed to an eight-hour time-weighted average of 85 decibels or greater will be subject to a continuing effective hearing conservation program and will be provided with and be required to wear hearing protection that is evaluated for its appropriateness for the work environment. Employees exposed to lower decibels are encouraged to utilize hearing protection if its use does not create additional hazards. When information indicates that employee exposure may equal/exceed the 8 hr time-weighted avg. of 85 decibels, the Company shall implement a monitoring program to identify employees to be included in the hearing conservation program.
2. Hearing protection shall be available on each jobsite for employee use at no cost to employees.
3. The project superintendent shall ensure that hearing protection is being worn by employees exposed to an eight-hour Time Weighted Average (TWA) of 85dB or greater.
4. All employees shall be provided with training in the use, care, and fitting of hearing protection equipment as well as their limitations.
5. Employees who fail to wear hearing protection when its use is required will be reprimanded and, if they do so repeatedly, will be disciplined as outlined within this plan
6. D&T will establish and maintain an audiometric testing program for those employees whose sound exposure is at or above the 85 dbA time weighted average. Within 6 months of an employee's first exposure at or above the action level, D&T shall establish a valid baseline audiogram against which future audiograms can be compared. When a mobile van is used, the baseline shall be established within 1 yr. Testing to establish a baseline audiogram shall be preceded by at least 14 hours without exposure to workplace noise. Hearing protection may be used to meet the requirement. Employees shall also be notified to avoid high levels of noise.
7. At least annually after obtaining the baseline audiogram, the Company shall obtain a new audiogram for each employee exposed at or above an 8-hour time-weighted average of 85 decibels. Each employee's annual audiogram shall be compared to that employee's baseline audiogram to determine if the audiogram is valid and if a standard threshold shift has occurred. If a comparison of the annual audiogram to the baseline audiogram indicates a standard threshold shift, the employee shall be informed of this fact in writing, within 21 days of the determination. If a threshold shift has occurred, use of hearing protection shall be re-evaluated and/or refitted and if necessary a medical evaluation may be required.
8. Hearing protection will be reevaluated and training reinforced in the event of a standard threshold shift, unless a physician determines that the hearing loss was not related to work noise exposures. The employee will be referred for an audiological or otological evaluation if additional testing is required, or if it is suspected that a medical pathology of the ear could be caused or exacerbated by wearing hearing protection.
9. The Company shall maintain accurate record of all employee exposure measurements and will assure that all records are maintained as required by the regulation.

Training

Training will be provided to all employees exposed to noise at or above the action level of an eight-hour TWA of 85 decibels . The training will be repeated annually for each employee. The training shall discuss the effects of noise on bearing and how through the use of hearing protection noise levels can be reduced. Additionally, the advantages and disadvantages of various types of hearing protection will be discussed as well as the use and care of often-used protectors. Training shall be updated consistent to

changes in PPE and work processes. The Company shall make available to affected employees copies of the noise exposure procedures and shall also post a copy in the workplace. The employer shall also allow the Assistant Secretary and the Director access to records.

Limits For Employee Exposure To Noise

Sound Level	Hours Of Exposure Per Day
83	21
85	16
87	12
90	8
92	6
95	4
97	3
100	2
102	1.5
105	1
110	0.5
115	0.25

Chapter 24

Project Safety Plan

Project Safety Plan

The Project Safety Plan is meant to supplement Diamond & Thiel Construction Co., Inc. existing safety program by identifying all real and potential hazards of a project and providing specific plans to deal with those hazards.

Pre-planning is an important step toward achieving a zero-injury project. This document is designed to walk you through the pre-planning process. The written end product of pre-planning activities will be the Project Safety Plan (PSP). The PSP should be a brief outline of the hazardous conditions associated with your project and the controls you intend to implement to remove those hazards, or to prepare for the work to be performed under the condition.

As questions develop, rely on your experience, OSHA Standards, Diamond & Thiel Construction Co., Inc. Corporate Safety Program, owner's representatives, engineers, insurance and trade association representatives, and consultants for assistance.

Subcontractors are encouraged to participate in the pre-planning process. Through coordination between trades, an effective Project Safety Plan can be developed. Where project activity can or will affect a client's operations, an owner's representative should also be encouraged to participate.

Responsibilities

The job superintendent is responsible for developing a project safety plan whenever the complexity of the project warrants it, when the owner requests it, or when there is a legal requirement for one.

Procedure

1. Through inspection of the site, review of the project plans, inquiries to the customer, and other investigation obtain appropriate information about potential hazards and available resources. Record data discovered during the inspection. This should include the following information:

    a. Materials which will be present in or near the work area:
        (1) Locations
            (a) For demolition activities inspect pipes, ductwork, soil, residue from exhaust vents, etc.
        (2) Quantities
        (3) Copies of Safety Data Sheets
        (4) Contamination that exists or may exist in or near the work area.
        (5) Locations of regulated materials, which may be contacted or disturbed during the work.

    b. Sources of ionizing radiation (x-ray machines and radioactive sources)

c. Any equipment that will be operating or may start automatically (such as robots, conveyors, manipulators, exhaust systems, air handling units, compressors, etc.).

d. Ambient noise levels

e. Provide a listing of Emergency Procedures and emergency service names, locations, and telephones for hazards involving:
   (1) Medical
   (2) Fire
   (3) Spills or Releases
   (4) Utilities
   (5) Facility and Equipment Damage

f. Sources of Technical Information:
   (1) Safety
   (2) Environmental Engineering
   (3) Security

g. Special access controls and security requirements.

2. Proposed Operations: Review the proposed scope of work and operations to identify the hazards that are inherent to the project and those that may be created or compounded by adjacent customer operations, facilities, or processes. Specifically identify hazards associated with the following:
   a. Materials to be used
   b. Elevated work
   c. Excavations
   d. Traffic and pedestrian control
   e. Confined spaces
   f. Noise levels
   g. Dust/contamination
   h. Utility disruptions
   i. Production disruption
   j. Product movement
   k. Employee discomfort
   l. Lockouts
   m. Poor lighting
   n. Cutting, welding, open flame work
   o. Internal combustion engines being used
   p. Cranes and hoists

3. Review all of the information regarding the materials the customer will have at or near the worksite, the materials that we will use and any contamination that may be present.

   a. Determine whether an incompatibility exists among the various materials and, if so, develop a protective measure to prevent contact between the incompatible materials.

b. Determine the respirator protection to be used, if any is needed. Make sure all respiratory protection requirements are met.

c. Determine whether measurements of employee exposure to airborne contaminants will be required.
   (1) Work that will require the measurements
   (2) Contaminants
   (3) The time and duration of each measurement
   (4) The person who will take the measurements.

4. Determine what hearing protection, if any is needed.

5. Determine what other personal protective equipment is needed (such as gloves, hard hats, harnesses, lanyards, etc.)

6. Determine whether special permits licenses or qualifications will be required.

7. Through review of the above and the personnel training records, determine what training will be necessary.

8. Determine who is responsible for housekeeping, cleaning methods and cleanliness to be maintained.

9. Provide information regarding exit evacuation plans, routes and methods.

10. Write a plan incorporating all of the determinations and requirements developed above and issue it as an addendum to the company safety program applicable to this project. In the plan, describe what actions are needed to meet the requirements identified above, when they are to be done, and who is responsible for doing them. Provide a detailed schedule of the work including project name, location, description, and contact names, phone numbers and pager numbers of both company and contractor responsible personnel. Distribute this plan to all company and contractor employees who will be affected by the project.

Chapter 25

Asbestos Awareness

Asbestos Awareness

Employee training

Diamond & Thiel Construction employees may not disturb asbestos containing materials (ACM) or Presumed Asbestos Containing Materials (PACM). It is likely, however, that employees will encounter ACM and PACM and they will be trained to recognize and avoid the hazards they represent.

Where is asbestos found?

Asbestos is found a wide range of building materials, including but not limited to thermal applications such as insulation, wall board, roofing, floor and ceiling tiles, soundproofing, asbestos-cement pipe and sheet, heat-resistant clothing, automotive brake and clutch linings, and window grout. Signs and labels will indicate the location of ACM and PACM, which may not be disturbed by Diamond & Thiel employees.

When is asbestos dangerous?

When friable asbestos – which can be crumbled with hand pressure – is disturbed, airborne fibers are released. Friable forms of asbestos include sprayed-on insulation or soundproofing. Non-friable asbestos, such as vinyl-asbestos floor tiles or roofing felts, are generally safe to work around, as long as it is not cut, abraded, sawed, or broken.

Asbestos health effects

Unprotected exposure to asbestos can cause lung disease, including lung cancer and asbestosis; mesothelioma; and cancers of the stomach and colon. Smoking is a co-carcinogen with asbestos: an employee who smokes and is exposed to asbestos is much more likely to suffer from lung cancer. The latency period between exposure to asbestos and illness can be 20 years or more. Even small amounts of asbestos can cause disease.

Work in proximity to Class I work

If Diamond & Thiel employees working immediately adjacent to a Class I asbestos job (involving the removal of Thermal System Insulation and surfacing ACM and PACM) are exposed to asbestos due to the inadequate containment of that job, the company will remove the employees from the area until the enclosure breach is repaired, or will perform an initial exposure assessment pursuant to 1926.1101(f).

Chapter 26

Aerial Lifts

Aerial Lifts

Aerial lifts acquired for use on or after January 22, 1973 shall be designed and constructed in conformance with the applicable requirements of the American National Standards for "Vehicle Mounted Elevating and Rotating Work Platforms," ANSI A92.2-1969, including appendix. Aerial lifts acquired before January 22, 1973 which do not meet the requirements of ANSI A92.2-1969, may not be used after January 1, 1976, unless they shall have been modified so as to conform with the applicable design and construction requirements of ANSI A92.2-1969.

Aerial lifts include the following types of vehicle-mounted aerial devices used to elevate personnel to job-sites above ground: Extensible boom platforms; Aerial ladders; Articulating boom platforms; Vertical towers; and a combination of any such devices.

Modification

Aerial lifts may be "field modified" for uses other than those intended by the manufacturer provided the modification has been certified in writing by the manufacturer or by any other equivalent entity.

Safe operation

1. Lifts will be inspected prior to use per manufacturer guidelines, including testing of lift controls to determine that such controls are in safe working condition.
2. Only trained, authorized persons shall operate an aerial lift.
3. Belting off to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted.
4. Employees shall always stand firmly on the floor of the basket, and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.
5. Approved fall protection will be worn while working from a lift, with lanyard attachment to the boom or basket
6. Boom and basket load limits specified by the manufacturer shall not be exceeded.
7. Lifts that are not equipped with a back-up alarm will reverse only when a spotter says it is safe to do so.
8. Where equipped with outriggers, these shall be used per manufacturer guidelines.
9. The brakes shall be set and when outriggers are used, they shall be positioned on pads or a solid surface. Wheel chocks shall be installed before using an aerial lift on an incline, provided they can be safely installed.
10. An aerial lift truck shall not be moved when the boom is elevated in a working position with men in the basket, except for equipment that is specifically designed for this type of operation.
11. Articulating boom and extensible boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower level controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.
12. For lines rated 50 kV or below, minimum clearance between the lines and any part of the equipment or load shall be 10 feet.

Chapter 27

Bloodborne Pathogens

Bloodborne Pathogens

Diamond & Thiel Construction is committed to providing a safe and healthful work environment for our entire staff. The following written exposure control plan (ECP) was prepared and implemented to protect employees for whom the company reasonably anticipates exposure to infectious material, in accordance with OSHA standard 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens."

The ECP is a key document to assist our organization in implementing and ensuring compliance with the standard, thereby protecting our employees. This ECP includes:

- Determination of employee exposure
- Implementation of various methods of exposure control, including: universal precautions; engineering and work practice controls; personal protective equipment; housekeeping
- Hepatitis B vaccination
- Post-exposure evaluation and follow-up
- Communication of hazards to employees and training
- Recordkeeping
- Procedures for evaluating circumstances surrounding exposure incidents

Implementation methods for these elements of the standard are discussed in the subsequent pages of this ECP.

Program Administration

The Safety Coordinator (SC) is responsible for implementation of the ECP, and will maintain, review, and update the ECP at least annually, and whenever necessary to include new or modified tasks and procedures. Contact phone number: 315-458-4850.

Those employees who are determined to have occupational exposure to blood or other potentially infectious materials (OPIM) must comply with the procedures and work practices outlined in this ECP.

The SC will provide and maintain all necessary personal protective equipment (PPE), engineering controls (e.g., sharps containers), labels, and red bags as required by the standard. The SC will ensure that adequate supplies of the aforementioned equipment are available in the appropriate sizes.

The SC will be responsible for ensuring that all medical actions required by the standard are performed and that appropriate employee health and OSHA records are maintained.

The SC will be responsible for training, documentation of training, and making the written ECP available to OSHA, and NIOSH representatives, and to employees in a reasonable time, place, and manner in accordance with 29 CFR 1910.1020(e).

Employee Exposure Determination

The following is a list of all job classifications at our establishment in which some or all employees have occupational exposure. This exposure determination was made without regard to the use of personal protective equipment.

Job Title Department / Location

Currently, no positions entail an occupational exposure to bloodborne pathogens. In the event that person(s) need to become certified for first aid, where medical assistance is not available in 3-4 minutes, they would in their emergency capacity fall under the provisions of this policy.

Methods of Implementation and Control

Universal Precautions

Under circumstances in which the differential between body fluids is difficult or impossible, all body fluids will be considered potentially infectious, and all employees will utilize universal precautions.

Exposure Control Plan

Employees covered by the bloodborne pathogens standard receive an explanation of the ECP during their initial training session. It will also be reviewed in their annual

refresher training. All employees can review this plan at any time during their work shifts by contacting the Safety Coordinator (SC). If requested, we will provide an employee with a copy of the ECP free of charge and within 15 days of the request.

The SC is responsible for reviewing and updating the ECP annually or more frequently if necessary to reflect any new or modified tasks and procedures that affect occupational exposure and to reflect new or revised employee positions with occupational exposure.

Engineering Controls and Work Practices

Engineering controls, where possible in an emergency situation, and work practice controls will be used to prevent or minimize exposure to bloodborne pathogens. The specific work practice controls used will be universal precautions and restricted access to an injury area. We will evaluate new procedures and new products regularly. Both site supervision and employees are responsible for implementing recommendations.

Personal Protective Equipment (PPE)

When the possibility of occupational exposure is present, PPE is provided to our employees at no cost to them. This may include but is not limited to gloves, gowns, face shields, etc. PPE shall be used unless D&T determines that an employee temporarily declined to use PPE under rare circumstances. D&T will assure that appropriate PPE in the appropriate size(s) is readily accessible. PPE must be cleaned, laundered, or property disposed of, as described below. D&T will repair and or replace PPE as needed to maintain its effectiveness. Training in the use of the appropriate PPE for specific tasks or procedures is provided by site supervision and/or the Safety Coordinator.

PPE is located at the Diamond & Thiel storage facility through the Safety Coordinator or in the field from site supervision. All employees using PPE must observe the following precautions:

- Wash hands immediately or as soon as feasible after removing gloves or other PPE. If provision of hand washing facilities is not feasible, Diamond & Thiel shall provide either an appropriate antiseptic hand cleanser in conjunction with cloth/paper towels or antiseptic towelletes.
- Remove PPE after it becomes contaminated and before leaving the work area.
- Used PPE may be disposed of in a red biohazard bag.
- Wear appropriate gloves when it is reasonably anticipated that there may be hand contact with blood or OPIM, and when handling or touching contaminated items or surfaces; replace gloves if torn, punctured or contaminated, or if their ability to function as a barrier is compromised.

- Utility gloves may be decontaminated for reuse if their integrity is not compromised; discard utility gloves if they show signs of cracking, peeling, tearing, puncturing, or deterioration.
- Never wash or decontaminate disposable gloves for reuse.
- Wear appropriate face and eye protection when splashes, sprays, spatters, or droplets of blood or OPIM pose a hazard to the eye, nose, or mouth.
- Remove immediately or as soon as feasible any garment contaminated by blood or OPIM, in such a way as to avoid contact with the outer surface.
- Reusable PPE such as face shields shall be decontaminated using a 1 in 10 bleach solution or according to OSHA or manufacturer recommendations.

Housekeeping

Regulated wastes such as blood-soaked bandages, etc. are to be placed in leak-proof bags or containers for handling, storage, and transport. The bags or containers shall be constructed to contain all contents, appropriately labeled or color-coded (see the following section "Labels"), and closed prior to removal to prevent spillage or protrusion of contents during handling.

All equipment or environmental surfaces shall be cleaned and decontaminated after contact with blood or other infectious materials.

Broken glassware that may be contaminated is only picked up using mechanical means, such as a brush and dustpan.

Laundry

Laundry will be performed by the site where an injury occurs, or by Diamond & Thiel, or by the employee involved in emergency response. Contaminated laundry should be handled as little as possible, with minimal agitation, and wet laundry should be placed in leak-proof, labeled or color-coded containers before transport. Red biohazard bags should be used for this purpose. Gloves with long gauntlets and eye protection should be used when handling/sorting contaminated laundry.

Labels

Red bags for disposal of regulated waste or for transport of laundry will be labeled with the biohazard symbol. The Safety Coordinator is responsible for ensuring that warning labels are affixed and red bags used as required, and should be notified if employees discover regulated waste containers without proper labeling.

Hepatitis B Vaccination

The Safety Coordinator will provide training to employees on hepatitis B vaccinations, addressing safety, benefits, efficacy, methods of administration, and availability.

The hepatitis B vaccination series is available at no cost to employees with occupational exposure after initial employee training and within 10 days of initial assignment to all employees identified in the exposure determination section of this plan. Vaccination is encouraged unless: 1) documentation exists that the employee has previously received the series; 2) antibody testing reveals that the employee is immune; or 3) medical evaluation shows that vaccination is contraindicated.

However, if an employee declines the vaccination, the employee must sign a declination form. Employees who decline may request and obtain the vaccination at a later date at no cost. Documentation of refusal of the vaccination is kept at Diamond & Thiel corporate offices.

Vaccination will be provided by a licensed health care professional.

Following the medical evaluation, a copy of the health care professional's written opinion will be obtained and provided to the employee within 15 days of the completion of the evaluation. It will be limited to whether the employee requires the hepatitis vaccine and whether the vaccine was administered.

Post-Exposure Evaluation and Follow-Up

Should an exposure incident occur, contact the Safety Coordinator at 315-458-4850.

- An immediately available confidential medical evaluation and follow-up will be conducted by a licensed health care professional. Following initial first aid (clean the wound, flush eyes or other mucous membrane, etc.), the following activities will be performed:

- Document the routes of exposure and how the exposure occurred.
- Identify and document the source individual (unless it can be established that identification is infeasible or prohibited by state or local law).
- Obtain consent and made arrangements to have the source individual tested as soon as possible to determine HIV, HCV, and HBV infectivity; document that the source individual's test results were conveyed to the employee's health care

provider.

- If the source individual is already known to be HIV, HCV and/or HBV positive, new testing need not be performed.

- Assure that the exposed employee is provided with the source individual's test results and with information about applicable disclosure laws and regulations concerning the identity and infectious status of the source individual (e.g., laws protecting confidentiality).

- After obtaining consent, collect exposed employee's blood as soon as feasible after exposure incident, and test blood for HBV and HIV serological status.

- If the employee does not give consent for HIV serological testing during collection of blood for baseline testing, preserve the baseline blood sample for at least 90 days; if the exposed employee elects to have the baseline sample tested during this waiting period, perform testing as soon as feasible.

Administration of Post-Exposure Evaluation and Follow-Up

The Safety Coordinator ensures that health care professional(s) responsible for employees' hepatitis B vaccination and post-exposure evaluation and follow-up are given a copy of OSHA's bloodborne pathogens standard.

The Safety Coordinator ensures that the health care professional evaluating an employee after an exposure incident receives the following:

- A description of the employee's job duties relevant to the exposure incident;
- Route(s) of exposure;
- Circumstances of exposure;
- If possible, results of the source individual's blood test;
- Relevant employee medical records, including vaccination status

The Safety Coordinator provides the employee with a copy of the evaluating health care professional's written opinion within 15 days after completion of the evaluation.

Procedures for Evaluating the Circumstances Surrounding an Exposure Incident

The Safety Coordinator will review the circumstances of all exposure incidents to determine:

Engineering controls in use at the time;
Work practices followed;
A description of the device being used (including type and brand);
Protective equipment or clothing that was used at the time of the exposure incident (gloves, eye shields, etc.);
Location of the incident;
Procedure being performed when the incident occurred'
Employee's training

If revisions to the ECP are necessary, the Safety Coordinator will ensure that appropriate changes are made. (Changes may include an evaluation of safer devices, adding employees to the exposure determination list, etc.)

Employee Training

All employees who may have occupational exposure to bloodborne pathogens will receive training at the time of initial assignment and at least annually thereafter conducted by the Safety Coordinator or Diamond & Thiel's long-time safety consultant. Annual training will be completed within one year of the previous training.

All employees who have occupational exposure to bloodborne pathogens will receive training on the epidemiology, symptoms, and transmission of bloodborne pathogen diseases. In addition, the training program will cover, at a minimum, the following elements:

- A copy and explanation of the OSHA bloodborne pathogen standard;
- An explanation of our ECP and how to obtain a copy;
- An explanation of methods to recognize tasks and other activities that may involve exposure to blood and OPIM, including what constitutes an exposure incident;
- An explanation of the use and limitations of engineering controls, work practices, and PPE;
- An explanation of the basis for PPE selection;
- Information on the hepatitis B vaccine, including information on its efficacy, safety, method of administration, the benefits of being vaccinated, and that the vaccine will be offered free of charge;
- Information on the appropriate actions to take and persons to contact in an emergency involving blood or OPIM;
- An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made

available;
- Information of the post-exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident.
- An explanation of the signs and labels and/or color coding that serve as warnings of infectious materials, as required by the standard;
- An opportunity for interactive questions and answers with the person conducting the training session.

Recordkeeping

Training Records

Training records will be completed for each employee upon completion of training. These documents will be kept for at least three years at Diamond & Thiel corporate offices and will include the dates of training sessions, training contents or summary, the names and qualifications of persons conducting the training, and the names and job titles of all persons attending the training.

Employee training records are provided upon request to the employee or the employee's authorized representative within 15 working days. Such requests should be addressed to the Safety Coordinator.

Medical Records

Medical records will be maintained for each employee with occupational exposure in accordance with 19 CFR 1910.1020, "Access to Employee Exposure and Medical Records."

The Safety Coordinator will be responsible for maintenance of the required medical records. These confidential records are kept at Diamond & Thiel corporate offices for at least the duration of employment plus 30 years.

Diamond & Thiel will ensure that all required records are made available upon request of employees, the Assistant Secretary and the Director for examination and copying. The written consent of an employee must be secured before the release of medical records. D&T will comply with the requirements of 29 CFR 1910.1020(h) involving the transfer of records.

Employee medical records are provided upon request of the employee or to anyone having written consent of the employee within 15 working days. Such requests should be

sent to the Safety Coordinator.

OSHA Recordkeeping

An exposure incident is evaluated to determine if the case meets OSHA's Recordkeeping Requirements (29 CFR 1904). This determination and the recording activities are done by the Safety Coordinator.

Hepatitis B Vaccine Declination (Mandatory)

I understand that due to my occupational exposure to blood or other potentially infectious materials I may be at risk of acquiring hepatitis B virus (HBV) infection. I have been given the opportunity to be vaccinated with hepatitis B vaccine, at no charge to myself. However, I decline hepatitis B vaccination at this time. In understand that by declining this vaccine, I continue to be at risk of acquiring hepatitis B, a serious disease. If in the future I continue to have occupational exposure to blood or other potentially infectious materials and I wan to be vaccinated with hepatitis B vaccine, I can receive the vaccination series at no charge to me.

Signed:_____

Date:_____

Chapter 28

Subcontractor Management

A. Subcontractor Prequalification

1. Diamond & Thiel will evaluate the safety performance of subcontractor candidates by examining their incident history (OSHA 300A summary, workers compensation experience modification factor), regulatory history (OSHA citations), training documentation, and health and safety programs.

2. Subcontractor Total Recordable Incidents Rates (TRIR) and Days Away, Restricted, or Transferred (DART) Rates will be compared to Bureau of Labor Statistics rates for the relevant trade.

3. Those subcontractors whose safety performance is found to be substandard by Diamond & Thiel management may be eliminated from consideration for the project.

B. Subcontractor Obligations

1. Before the job begins subcontractors will perform job hazard analyses to allow hazard recognition and appropriate control measures. Specifically, they will be required as applicable to be sure all PPE is furnished, training is completed, hazards are explained, required posters are in place, insurance certificates have been submitted, emergency numbers are posted, medical clearances are in place, fire protection and first aid are available, equipment is in good condition, everyone knows where to park and where exits are, etc.

2. Subcontractors will submit a copy of their Environment, Health, and Safety program for review by Company management.

3. Representatives from subcontractors must attend pre-job and start-up safety briefings held by Diamond & Thiel, the general contractor, and the owner, as required.

4. Subcontractors will deliver tailgate safety training to their employees, or will require them to attend Diamond & Thiel's tailgate meetings and new hire orientations.

5. It is the subcontractor foreman's job to get permission and special instructions related to the safety of the jobsite before beginning any work. He must arrange for any required permits.

6. Subcontractor foremen or their designated competent person will perform frequent and regular inspections of the job site to ensure ongoing compliance with safety policies and procedures. Instances of non-compliance will be documented and submitted to Diamond & Thiel, which will ensure proper response and closure of action items.

C. Subcontractor Safety Performance Review

1. At the conclusion of the project, Diamond & Thiel's management will confer with the site superintendent and the Safety Coordinator to review subcontractor safety performance. This will include evaluation of adherence to safety rules, documented infractions, and incidents. If management deems that subcontractor performance was unacceptable, that company will not be considered for future projects.

D. Procedures

All subcontractors and their employees are required to observe the following rules and procedures:

1. Special instructions related to the safety and security of the job site must be secured before beginning work in any area on site. For example, security badges or drug testing may be required.

2. Before any work is started, the insurance certificate and/or any other permits or licenses required by public authorities or the client must be on file with Diamond & Thiel.

3. Each subcontractor shall maintain a Safety Program that complies with federal, state and local safety regulations. Subcontractors must:

    - Provide documentation of employee physicals, fit tests, and training when required
    - Furnish appropriate and approved personal protective equipment (PPE) at no cost to employees, and provide documented training and monitoring for PPE used while working in hazardous locations.
    - Give instructions to all employees as to the work plan, hazards of the job, use of PPE, and site-specific safety rules.
    - Report all incidents and near misses immediately. Each subcontractor is responsible for filling out any required reports or records.

Chapter 29

Fleet & Driver Vehicle Safety

Fleet and Driver Vehicle Safety Program

Policy

Diamond & Thiel is committed to instituting and maintaining a Fleet Safety Program. The goal of the program is to take the proper steps to prevent loss of life, injury, or property damage to all employees and members of the general public. Diamond & Thiel recognizes that the responsibilities for safety and loss prevention must be shared by everyone.

1. M**anagement will :**
    a. Frequently check for employee compliance with program requirements, including maintenance of vehicles in safe condition for operation, and drivers and all passengers wearing seatbelts
    b. Establish and adhere to policies on disciplinary actions appropriate for employees who show a disregard for good driving practices
    c. Ensure in the event of an incident that any necessary steps are taken to prevent a recurrence
    d. Establish periodic inspection of assigned vehicles for safety malfunctions, signs of abuse, unreported damage, and cleanliness, and will require that repairs be made as soon as possible
    e. Support Diamond & Thiel's driver training program to promote defensive driving
    f. Review each preventable vehicle incident and unsafe driving report with the employee and his supervisor to emphasize management's intolerance of irresponsibility behind the wheel

2. **Supervisors will:**
    a. Ensure that only employees with a valid driver's license who are familiar with Diamond & Thiel's driving rules and regulations may drive a Diamond & Thiel vehicle
    b. Ensure that only authorized personnel be allowed to operate Diamond & Thiel's vehicles, special purpose vehicles, and trucks
    c. Be alert to unsafe driving practices of employees and ensure that action is taken immediately to correct the driver
    d. Review all preventable vehicle collisions with employees at safety meetings and discuss underlying unsafe acts
    e. Ensure that vehicles are not driven until necessary repairs are made

3. **Employees will:**
    a. Be responsible for safe vehicle operation and for the safety of passengers and cargo
    b. Have a valid driver's license in their possession
    c. Inspect the vehicle they are about to drive, and report the need for repairs
    d. Report any vehicle incidents or traffic citations.

4. **The Safety Coordinator will:**
    a. Implement the program policies
    b. Monitor the driving performance of employees operating Diamond & Thiel vehicles

c. Ensure proper maintenance procedures are followed to keep vehicles in safe operating condition
d. Verify that adequate insurance limits are maintained by drivers who use their personal vehicles for Diamond & Thiel business

5. Vehicle Operators

a. Inspection: The driver is responsible for checking the safety and general condition of the vehicle, including gas, oil, and other fluid levels; lights; and brakes. With the assistance of the Safety Coordinator, supervisors will furnish vehicles with inspection checklists. If there is a problem with the vehicle that may affect safety, repairs will be made before use.

b. Vehicle abuse: No employee will use a vehicle or equipment for any purpose for which it was not designed, operate it beyond manufacturer design and legal limits, operate it in areas or locations for which it was not designed, or cause damage through neglect, misuse, improper driving techniques, or improper handling. Loads will be stacked in a stable manner and secured against movement during transport. Employees will maintain the appropriate distance between vehicles, yield to pedestrians, pull into the left lane when they observe a police vehicle or other vehicle on the shoulder, and adjust speed to reflect the hazards of inclement weather.

c. Impairment and distraction: No employee may operate a company vehicle while under the influence of alcohol, illegal drugs, or medications that could impair performance. Texting while driving is not permitted while operating Diamond & Thiel vehicles, and use of a hand held device in a vehicle must be hands-free. Employees may not engage in other activities that could pose a distraction while driving, including but not limited to personal grooming, reading, watching video footage, and eating meals. The use of cell phones in the workplace must be in compliance with host employer rules, including but not limited to the rule against walking on site while using a hand held device.

d. Transporting employees in Diamond & Thiel vehicles: The driver and each passenger will ride in a position equipped with a seatbelt, and each person will use the seatbelt provided. No employee will be authorized to ride or work from the bed or rear of a vehicle while it is in motion.

e. Traffic laws: Employees will adhere to all traffic laws and regulations, including observation of posted speed limits. Employees will not use radar detection equipment to circumvent speed limit enforcement. An employee will at all times operate vehicles in such a manner as to avoid injury to persons or damage to property. All incidents and traffic citations must be reported as soon as possible.

f. Unauthorized use of vehicles: Diamond & Thiel vehicles are to be used for company business only. Persons found using company vehicles for their personal errands may be subject to disciplinary action.

g. Operation and occupancy of Diamond & Thiel vehicles by unauthorized persons: Employees will not permit unauthorized employees or non-employees of the company to ride in Diamond & Thiel vehicles, except when such persons are conveyed in the performance of duty, or authorized to ride by supervisory staff.

h. Parking vehicles: All employees will park their vehicles in a legal and proper manner. Employees will remove the keys and lock the vehicle, except when specifically instructed otherwise. Employees will not park on the wrong side of a street or highway, unless it is mandatory to park in such a location to perform a jo b. All signs, cones, lights, and warning devices as required by law will be sued when vehicles are parked or in use in a public travel lane. Employees will use all safety brakes, lockout devices, and other parking safety methods when parking equipment.

i. Use of personal vehicles for company business: Supervisors will identify and authorize those employees who are required, as part of their normal job duties to use their personal vehicles to conduct Diamond & Thiel business. The employee's own insurance policy is the primary coverage and, therefore, Diamond & Thiel will not be responsible for any claims that arise out of any motor vehicle incident that the employee is involved in while operating a personal vehicle. The mileage reimbursement the employee receives is intended to fully cover all costs of the operation of the employee's personal vehicle, including but not limited to fuel, maintenance, repairs, and insurance.

j. Transporting equipment: Employees using Diamond & Thiel vehicles will exercise caution when transporting equipment, packages, or other materials in the driver/passenger compartment that could become flying projectiles in the event of an incident. Such items as briefcases, laptop computers, tools, etc. need to be transported in the trunk of passenger vehicles. Pickups, whether standard or extended cab, should have secured storage capabilities in the bed of the vehicle such as tool storage or camper shells if they are used with any regularity in the transport of items that could injure the driver or passenger(s) in the event of an incident. Vans used in the regular transport of such items should have screen type barriers between such cargo and the driver/passenger compartment. It is always important to keep the driver/passenger as free as possible of objects that could distract their attention or could cause injury from unexpected movement.

6. Driver Selection

a. Diamond & Thiel believes knowing the ability, experience, and attitude of drivers is a key factor in the selection process. An important area in this process is to establish qualification standards for new employees and existing employee s that have driving duties.

b. All drivers must be a minimum of 21 years of age.

c. Driver applicants shall complete an application for employment containing all of the information required for positions in which driving is required. Company hiring standards also require that driver applicants list all former employers.

d. Diamond & Thiel will obtain a legible copy of the license of all driver applicants. A review of the license will be conducted to be certain it is valid, has not expired, and is the appropriate for the class of vehicles in which driving is required. Employees must have a valid driver's license in their possession when operating their own or a company vehicle on company business. Employees must notify supervision if their license is suspended, revoked, or expired. Employees who drive vehicles requiring a Commercial Driver's License (CDL) will comply with the New York State Dept. of Motor Vehicles requirements for medical examinations and license renewal. Supervisors will maintain a system that ensures all employees operating vehicles have the proper class of license and check licenses for current status at frequent intervals.

7. Motor Vehicle Record (MVR) Check and Evaluation

a. Diamond & Thiel will request an MVR for driver applicants being considered for employment in which driving company vehicles or operating their own vehicle for company business will be required. The Safety Coordinator will review all MVR information to determine if driver applicant meets the qualification standards regarding driving records. A formal review of the driver's MVR will be conducted on an annual basis, or more frequently if warranted, to ensure that existing drivers are meeting the established qualification standards. MVR's are personal and confidential and should only be discussed with the driver or supervision. If required by the host employer, additional background checks may be completed.

8. Driver Training

a. Driver orientation: Diamond & Thiel has an orientation program that all new drivers are required to complete. The orientation program consists of comprehensive classroom training that will cover a variety of subjects. Among the topics are established driving policies and procedures, regulatory compliance, vehicle maintenance and inspections, incident reporting procedures, and defensive driving procedures.

b. Driver evaluation: Supervisors are responsible for conducting a periodic performance review with each driver.

9. Incident Investigation

a. Diamond & Thiel's policy is to fully investigate any incident company personnel and vehicles. All incidents involving a Diamond & Thiel vehicle, regardless of severity, must be reported immediately. The investigation of minor incidents only is the responsibility of the driver and the supervisor. The Safety Coordinator will be in charge of investigating incidents in which serious injury or death or substantial property damage has occurred, or when a third party is involved. Management may initiate any other investigations deemed appropriate. The investigating parties will follow Diamond & Thiel's Incident Investigation program as to securing the scene, gathering evidence, and interviewing witnesses.

b. A driver involved in an incident should remain at the incident scene and:
    i. Pull over and turn on emergency flashers and set out emergency warning devices in the roadway if deemed appropriate
    ii. Contact local law enforcement and supervision
    iii. Be cooperative when providing information to authorities, without conceding guilt or liability
    iv. If able, write down names, license numbers, and any other information that may prove useful later on for insurance or legal purposes; and take photographs of the scene
    v. Assist the Safety Coordinator with completion of an incident report

Chapter 30

Pandemic Preparedness

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Pandemic Preparedness Program

1. Overview

a. Business continuity means ensuring that essential business functions can survive a natural disaster, technological failure, human error, or other disruption. Many existing business continuity plans anticipate disruptions such as fires, earthquakes, and floods; these events are restricted to certain geographic areas, and the time frames are fairly well defined and limited. Pandemic flu, however, demands a different set of continuity assumptions since it will be widely dispersed geographically and potentially arrives in waves that could last several months at a time. Diamond & Thiel will prepare business continuity plans so that in the event of significant absenteeism or if changes in business practices are required, business operations can be effectively maintained.

b. Depending on the flu strain and based on previous pandemics, public health officials project cumulative absentee rates of 25-30 percent over three to four months. Absentees will include sick employees, and those who must care for others who are sick. Fear of infection will also impact rates of absenteeism.

c. If a pandemic flu strikes, government health officials will issue information and warnings and will work with the media to disseminate advice on how to avoid becoming ill. Company managers, human resource departments, and employees should pay close attention to the guidance provided by local and state health departments.

d. In a worse-case scenario, "business as usual" may cease. Government health officials may have to implement dramatic measures, including shutting down certain businesses that involve high levels of interaction with the public, such as restaurants and theatres. Health officials may also have to restrict travel, cancel public events such as concerts or sports, and close schools.

e. The size and type of business will be the deciding factors for the type of plan that a business needs to develop. Diamond & Thiel's continuity plan for a pandemic includes the following components:
   i. Provide employees the resources to prepare themselves or their families
   ii. Prevent/minimize the spread of influenza in the workplace
   iii. Monitor worker absentee rates
   iv. Create a system to notify/share the information with workers during pandemic
   v. Develop a plan to address essential resources to maintain operations

2. Assumptions

a. A pandemic flu will spread rapidly and easily from person to person, affecting all businesses due to absenteeism. Businesses that are relied upon by other businesses will be facing the same massive absentee rates, and will be unable to provide essential components to maintain their daily operations.
b. Risk assessments to identify the essential/critical components of business operation need to be conducted, and it will be necessary to develop partnerships, alliances, third parties and suppliers to support continuity arrangements that will maintain operations and ensure these components are available during a pandemic.

c. A pandemic's impact could include:
   i. Healthcare services not being available (they are already full at present with the usual ailments).
   ii. Schools, churches and other public places not being open.
   iii. Borders partially or fully closed, especially airports, leaving people (our families, employees, business partners, customers and suppliers) "stranded".
   iv. Essential materials and supplies may be limited due to distribution chains that are affected by the travel restrictions or absentee workers supporting those transportation means.
   v. Essential services around utilities, food distribution/access and banking systems may not be at "normal levels"; access to cash flow could be tight.
   vi. People may not be willing to or able to come to work.

3. Training

a. Employees will be trained on health issues of the pertinent disease, including prevention of illness, initial disease symptoms, preventing the spread of the disease, and when it is appropriate to return to work after illness. Disease containment plans and expectations will be shared with employees. Diamond & Thiel will communicate information with non-English speaking employees or those with disabilities as needed.

4. Communications

a. Communications during a Pandemic involves both internal communications and external communications. Internal communication should be provided to our employees to educate them about pandemic influenza and measures they can take to be prepared. Risk communication is critical to inform employees regarding changes in the pandemic status. The following are methods for providing such information:

   i. Alert: conveys the highest level of importance; warrants immediate action or attention.
   ii. Advisory: provides key information for a specific incident or situation; might not require immediate action.
   iii. Update: provides updated information regarding an incident or situation; unlikely to require immediate action.

b. Diamond & Thiel will provide continuous updates through internal & external communications when a pandemic is imminent:
   i. Notification to employees of operational changes
   ii. Frequent updates about the pandemic status
   iii. Advisories and alerts as conditions change
   iv. Ensuring vendors and suppliers have available a dedicated contact
   v. Monitoring local, state, and federal pandemic updates

c. Using phone systems that can perform automatic dialing from a database with each employee's contact number is useful to send notifications and messages about alerts. Many phone systems have the capacity to create a message center for staff to call-in and receive important updates. Computer systems have many options available for alerting and notifying key stakeholders through e-mails, pagers, etc. The use of the company web-site could serve as a portal for sharing information with employees and vendors.

d. Key contacts, a chain of communications and contact numbers for employees, and processes for tracking business and employee status shall be developed. A procedure to notify key contacts includes both customers and suppliers in the event an outbreak has impacted Diamond & Thiel's ability to perform services. This procedure also includes notification to customers and suppliers when operations resume.

e. Diamond & Thiel's workers will be encouraged to stay at home when ill, when having to care for ill family members, or when caring for children when schools close, without fear of reprisal. This will be facilitated with flexible work schedules that allow for tele-commuting or other work-at-home strategies.

5. Managing During a Pandemic

a. During an emergency, employees look to management to provide leadership for the company. Companies that don't have emergency plans often struggle with the chain of command because the company leaders have not had an opportunity to think through the effects of a crisis. Any pandemic disease plan or disease containment plan should have a coordinator appointed. Our coordinator is the Safety Coordinator, who will be responsible for dealing with disease issues and their impact at the workplace. This may include contacting local health department and health care providers in advance and developing and implementing protocols for response to ill individuals. Diamond & Thiel needs to demonstrate to our employees that the leaders have a plan and are able to work together.

b. During a pandemic, many managers may be out sick or at home taking care of ill family. A plan should include redundancy for the specific measures identified as part of the response plan and those additional responsibilities need to be designated in the management structure.

6. Maintaining Essential Services

a. Management will utilize the risk assessment to identify the critical components to maintaining your operation, and will prioritize these components (services and materials) and begin identifying provisions to support those components during an emergency.

b. The assessment of critical operations needs to include supplies and human resources. Management will identify the essential staff necessary to continue operations in emergency situations for approximately 4 to 6 weeks. Diamond & Thiel will cross-train or back-fill these essential employees should the impact of absenteeism during a pandemic minimize worker availability, and will look for creative solutions to operational needs. These could include creating partnerships with vendors, suppliers, and personnel management agencies to develop a robust plan.

c. The key to maintaining essential services is to identify the critical components that may become scarce during a pandemic. By identifying these early, you can begin looking for ways to create back-up systems, supplies, and other resources.

7. Monitoring & Reporting

a. Monitoring absenteeism and identifying the number of ill workers will provide useful information regarding operational decisions that need to be made during all phases of a pandemic. Reporting these numbers to the local public health department will aid them in a community wide surveillance to implement necessary public health measures. For this reason, developing a monitoring and reporting system will be essential for continuity of operations.

b. Diamond & Thiel has designated the Safety Coordinator as the Influenza Manager. This person will be responsible for tracking the employees who call in sick or get ill at work. Weekly or daily reports will be provided to upper management for determining policy issues that may need to be addressed. In addition, these reports will be available to the local health department for community wide surveillance and could be initiated during the regular flu season.

c. Diamond & Thiel workers will be encouraged to obtain flu and other appropriate immunizations to help avoid disease. The company will consider granting time off work to obtain the vaccinations as vaccines become available locally.

d. Pandemic reporting will be developed during the alert phases to identify community clusters. Self reporting forms may be made available on-line, and provided to institutional settings, long-term care homes, public schools, responder agencies, and large businesses.

e. Information generated through this type of integrated surveillance program will be used to: determine when a pandemic begins; track its course globally, nationally, regionally, and locally; guide antiviral use; and evaluate management efforts.

8. Public Health Measures

a. Access to vaccines and antiviral drugs during a pandemic will be extremely limited; non-medical interventions may be the only way to delay the spread of the disease. Many of the interventions, however, may affect human behavior and human rights and therefore need a strong educational and legal basis. Moreover, most of the interventions are based on limited evidence. Therefore, transparent decision-making and frank information-sharing should go hand-in-hand with the measures discussed in this section.

b. The key to making public health measures effective involves providing information to staff on the threat of a pandemic, limitations of resources to combat the disease, and educational awareness of the measures that need to be implemented before a pandemic begins. These efforts are intended to modify behavior so that utilizing these measures will be effective.

c. Examples of public health measures include:
   i. Utilize good hygiene by following recommended protection and infection control measures
   ii. Minimize exposure by avoiding public gatherings, public places, and areas considered high risk
   iii. Social distancing including increasing the space between employee work areas and decreasing the possibility of contact by limiting large or close-contact gatherings should be considered.
   iv. Update vaccinations including seasonal flu and pneumonia
   v. Keep physically healthy; eat right, drink plenty of fluids, exercise, and get plenty of sleep
   vi. Maintain a positive mental attitude
   vii. Stay home and seek medical care when sick

d. Diamond & Thiel will utilize experts from the field of public health and emergency management to resolve questions about the plans. At a minimum, we will create signage to place in the workplace for employees and customers recommending good hygiene measures.

9. Infection Control Measures

a. Guidelines for infection control are important to clarify the routes of transmission and the ways to interrupt transmission through measures of hygiene. Infection control is an essential component of pandemic management and a component of public health measures. Diamond & Thiel will utilize training sessions and signage to make staff aware of essential measures.

b. Examples of Infection Control Measures;
   i. Stay at home when you are sick. If possible, stay away from work, school and from running errands. You will help others from catching your illness.
   ii. Cover your coughs and sneeze into tissue, or cough into your shirt sleeve.
   iii. Hand washing and use of hand sanitizers should be encouraged by company supervision. Hand washing facilities, hand sanitizers, tissues, no-touch trash cans, hand soap and disposable towels shall be provided by Diamond & Thiel.
   iv. Wash your hands often and thoroughly to avoid spreading and getting germs.
   v. Enhance existing housekeeping service by wiping down and disinfecting work areas (i.e. keyboards, telephones, desks, break room tables, etc.) frequently.
   vi. Enhance housekeeping services for general public use areas several times throughout the work period.
   vii. Clean all areas that are likely to have frequent hand contact (like doorknobs, faucets, handrails) routinely and when visibly soiled. Work surfaces should also be cleaned frequently using normal cleaning products.
   viii. Use personal protective equipment where appropriate to minimize exposure (i.e. gloves- for handling money, masks for ill employees)

10. Implementation, Testing, and Revision of the Plan

a. Pandemic response plan provisions will be tested to ensure their effectiveness. There are numerous ways available to accomplish this, without having to wait for an actual emergency. Implementing any of the following policy measures during the upcoming flu season will enhance the ability to respond to a pandemic outbreak.

   i. Place signage to encourage good hygiene
   ii. Track employee absenteeism
   iii. Stay home when ill
   iv. Conduct employee training

b. Testing the plan (preferably annually) can also be accomplished by conducting exercises. Exercises range from informal to full scale, hands on drills. A tabletop exercise is an excellent tool for testing a plan. This type of exercise involves having discussions regarding a scenario that challenges the plan and the decision makers during an emergency. Functional exercises will engage participants in addressing specific scenarios, creating simulated data, and presenting issues that target an area within the plan to be tested.

c. Each of these methods of testing the plan requires extensive planning for the exercise and the evaluation. The evaluation is critical to revising the plan based on actual responses identified during the exercise or drill objectively. Once these data are captured, an after-action report with recommendations for plan revision should be completed within a few weeks of the exercise.

d. Assistance with implementing and testing a plan is available through Emergency Management at the federal and local levels, and through public health agencies. Additionally, there are many consultants available to assist in exercise design and facilitation.

Chapter 31

Hydrogen Sulfide

HYDROGEN SULFIDE

A. About Hydrogen Sulfide

Hydrogen sulfide is a toxic, colorless, flammable, extremely hazardous gas with a "rotten egg" smell at low concentrations. It occurs naturally in crude petroleum and natural gas, and can be produced by the breakdown of organic matter and human/ animal wastes (e.g., sewage). It is heavier than air and can collect in low-lying and enclosed, poorly ventilated areas such as basements, manholes, sewer lines and underground telephone/electrical vaults. It is also soluble in water. Hydrogen sulfide could be located in drilling operations, recycled drilling mud, water from sour crude wells, blowouts, tank gauging, field maintenance and tank batteries and wells, etc.

B. Odor and Health Effects

Hydrogen sulfide can be smelled at low levels, but with continuous low level exposure or at higher concentrations you lose your ability to smell the gas even though it is still present. At high concentrations your ability to smell the gas can be lost instantly.

a. Health effects vary with how long, and at what level, you are exposed. Asthmatics may be at greater risk. Hydrogen sulfide affects the nerve centers in the brain that control breathing.

   Low concentrations – irritation of eyes, nose, throat, or respiratory system; effects can be delayed.

   Moderate concentrations – more severe eye and respiratory effects, headache, dizziness, nausea, coughing, vomiting and difficulty breathing.

   High concentrations – shock, convulsions, unable to breathe, coma, death; effects can be extremely rapid (within a few breaths).

C. Monitoring and Sampling

The Company will conduct personal area sampling for hydrogen sulfide to measure worker exposures in work areas where there is a potential exposure. Air sampling is needed to measure worker exposures and select appropriate engineering and administrative controls and respiratory protection. Where data is collected it must be retained to support negative exposure assessments. The Company will further perform air monitoring as needed to measure the effectiveness of controls. Calibrated direct reading instruments and colorimetric tubes for quantification of exposures to hydrogen sulfide will be used. When utilizing direct reading instruments in detecting hydrogen sulfide, the units will alarm when PEL is exceeded. The PEL for hydrogen sulfide is 20 parts per million under the General Industry Standard (29 CFR 1910) and 10 parts per million under the construction standard (29 CFR 1926).

Should the monitor alarm sound, employees shall evacuate the area immediately and may not reenter the work area until safe conditions are restored.

D. Emergency Plan

The Company will coordinate with the host employer to establish safe exit routes and assembly areas, and will communicate emergency plan provisions to employees.

Chapter 32

Process Safety Management

PROCESS SAFETY MANAGEMENT AWARENESS PROGRAM

PURPOSE

Diamond & Thiel is committed to preventing or minimizing the unwanted release of hazardous chemicals, especially into locations that would expose personnel to serious hazards.

POLICY:

It is the company's intent to comply with all applicable regulations and to provide a workforce that is trained to safely perform their jobs with a full knowledge of the hazards and safe work practices associated with refining/chemical plant or other PSM regulated industry work. In accordance with the law, employees will receive initial and refresher training in the following:

- An overview of the refinery/chemical plant/facility process and operating procedures for the process that employees will be working with or near, including the hazards of the chemicals used in the process. This will include a complete review of the company HazCom Program and all SDSs that are provided for each unit where the employees will be working;
- Specific safety and health hazards;
- Procedures and safe work practices applicable to the employee's job tasks, including personal protective equipment, permits (confined space, hot work and general safe permits, job hazard analysis and auditing;
- Incident investigations are required for all incidents. When an incident occurs, an investigation will be immediately implemented, but not longer than 24 hours after the incident. Causal analysis and corrective actions will be documented and tracked for closure. Those records will be kept for a minimum of 5 years.
- The site-specific Emergency Action Plan.

Employees shall comply with established procedures and safe work practices, be on the alert for changing conditions and quickly report any accidental release or potential release of hazardous chemicals to a supervisor.

The company will promptly investigate every incident that results in, or could have resulted in, a dangerous release of a hazardous chemical.

All employees will attend the host employer's process overview and any site-specific training during the host employer orientation, including the process overview and Emergency Action Plan. Attached is a summary of applicable information taken from the PSM standard.

Process Safety Management of Acutely Hazardous Materials

These regulations contain requirements for **preventing or minimizing the consequences of catastrophic releases** of toxic, reactive, flammable or explosive chemicals. These regulations are intended to eliminate to a substantial degree, the risks to which employees are exposed in petroleum refineries and chemical plants.

1. The host employer shall develop and implement **written procedures** that provide clear instructions for safely conducting activities involved in each process.

   A. Steps for Each Operating Phase:
   1. Start-up
   2. Normal operation
   3. Temporary operations
   4. Emergency operations, including emergency shutdowns
   5. Normal shutdown
   6. Start-up following a turnaround, or after an emergency shutdown

B. Operating Limits:

1. Consequences of deviation
2. Steps required to correct and/or avoid deviation
3. Safety systems and their functions

C. Safety and Health Considerations:

1. Properties and hazards of the chemicals used in the process
2. Precautions necessary to prevent exposure, including PPE
3. Control measures to be taken if physical contact or airborne exposure occurs
4. Safety procedures for opening process equipment (such as pipeline breaking)
5. Verification of raw materials and control of hazardous chemical inventory levels
6. Any special or unique hazards

Note: If Hot Work is to be performed, as with any hot work, a "Hot Work" permit shall be obtained from the client before any work commences (refer to the company hot work/welding policy if applicable).

2. A copy of the operating procedures shall be readily accessible to employees who work in or near the process area or to any other person who works in or near the process area.
3. The operating procedures shall be reviewed as often as necessary to assure that they reflect safe operating practices, including changes that result from changes in process chemicals, technology and equipment and changes to facilities.
4. The employer shall develop and implement **safe work practices** to provide for the control of hazards during operations such as opening process equipment or piping and control over entrance into a facility by maintenance, contractor, laboratory or other support personnel. These safe work practices shall apply to employees and contractor employees.

Training:

1. **Initial training**. Each employee presently involved in operating or maintaining a process, and each employee before working in a newly assigned process, shall be trained in an overview of the process and in the operating procedures. The training shall include emphasis on the specific safety and health hazards, procedures and safe practices applicable to the employee's job tasks.
2. **Refresher and supplemental training**. At least every three years, and more often if necessary, refresher and supplemental training shall be provided to each maintenance or operating employee and other workers necessary to ensure safe operation of the facility. The employer in consultation with employees involved in operation or maintenance of a process shall determine the appropriate frequency of refresher training.
3. **Training certification**. The employer shall ensure that each employee involved in the operation or maintenance of a process has received and successfully completed training. The employer, after the initial or refresher training shall prepare a certification record which contains the identity of the employee, the date of training, and the signatures of the persons administering the training.
4. **Testing procedures** shall be established by each employer to ensure competency in job skill levels and safe and healthy work practices.

Contractors:

1. The employer shall inform contractors performing work on, or near, a process of the known potential fire, explosion or toxic release hazards related to the contractor's work and the process, and require that contractors have trained their employees to a level adequate to safely perform their jobs. The employer shall also inform contractors of any applicable safety rules of the facility, and assure that the contractors have so informed their

employees.

2. The employer shall explain to contractors the provisions of the emergency action plan.
3. Contractors shall assure that each of their employees have received training to safely perform their job and that the contract employees shall comply with all applicable work practices and safety rules of the facility.

Trade Secrets:

Company employees will respect and maintain the confidentiality of all "Trade Secret" information received and/or gathered from our clients (Owner Facilities). Any and all proprietary information obtained including but not limited to the following is governed by this policy:

- Development of the process hazard analysis
- Development of operating procedures
- Involvement in incident investigations
- Involvement in emergency response or emergency planning
- Involvement in compliance auditing

Management of Change (MOC)

The host employer that is covered by the standard will typically handle all MOC situations, but we need to be aware of the program and be mindful that if we get involved with any changes, the necessary steps will need to take place. The company will establish and implement written procedures to manage changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures; and, changes to facilities that affect a covered process.

Prior to the change, address the following considerations:

- The technical basis for the proposed change;
- Impact of change on safety and health;
- Modifications to operating procedures;
- Necessary time period for the change; and,
- Authorization requirements for the proposed change.

The Company will train affected employees and contract employees in the change prior to start-up of the process or affected part of the process.

Chapter 33

Ergonomics

ERGONOMICS

Purpose

The purpose of this program is to effectively eliminate or control Work-related Musculoskeletal Disorders (WMSD) and hazards by providing management leadership and employee involvement in the identification and control of hazards.

> **Ergonomics** is the science of fitting jobs to people. Ergonomics encompasses the body of knowledge about physical abilities and limitations as well as other human characteristics that are relevant to job design. Ergonomic design is the application of this body of knowledge to the design of the workplace (i.e., work tasks, equipment, environment) for safe and efficient use by workers. Good ergonomic design makes the most efficient use of worker capabilities while ensuring that job demands do not exceed those capabilities.

Covered Tasks

This program covers all jobs involved in construction, including tool use, material handling, and other jobs where there are work related musculoskeletal disorder hazards.

Program Goals

1. Reduction in injuries & illnesses
2. Reduction in absenteeism
3. Reduction in employee turnover
4. Increased productivity & quality

Management Leadership & Employee Involvement

Policy: Diamond & Thiel employees are highly encouraged to bring their concerns to supervisors and management. Feed back from employees is an important means of identifying ergonomic hazards. When a WMSD is identified, the Safety Coordinator will work with employee(s) to eliminate or control hazards.

Training

Current and new / short service employees involved in manual handling and other jobs with WSDS will complete documented training in the following areas:

1. How to recognize the signs and symptoms of WSDS, and the importance of early reporting of signs and symptoms
2. Hazards that are reasonably likely to be causing or contributing to WSDS
3. How to report signs and symptoms of WSDS and WMSD hazards, and make recommendations

Job Hazard Analysis

The purpose of Job Hazard Analysis is to identify WMSD hazard elements to provide information for effective control measures. When WMSD hazards are identified, a full JHA will be conducted and control measures implemented to eliminate or control the hazards to the extent feasible.

Control Measures

1. Identification, evaluation and implementation of feasible control measures to control the WMSD hazards, including engineering, administrative, and PPE controls. This includes prioritizing the control of WMSD hazards, where necessary.
2. Communication of results of the job hazard analysis to other areas of the workplace (e.g., procurement, human resources, and maintenance) whose assistance may be needed to successfully control the WMSD hazard.
3. Identification of hazards when equipment is changed, re-designed, or purchased and when change occurs in processes or facilities.

Medical Management

The company will make available prompt and effective medical management whenever an employee has a WMSD. (This means that when an employee reports signs or symptoms of a WMSD. All reports will be processed to determine whether medical management is necessary). Medical management, including recommended work restrictions, will be provided at no cost to the employee. Medical treatment protocols for WSDS will be established by a health care professional (HCP).

Program Evaluation

Evaluation of the ergonomics program and controls will be conducted periodically to ensure effective administration and management and compliance with regulatory requirements.

All program deficiencies found will be corrected promptly.

Chapter 34

Fatigue & Journey Management

FATIGUE & JOURNEY MANAGEMENT

Purpose

Diamond & Thiel's Fatigue Management plan's goal is to further the health and well-being of its employees through management of work hours, conditions, and stressors.

Work hours

Employee work hours will be in compliance with regulatory guidelines as regards rest breaks, meal breaks, and duration of the work day. Work on Sundays will not be routinely scheduled in order to promote a good work and personal life balance.

Shelter and facilities

The Company appreciates that workers are less likely to take their entitled breaks if they do not have access to warm, dry facilities, a supply of drinking water, hand washing/cleaning facilities, and portable or permanent toilet facilities. Fatigue cannot be managed unless uninterrupted breaks can be taken in moderate comfort. The Company will work with host employers to ensure availability of appropriate facilities.

Maintenance and cleanliness of facilities

The Company will take all practicable steps to ensure that facilities are properly maintained, readily accessible, and kept in a clean, safe, and hygienic state.

Driving

Employees who experience fatigue or tiredness while driving must stop driving and seek rest.

Training

Employees and supervisors will complete training in the following areas:

Signs of fatigue and stress

- Sore or aching muscles or feeling of muscle weakness
- Headache
- Moodiness, irritability or easily agitated
- Dizziness and blurred vision
- Loss of appetite
- Difficulties with short term memory
- Inability to concentrate or focus on tasks
- Slowed reflexes or difficulty making decisions
- Feeling as if your actions are useless or that you can't change your situation
- Lack of motivation

Fatigue from physical exertion can be easily managed with proper food and rest and workers should be rotated through tasks that require high physical exertion. By contrast, fatigue from emotional, financial, or other stressors is not so easily managed and can be very debilitating.

Driving is one of the most potentially hazardous activities related to the workplace. Tired drivers must stop and rest.

Supervisors must monitor employees for signs of fatigue in those reporting to them, and must take appropriate steps to address the issue. This may include notification of the Safety Coordinator.

Everyone has a different ability to cope with stress and his or her symptoms of stress fatigue will be different. Workers performing high stress tasks should be monitored regularly for signs of fatigue and stress.

Chapter 35

Harassment

HARASSMENT

Purpose

Diamond & Thiel is committed to providing its employees a place of employment free of harassment of any type, including workplace violence, a hostile environment, or unwelcome comments or behavior related to religion, sexual orientation, or gender.

Training

Documented training will be provided to supervision and employees as follow:

Employees:

- Their right and obligation to report any incidence of harassment to supervision
- The types of harassment
- The Company's zero-tolerance policy as regards workplace violence
- Potential consequences of harassment, including but not limited to termination of employment

Supervision:

- In addition to employee training subjects, supervision will be trained in incident investigation procedures.

Chapter 36

Drug and Alcohol Policy

DRUG AND ALCOHOL POLICY

Purpose:

Diamond & Thiel will not tolerate the use of alcohol or of illegal drugs in the workplace.

Policy:

Employees will be subject to post accident, probable cause, and follow-up drug and alcohol screening, conducted by the Company's medical provider, in accordance with legal guidelines. If impairment is identified and an employee is suspended, screening must be performed prior to return to work.

If a host employer requires additional drug and alcohol testing, the Company will require compliance with host policies.

Training:

Employees:

- The Company's zero-tolerance policy as regards use of alcohol or illegal drugs
- Potential impact of prescription drug use on safety-sensitive work tasks
- Resources for assistance related to drug and alcohol misuse
- Potential disciplinary actions

Supervision:

- In addition to employee training subject areas, supervision will receive instruction in the recognition of signs and symptoms of drug or alcohol abuse, and in proper incident investigation.

Chapter 37

Environmental Policy

ENVIRONMENTAL POLICY

Purpose:

Diamond & Thiel is committed to preserving the environment for the benefit of its employees, its clients, and the community.

Policy:

The Company will adhere to all applicable Federal, state, county, and local environmental regulations where it performs work. It is the Company's objective to exceed regulatory requirements where possible, with the target of green job practices implemented whenever possible. These may include recovery of reusable materials (e.g., reinforcing steel; uncontaminated scrap wood, etc.), local sourcing of materials, diesel emission reduction, etc. Construction debris may not be removed by employees and will be disposed of (or recycled, if possible) in accordance with EPA/NYSDEC and local waste management regulations. All chemicals will be stored in original manufacturer containers in good condition or in approved and labeled temporary use containers to prevent spills and releases.

Responsibilities:

Managers:

- Will identify applicable regulatory requirements with the assistance of EHS professionals and host employers; provide compliance resources; and monitor, evaluate, and revise the Company's policies and procedures on an ongoing basis.

- Will arrange for annual audit by the Company's insurance carrier of Company environmental and other policies. Documented results will be communicated to supervision and employees.

- Will hold environmental meetings with host employers to learn site-specific requirements and will communicate these to supervision.

- Will require subcontractor suppliers to submit documentation related to their environmental, health, and safety policies and procedures to ensure compliance with host employer and Federal, state, and local requirements. Will respond appropriately to any deviations from policy reported by supervision. This may include removal from the site.

Supervisors:

- Will implement environmental controls, monitor employee compliance, and communicate with management and host employers regarding any environmental impact potential inherent in the work. Will conduct environmental briefings periodically to communicate site and Company policies and procedures to employees. Daily work briefings will also be used to assure worker compliance.

- Will monitor subcontractor suppliers' environmental, health, and safety performance, and will report to management any deviations.

Workers:

- Will comply with environmental controls; report all spills, releases, or other incidents that could involve environmental impact.

Environmental Incidents:

Any incidents with an environmental impact, including but not limited to spills and releases and deviations of any kind from regulatory or host employer requirements, will be investigated using the Company Incident Investigation policy. Root causes will be identified and communicated to employees, and policies and procedures will be revised as necessary.

Training:

Supervision and employees will receive documented instruction in the following areas:

- Work tasks that could involve an environmental impact
- Potential consequences to host employers, the Company, and employees of environmental violations
- Description of waste management and other relevant regulations
- Description of host employer requirements
- Proper chemical labeling, usage, and storage, including fuels, solvents, etc.
- Importance of prompt reporting of spills, releases, and any other environmental incident

Chapter 38

Heat & Cold Stress

HEAT AND COLD STRESS

Purpose

Prevention of heat and cold stress related injuries and illnesses.

Cold Hazards

Common harmful effects of cold include frostbite, trench foot, and general hypothermia. Frostbite occurs when skin tissue actually freezes and cell damage results. The freezing point of skin is approximately 30 °F and wind chill can be a significant factor in accelerating the process. Fingers, toes, cheeks, nose, and ears are primarily affected.

Preventing Cold-Related Disorders

Employees must dress appropriately and take precautions:

- Don at least three layers: An outer layer to break the wind and allow some ventilation (like Gore-Tex or nylon); a middle layer of wool, down, or synthetic pile to absorb sweat and retain insulating properties when wet; and an inner layer of cotton or synthetic weave to allow ventilation and escape of perspiration.
- Pay particular attention to protecting feet, hands, head, and face. Keep the head covered (up to 40% of body heat can be lost when the head is exposed)
- Set their own pace and take additional breaks as needed
- Shift outdoor activities to the inside when possible
- Prevent dehydration and eat properly

Heat Hazards

Harmful effects of heat include heat fatigue, heat rash, heat exhaustion, fainting, and heat stroke, a life-threatening condition. Early response is critical.

Preventing heat-Related Disorders

Employees must take appropriate precautions:

- Recognize that high radiant heat (sun, furnaces, etc.), poor ventilation, and high humidity increase the likelihood of heat illness
- Recognize that extra burden created by some personal protective equipment (respirators, chemical resistant suits, etc.)
- Set their own pace and take additional breaks as needed, and at the first signs of heat-related fatigue or other symptoms
- Avoid working alone in high-heat conditions
- Prevent dehydration and eat properly

Training

Employees will complete documented training in heat- and cold-related hazards and preventive measures and emergency response during toolbox talks periodically and as seasonally appropriate.

Chapter 39

Working Alone

WORKING ALONE

Purpose

Prevention of injuries and illnesses related to working alone in dangerous conditions. Diamond & Thiel employees who are performing high hazard tasks may not work alone.

Hazards

Prompt emergency response, and especially summoning of medical attention, are critical to minimizing injuries and illnesses. Working alone in high hazard conditions or while performing high hazard tasks can compromise prompt response.

Prevention

As addressed under Diamond & Thiel's specific policies, employees may not work alone when working:

- In extreme heat conditions
- At an elevation, to ensure prompt rescue
- In or around a confined space
- At any high hazard activity identified by the host employer or as part of a Job Hazard Analysis

New / short service employees may not work alone until they have demonstrated proficiency in their job assignments.

An employee who is unaccompanied during such tasks must stop work and notify supervision. Supervision must provide additional personnel resources as needed.

Chapter 40

Benzene Awareness Guideline

BENZENE AWARENESS GUIDELINE

This safety guideline is intended to provide suitable information to all Diamond & Thiel Construction Company, Inc. employees regarding the potential toxic effects of Benzene so that adequate measures can be taken to limit exposures through controls in the workplace.

GENERAL

Of all the hydrocarbons, Benzene poses the most serious long-term threat. Exposure over time, to even low levels of Benzene can cause leukemia, blood changes, and aplastic anemia.

CHARACTERISTICS

Benzene is a colorless to light-yellow liquid with a pleasant sweet odor.

- Formula (C6H6)
- CAS No.: 71-43-2

Benzene is a flammable liquid that can accumulate static electricity. Benzene vapors are heavier that air and may travel to a source of ignition and flash back. The vapors are readily dispersed by wind movement and/or air currents. Liquid benzene tends to float on water and may travel to a source of ignition and spread fire. Benzene is highly reactive with no oxidizing materials.

USES:

Benzene is a component of gasoline, both in the manufacturing process and found naturally in crude oil; Benzene is also used as a feed stock for chemical manufacturing.

HEALTH EFFECTS:

WARNING
Benzene is a cancer-causing agent in humans. All contact should be reduced to the lowest possible level. The above exposure limits are for air levels only. Skin contact may also cause overexposure.

Benzene is one of the most hazardous of all petroleum products because of its adverse health hazards and high flammability.

The following adverse health affects are important to remember where there may be a potential exposure to Benzene:

a) **Acute:** At high concentrations (1000 PPM) Benzene has an acute effect on the central nervous systems causing headaches, dizziness, drowsiness, unconsciousness, and possible death.

a. Acute exposure can also cause breathlessness, irritability, and giddiness.

b) **Chronic:** Benzene has the chronic exposure effect on bone marrow (aplastic anemia leukemia).

a. Chronic exposure can also cause convulsions, liver damage, heart damage, blood diseases (aplastic anemia), and cancer (leukemia). These symptoms can take months or years to surface and can develop without physical or visible indications.

c) Repeated skin contact leads to irritant contact dermatitis (rash); as with any petroleum solvent (which Benzene is also classified as), it will leach the natural oils out of the skin. Direct contact with the skin can cause erythema and/or blistering.

d) Benzene is irritating to eyes and mucous membranes.

e) Flammable/dangerous fire risk: benzene has a very low flash point making it dangerous to have any open flame, spark or source of ignition when vapors are present.

f) Explosive limits in air 1.5 to 8% by volume: benzene is highly flammable at low levels of vapor quantity in air.

PERSONAL PROTECTIVE MEASURES

Diamond & Thiel Construction Company, Inc. employees are not permitted to work in areas where there may be a potential for Benzene exposure.

TRAINING

All employees will be provided awareness training in this program in order to be familiar with the potential hazards and proper safe work procedures to follow if exposed to this health hazard.

Chapter 41

Lead Awareness Guideline

LEAD AWARENESS GUIDELINE

This safety guideline is intended to provide suitable information to all employees of Diamond & Thiel Construction Company, Inc. regarding the potential effects of Lead and where lead may be found so that adequate measures can be taken to limit exposures through controls in the workplace.

I. GENERAL

The objective of this guideline is to prevent absorption of harmful quantities of lead. The guideline is intended to protect employees from the immediate toxic effects of lead and from the serious toxic effects that may not become apparent until years of exposure have passed.

II. CHARACTERISTICS & WHERE IT CAN BE FOUND

To understand why lead is so hazardous, it is important to know what it is, the hazardous effects on people, and which materials do or may contain lead. Once this is understood, employees will gain a respect for the safety guidelines set forth in this policy.

What Is It?
Pure lead (Pb) is a heavy metal and is a basic chemical element. It can combine with various other substances to form numerous lead compounds.

Where Can It Be Found?
Lead can be found in:

- Old glossy paints used on walls and pipe.
- Building and roof metal support frames.

Report to the controlling contractor's Project Manager anytime you suspect lead-containing materials that may not have been disclosed:

- Cracked or pealing paint,
- Visible paint dust, grindings, or shavings.

III. HEALTH EFFECTS:

I. **<u>Ways in which lead enters your body.</u>**
Lead can be absorbed into your body by inhalation (breathing) and ingestion (eating). When lead is scattered in the air it can be inhaled and absorbed through your lungs and upper respiratory tract. Inhalation of airborne lead is generally the most important source of occupational lead absorption. You can also absorb lead through your digestive system if lead gets into your mouth and is swallowed.

Hazards encountered with lead occur when:

- Inhaling lead as a dust, fume or mist.

- Ingesting lead through food, cigarettes, and chewing tobacco when handled with contaminated hands.

Lead (except for certain organic lead compounds not covered by the standard, such as tetraethyl lead) is not absorbed through your skin. When lead is scattered in the air as a dust, fume or mist it can be inhaled and absorbed through your lungs and upper respiratory tract. Inhalation of airborne lead is generally the most important source of occupational lead absorption. You can also absorb lead through your digestive system if lead gets into your mouth and is swallowed. If you handle food, cigarettes, chewing tobacco, or make-up, which have lead on them or handle them with hands contaminated with lead, this will contribute to ingestion.

A significant portion of the lead that you inhale or ingest gets into your blood stream. Once in your blood system, lead is circulated throughout your body and stored in various organs and body tissues. Some of this lead is quickly filtered out of your body and excreted, but some remains in the blood and other tissues. As exposure to lead continues, the amount stored in your body will increase if you are absorbing more lead than your body is excreting. Even though you may not be aware of any immediate symptoms of disease, this lead stored in your tissues can be slowly causing irreversible damage, first to individual cells, then to your organs and whole body systems.

II. **Effects of overexposure to lead -(1) Short-term (acute) overexposure**.

Lead is a potent, systemic poison that serves no known useful function once absorbed by your body. Taken in large enough doses, lead can kill you in a matter of days. A condition affecting the brain called acute encephalopathy may arise which develops quickly to seizures, coma, and death from cardiorespiratory arrest. A short-term dose of lead can lead to acute encephalopathy. Short-term occupational exposures of this magnitude are highly unusual, but not impossible. Similar forms of encephalopathy may, however, arise from extended, chronic exposure to lower doses of lead. There is no sharp dividing line between rapidly developing acute effects of lead and chronic effects, which take longer to acquire. Lead adversely affects numerous body systems and causes forms of health impairment and disease that arise after periods of exposure as short as days or as long as several years.

(2) Long-term (chronic) overexposure.

Chronic overexposure to lead may result in severe damage to your blood-forming, nervous, urinary and reproductive systems. Some common symptoms of chronic overexposure include loss of appetite, metallic taste in the mouth, anxiety, constipation, nausea, pallor, excessive tiredness, weakness, insomnia, headache, nervous irritability, muscle and joint pain or soreness, fine tremors, numbness, dizziness, hyperactivity and colic. In lead colic there may be severe abdominal pain.

Damage to the central nervous system in general and the brain (encephalopathy) in particular is one of the most severe forms of lead poisoning. The most severe, often fatal, form of encephalopathy may be preceded by vomiting, a feeling of dullness progressing to drowsiness and stupor, poor memory, restlessness, irritability, tremor, and convulsions. It may arise suddenly with the onset of seizures, followed by coma, and death. There is a

tendency for muscular weakness to develop at the same time. This weakness may progress to paralysis often observed as a characteristic "wrist drop" or "foot drop" and is a manifestation of a disease to the nervous system called peripheral neuropathy.

Chronic overexposure to lead also results in kidney disease with few, if any, symptoms appearing until extensive and most likely permanent kidney damage has occurred. Routine laboratory tests reveal the presence of this kidney disease only after about two-thirds of kidney function is lost. When overt symptoms of urinary dysfunction arise, it is often too late to correct or prevent worsening conditions, and progression to kidney dialysis or death is possible.

Chronic overexposure to lead impairs the reproductive systems of both men and women. Overexposure to lead may result in decreased sex drive, impotence and sterility in men. Lead can alter the structure of sperm cells raising the risk of birth defects. There is evidence of miscarriage and stillbirth in women whose husbands were exposed to lead or who were exposed to lead themselves. Lead exposure also may result in decreased fertility and abnormal menstrual cycles in women. The course of pregnancy may be adversely affected by exposure to lead since lead crosses the placental barrier and poses risks to developing fetuses. Children born of parents either one of whom were exposed to excess lead levels are more likely to have birth defects, mental retardation, or behavioral disorders or to die during the first year of childhood.

Overexposure to lead also disrupts the blood-forming system resulting in decreased hemoglobin (the substance in the blood that carries oxygen to the cells) and ultimately anemia. Anemia is characterized by weakness, pallor and fatigue as a result of decreased oxygen-carrying capacity in the blood.

IV. PROCEDURES:

1.1. Permissible Exposure Limit (PEL)

The current Cal/OSHA lead standard is 50 µg/m^3 as an 8-hour Time Weighted Average (TWA). The standard as it applies to construction is unique in that it groups tasks ***presumed*** to create employee exposures above the PEL of 50 µg/m^3 as an 8-hour TWA, as follows:

LEAD-RELATED CONSTRUCTION TASKS AND THEIR 8-HOUR TWA EXPOSURE LEVELS

> 50 to 500 µg/m^3	**> 500 µg/m^3 to 2,500 µg/m^3**	**> 2,500 µg/m^3**
Manual demolition	Using lead-containing mortar	Abrasive blasting
Dry manual scraping	Lead burning	Welding
Dry manual sanding	Rivet busting	Torch cutting
Heat gun use	Power tool cleaning without dust detection systems	Torch burning
Power tool cleaning with	Cleanup of dry expendable	

dust collection systems	abrasive blasting jobs	
Spray painting with lead paint	Abrasive blasting enclosure movement and removal	

1.2. Action Level

The standard also establishes an action level of 30 micrograms per cubic meter of air (30 µg/m^3), time-weighted average, based on an 8-hour workday. The action level initiates several requirements of the standard, such as exposure monitoring, medical surveillance, and training and education.

1.3. Evaluation Process

The controlling contractor's Project Manager will provide employees with results of any evaluation processes and a listing of lead containing material. The Contracting Company will provide all precautions and render the area safe for IPM employees before work begins.

Chapter 42

Grounding Conductor Program

GROUNDING CONDUCTOR PROGRAM

Purpose

The purpose of this policy is to specify procedures and guidelines to eliminate all injuries resulting from possible malfunctions, improper grounding and/or defective electrical tools.

Ground Fault Protection

Diamond & Thiel Construction Company, Inc. employees will use ground fault circuit interrupters or assured equipment grounding conductor program to protect employees on the job site. These requirements are in addition to any other requirements for equipment grounding conductors.

Ground-fault circuit interrupters (GFCI) - All 120 volt, single phase, 15 and 20 ampere Receptacle outlets on the job site, which are not part of the permanent wiring of the building or structure and which are in use by employees, shall have approved ground fault circuit interrupters for personnel protection. Receptacles on a two wire, single phase portable or vehicle mounted generator rated not more than 5kw, where the circuit conductors of the generator frame and all other grounded surfaces, need not be protected with ground fault circuit interrupters.

Assured equipment grounding conductor program - The company has established the following assured equipment grounding conductor program on the job site covering all cord sets, receptacles which are not part of the building or structure, and equipment connected by cord and plug which are available for use or used by employees. This program will comply with the following minimum requirements:

(A) A written description of the program, including the specific procedures adopted by the employer, shall be available at the job site for inspection and copying by Assistant Secretary and any affected employee.
2

(B) The manager and/or designated employee have been designate to implement the program as defined by OSHA 1926.304(f).

(C) Each cord set, attachment cap, plug and receptacle of cord sets, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to damage, shall be visually inspected before each day's use for external defects, such as deformed or missing pins or insulation damage, and for indications of possible internal damage. Equipment found damaged or defective shall not be used until repaired. Damaged or defective items shall be tagged "DO NOT USE" and removed from service until repaired and tested.

(D) The following tests shall be performed on all cord sets, receptacles which are not part of the permanent wiring of the building or structure, and cord and plug connected required to be grounded:

1. All equipment grounding conductors shall be tested for continuity and shall be electrically continuous.

2. Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal.

(E) All required test shall be performed:

1. Before first use;
2. Before equipment is returned to service following any repairs;
3. Before equipment is used after any incident which can be reasonably suspected to cause damage (for example, when the cord set has been run over; and
4. At intervals not to exceed 3 months, except that cord sets and receptacles which are fixed and not exposed to damage shall be tested at intervals not exceeding 6 months.

(F) The company will not make available or permit the use by employees on any equipment that has not met the above requirements.

(G) Tests performed as required will be recorded. This test record shall identify each receptacle, cord set, and cord and plug connected equipment that passed the test and shall indicate the late date it was tested or the interval for which it was tested. The equipment will be identified with a nonconducting tag or other means of identification. This record shall be kept by means of logs, color coding, (example – colored plastic tapewriter tape) or other effective means and shall be maintained until replace by a more current
record. The record shall be made available on the job site for inspection by the Assistant Secretary and any affected employee.

(H) The company will use a different color plastic tape for each quarterly inspection. Red 1st Quarter, Blue 2nd Quarter, Green 3rd Quarter, and Yellow 4th Quarter. A plastic tape writer will be used to identify each cord set by a number (SP01, 02, 03 etc.). A written record will be maintained on all cords sets and news sets as they are added. A Volt/OHM meter will be used to test continuity of each set.

GROUND FAULT PROTECTION INSPECTION RECORD
Equipment ID No. Test performed DATE

GROUND FAULT PROTECTION INSPECTION RECORD
Equipment ID No. Test performed DATE

SAFETY
ALERT
ASSURED ELECTRICAL
EQUIPMENT GROUNDING
CONDUCTOR PROGRAM
INSPECT - TEST - COLOR CODE
6
ALL ELECTRICAL TOOLS, EXTENSION CORDS, AND EQUIPMENT
FIRST QUARTER
JANUARY 1 – MARCH 31
COLOR CODE IS
RED
ENSURE ALL ELECTRIC APPARATUS HAVE BEEN SATISFACTORILY TESTED AND COLOR CODED PRIOR TO USE.
SAFETY
ALERT
ASSURED ELECTRICAL
EQUIPMENT GROUNDING
CONDUCTOR PROGRAM
INSPECT - TEST - COLOR CODE
7

ALL ELECTRICAL TOOLS, EXTENSION CORDS, AND EQUIPMENT
SECOND QUARTER
APRIL 1 – JUNE 30
COLOR CODE IS
BLUE
ENSURE ALL ELECTRIC APPARATUS HAVE BEEN SATISFACTORILY TESTED AND COLOR CODED PRIOR TO USE.
SAFETY
ALERT
ASSURED ELECTRICAL
EQUIPMENT GROUNDING
CONDUCTOR PROGRAM
8
INSPECT - TEST - COLOR CODE
ALL ELECTRICAL TOOLS, EXTENSION CORDS, AND EQUIPMENT
THIRD QUARTER
JULY 1 – SEPTEMBER 30
COLOR CODE IS
GREEN
ENSURE ALL ELECTRIC APPARATUS HAVE BEEN SATISFACTORILY TESTED AND COLOR CODED PRIOR TO USE.
SAFETY
ALERT
ASSURED ELECTRICAL
EQUIPMENT GROUNDING
CONDUCTOR PROGRAM
9
INSPECT - TEST - COLOR CODE
ALL ELECTRICAL TOOLS, EXTENSION CORDS, AND EQUIPMENT
FOURTH QUARTER
OCTOBER 1 – DECEMBER 31
COLOR CODE IS
YELLOW
ENSURE ALL ELECTRIC APPARATUS HAVE BEEN SATISFACTORILY TESTED AND COLOR CODED PRIOR TO USE.

Chapter 43

Silica

Silica

Purpose

The purpose of this policy is to protect Diamond & Thiel employees from the health hazards associated with exposure to crystalline silica.

Hazards & assessment

Respirable crystalline silica, generated by work with masonry products in construction, is associated with lung cancer, silicosis, and opportunistic illnesses such as tuberculosis. Diamond & Thiel will protect its employees with engineering, work practice, and respirator controls as specified in 1926.1153 Table 1, or based on an exposure assessment using the standard's performance option (air monitoring or objective data), or the scheduled monitoring option. Employees will be monitored individually or by taking representative samples. Exposures will be reassessed if there are changes in work conditions, equipment, or practices.

Employees will be notified individually and in writing of results within five days of the exposure assessment, or results will be posted in a location accessible to all affected employees. If the assessment indicates that exposure is above the PEL, the notification will describe the measures being taken to reduce employee exposure at or below the PEL.

Respiratory protection

Respiratory protection will be provided to employees exposed to actionable levels of respirable crystalline silica, except where respiratory protection is not required under Table 1 for a specific task. Respirator use will follow the requirements of 1910.134. If an employee performs more than one task on Table 1 (and task(s) involve respirator use under Table 1 when duration of task is over 4 hours) within a shift, and the total duration of those tasks is more than four hours, the employee will use respiratory protection for each task as of the start of each task. This means, in effect, that rotation of job duties will not be used to eliminate the need for respiratory protection. For tasks not covered under Table 1, engineering controls, work practices, and respiratory protection will be provided as necessary to reduce employee exposure to the lowest feasible level.

Medical surveillance

Diamond & Thiel will make medical surveillance available at no cost to employees, at a reasonable time and place, for each employee who will be required under the silica standard to use a respirator for 30 or more days per year. The company will ensure that all medical examinations and procedures are performed by a physician or other licensed health care professional (PLHCP) as required under the silica in construction standard. A baseline medical assessment must be available to covered employees within 30 days of initial assignment unless they have received a suitable medical examination in the prior three years.

Housekeeping

The following housekeeping measures will be used to limit employee exposure to respirable crystalline silica:

- HEPA-vacuuming
- Wet sweeping
- Dry sweeping and dry brushing will not be allowed unless wet sweeping, HEPA-filtered vacuuming or other methods to reduce exposure are not feasible.
- Compressed air will not be used to clean clothing or surfaces where its use could contribute to employee exposure to respirable crystalline silica

Written exposure control plan

When employee activities are covered by 1926.1153, a written exposure control plan will be implemented. It will include the following elements:

- A description of the tasks that could expose employees to silica, including but not limited to sawing, drilling, jackhammering, and grinding
- The engineering controls, work practices, and respiratory protection used to limit exposure for each task to the lowest feasible level
- The housekeeping measures used to limit exposure
- The procedures used to restrict access to work areas, if necessary, to minimize the number of employees exposed to silica, including exposures generated by other employers or sole proprietors

The plan will be reviewed and evaluated and updated at least once per year and as necessary in the event of regulatory updates, changes in equipment, and any exposure incidents. Plan changes will be communicated to affected employees. It will be available electronically or in hard copy for examination and copying, upon request, to each covered employee.

The company will designate a competent person to make frequent and regular inspections of job sites, materials, and equipment to implement the written exposure control plan.

Training

Diamond & Thiel employees exposed to respirable crystalline silica at or above the action level (an 8-hour time weighted average of 25 micrograms per cubic meter) who are covered by the written exposure control plan will be trained under the company's hazard communication program and will demonstrate knowledge and understanding of at least the following:

- The health hazards associated with silica exposure, including cancer, lung disease, immune system effects, and kidney disease.
- Specific tasks in the workplace that could result in exposure to respirable crystalline silica
- Specific measures taken to protect employees from exposure, including engineering

controls, work practices, and respirators to be used
- The contents of the relevant OSHA standard
- The identity of the competent person
- The purpose and description of the medical surveillance program

A copy of 29 CFR 1926.1153 will be made available at no cost to covered employees.

Recordkeeping

Accurate air monitoring data, objective data, and medical surveillance records will be maintained in accordance with 1910.1020 and 1926.1153.

Appendix A

Written Exposure Control Plan

Company: Diamond & Thiel Construction Co., Inc.

Person Completing the Plan/Title: Dale Russell, Safety Director

Jobsite/Project: Comprehensive Plan

Description of Work: This comprehensive written silica exposure control plan includes all equipment, materials, tasks, and conditions for the jobs Diamond & Thiel performs. Diamond & Thiel will fully and completely implement the engineering controls, work practices, and respiratory protection specified for its tasks in Table 1. Tasks that are not covered under Table 1, or for which Diamond & Thiel does not fully and properly implement the controls described in Table 1, will be either subcontracted or the company will perform an exposure assessment using the performance option and will use engineering and work practice controls to reduce and maintain employee exposure to or below the PEL. Where necessary to protect employees to or below the PEL, the company will supplement feasible engineering and work practice controls with respiratory protection. The Safety Director will review and evaluate the effectiveness of the plan at least annually.

Competent Person: Dale Russell, Safety Director, or the specific project's Foreman or Superintendent

Materials, Tasks, Controls:

Material: Asphalt
Task: Drilling/coring
Equipment and Control(s): Hand-Held Drill with Dust Extraction (Table 1 Entry)
Task/Control Description:
Drilling in asphalt with a handheld drill equipped with a dust collection system, and a HEPA-filtered vacuum for cleaning holes. Tools will be operated and maintained in accordance with manufacturer instructions to minimize dust emissions. The dust collector will provide the airflow recommended by the manufacturer, or greater, and will have a filter with 99% or greater efficiency and a filter-cleaning mechanism.

Material: Brick
Task: Cutting/sawing
Equipment and Control(s): 1) Hand-Held Masonry Saw with Water (Table 1 Entry), 2) Stationary Masonry Saw with Water (Table 1 Entry)

Task/Control Description:
Cutting brick with a stationary masonry saw equipped with an integrated water delivery system that continuously feeds water to the blade, or with a handheld power saw equipped with an integrated water delivery system that continuously feeds water to the blade. Tools will be operated and maintained in accordance with manufacturer instructions to minimize dust emissions. The saw operator will make sure that enough water for the saw is available before starting to cut, and that a steady stream of water can be seen while cutting. The operator will change water, when needed, to maintain flow of water to the blade and will, if an increase in visible dust is seen, stop work and adjust controls. Where work with the handheld power saw exceeds 4 hours, or takes place indoors or in an enclosed area, workers will also use APF 10 respiratory protection.

Material: Brick
Task: Drilling/coring
Equipment and Control(s): 1) Core Drill with Water (Table 1 Entry), 2) Hand-Held Drill with Dust Extraction (Table 1 Entry)
Task/Control Description:
Drilling in brick with a rig-mounted core saw or drill equipped with an integrated water delivery system that applies water to the cutting surface; or with a handheld drill equipped with a dust collection system; and a HEPA-filtered vacuum for cleaning holes. Tools will be operated and maintained in accordance with manufacturer instructions to minimize dust emissions. The dust collector will provide the airflow recommended by the manufacturer, or greater, and will have a filter with 99% or greater efficiency and a filter-cleaning mechanism. The drill operator will make sure that enough water for the drill is available before starting to cut, and that a steady stream of water can be seen while drilling. The operator will change water, when needed, to maintain flow of water and will, if an increase in visible dust is seen, stop work and adjust controls.

Material: Concrete
Task: Cutting/sawing
Equipment and Control(s): Hand-Held Masonry Saw with Water (Table 1 Entry)
Task/Control Description:
Cutting concrete with a handheld power saw equipped with an integrated water delivery system that continuously feeds water to the blade. Tools will be operated and maintained in accordance with manufacturer instructions to minimize dust emissions. The saw operator will make sure that enough water for the saw is available before starting to cut, and that a steady stream of water can be seen while cutting. The operator will change water, when needed, to maintain flow of water to the blade and will, if an increase in visible dust is seen, stop work and adjust controls. Where work exceeds 4 hours, or takes place indoors or in an enclosed area, workers will also use APF 10 respiratory protection.

Material: Concrete
Task: Drilling/coring
Equipment and Control(s): 1) Core Drill with Water (Table 1 Entry), 2) Hand-Held Drill with Dust Extraction (Table 1 Entry)
Task/Control Description:
Drilling in concrete with a rig-mounted core saw or drill equipped with an integrated water delivery system that applies water to the cutting surface; or with a handheld drill equipped with a dust collection system; and a HEPA-filtered vacuum for cleaning holes. Tools will be operated and maintained in accordance with manufacturer instructions to minimize dust emissions. The dust collector will provide the airflow recommended by the manufacturer, or greater, and will have a filter with 99% or greater efficiency and a filter-cleaning mechanism. The drill operator will make sure that enough water for the drill is available before starting to cut, and that a steady stream of water can be seen while drilling. The operator will change water, when needed, to maintain flow of water and will, if an increase in visible dust is seen, stop work and adjust controls.

Material: Concrete Block
Task: Cutting/sawing
Equipment and Control(s): 1) Hand-Held Masonry Saw with Water (Table 1 Entry), 2) Stationary Masonry Saw with Water (Table 1 Entry)
Task/Control Description:
Cutting concrete block with a stationary masonry saw equipped with an integrated water delivery system that continuously feeds water to the blade, or with a handheld power saw equipped with an integrated water delivery system that continuously feeds water to the blade. The saw operator will make sure that enough water for the saw is available before starting to cut, and that a steady stream of water can be seen while cutting. The operator will change water, when needed, to maintain flow of water to the blade and will, if an increase in visible dust is seen, stop work and adjust controls. Tools will be operated and maintained in accordance with manufacturer instructions to minimize dust emissions. Where work with the handheld power saw exceeds 4 hours, or takes place indoors or in an enclosed area, workers will also use APF 10 respiratory protection.

Material: Concrete Block
Task: Drilling/coring
Equipment and Control(s): 1) Core Drill with Water (Table 1 Entry), 2) Hand-Held Drill with Dust Extraction (Table 1 Entry)
Task/Control Description:
Drilling in concrete block with a rig-mounted core saw or drill equipped with an integrated water delivery system that applies water to the cutting surface; or with a handheld drill equipped with a dust collection system; and a HEPA-filtered vacuum for

cleaning holes. Tools will be operated and maintained in accordance with manufacturer instructions to minimize dust emissions. The dust collector will provide the airflow recommended by the manufacturer, or greater, and will have a filter with 99% or greater efficiency and a filter-cleaning mechanism. The drill operator will make sure that enough water for the drill is available before starting to cut, and that a steady stream of water can be seen while drilling. The operator will change water, when needed, to maintain flow of water and will, if an increase in visible dust is seen, stop work and adjust controls.

Material: Stone (including: granite, limestone, quartzite, sandstone, shale, slate, cultured, etc.)
Task: Cutting/sawing
Equipment and Control(s): 1) Hand-Held Masonry Saw with Water (Table 1 Entry), 2) Stationary Masonry Saw with Water (Table 1 Entry)
Task/Control Description:
Cutting stone with a stationary masonry saw equipped with an integrated water delivery system that continuously feeds water to the blade, or with a handheld power saw equipped with an integrated water delivery system that continuously feeds water to the blade. The saw operator will make sure that enough water for the saw is available before starting to cut, and that a steady stream of water can be seen while cutting. The operator will change water, when needed, to maintain flow of water to the blade and will, if an increase in visible dust is seen, stop work and adjust controls. Tools will be operated and maintained in accordance with manufacturer instructions to minimize dust emissions. Where work with the handheld power saw exceeds 4 hours, or takes place indoors or in an enclosed area, workers will also use APF 10 respiratory protection.

Material: Stone (including: granite, limestone, quartzite, sandstone, shale, slate, cultured, etc.)
Task: Drilling/coring
Equipment and Control(s): 1) Core Drill with Water (Table 1 Entry), 2) Hand-Held Drill with Dust Extraction (Table 1 Entry)
Task/Control Description:
Drilling in stone with a rig-mounted core saw or drill equipped with an integrated water delivery system that applies water to the cutting surface; or with a handheld drill equipped with a dust collection system; and a HEPA-filtered vacuum for cleaning holes. Tools will be operated and maintained in accordance with manufacturer instructions to minimize dust emissions. The dust collector will provide the airflow recommended by the manufacturer, or greater, and will have a filter with 99% or greater efficiency and a filter-cleaning mechanism. The drill operator will make sure that enough water for the drill is available before starting to cut, and that a steady stream of water can be seen while drilling. The operator will change water, when needed, to maintain flow of water and will, if an increase in visible dust is seen, stop work and adjust controls.

Material: Terrazzo
Task: Cutting/sawing
Equipment and Control(s): Hand-Held Masonry Saw with Water (Table 1 Entry)
Task/Control Description:
Cutting terrazzo with a handheld power saw equipped with an integrated water delivery system that continuously feeds water to the blade. The saw operator will make sure that enough water for the saw is available before starting to cut, and that a steady stream of water can be seen while cutting. The operator will change water, when needed, to maintain flow of water to the blade and will, if an increase in visible dust is seen, stop work and adjust controls. Tools will be operated and maintained in accordance with manufacturer instructions to minimize dust emissions. Where work exceeds 4 hours, or takes place indoors or in an enclosed area, workers will also use APF 10 respiratory protection.

Material: Tile (clay and ceramic)
Task: Cutting/sawing
Equipment and Control(s): 1) Hand-Held Masonry Saw with Water (Table 1 Entry), 2) Stationary Tile Saw with Water (Table 1 Entry)
Task/Control Description:
Cutting tile with a stationary masonry saw equipped with an integrated water delivery system that continuously feeds water to the blade, or with a handheld power saw equipped with an integrated water delivery system that continuously feeds water to the blade. The saw operator will make sure that enough water for the saw is available before starting to cut, and that a steady stream of water can be seen while cutting. The operator will change water, when needed, to maintain flow of water to the blade and will, if an increase in visible dust is seen, stop work and adjust controls. Tools will be operated and maintained in accordance with manufacturer instructions to minimize dust emissions. Where work with the handheld power saw exceeds 4 hours, or takes place indoors or in an enclosed area, workers will also use APF 10 respiratory protection.

Safety of Others:
Work involving a handheld power saw for more than 4 hours, or for work indoors or in an enclosed area, will be scheduled so that only employees engaged in the task and others who are assisting them are in the area. Access for other employers' workers or self-employed persons will be restricted. Employees not engaged in the task will be positioned away and upwind of the task activity. When the controls on a stationary masonry saw, a rig-mounted core saw or drill, or a handheld drill are fully and properly implemented, access does not need to be restricted to decrease other employees' exposure to respirable crystalline silica. The Competent Person may elect to use warning signs, traffic cones, or barrier tape to restrict access if necessary. When needed, the Competent Person will restrict access of Diamond & Thiel employees to

areas where other employers or self-employed persons are generating silica exposures.

Worker Training:
Diamond & Thiel employees involved in tasks that create silica exposure will receive training before being assigned work in the following areas:
* Health hazards of respirable crystalline silica exposure, including at least cancer, lung effects, immune system effects, and kidney effects;
* Tasks and materials in the workplace that could result in exposure to silica;
* Specific measures Diamond & Thiel has implemented to protect employees from exposure to respirable crystalline silica, including engineering controls, work practices, and respirators to be used;
* The content of the silica in construction standard, which is readily available at no cost to Diamond & Thiel employees;
* The availability upon request of this plan to view or copy to covered employees, their representatives, and representatives of OSHA or NIOSH;
* The identity of the Competent Person designated by Diamond & Thiel to implement the silica control plan and inspect the job site, materials and equipment; and
* The purpose and description of the medical surveillance program.

Competent Persons will receive training on how to implement Diamond & Thiel's silica control plan.

Housekeeping:
When cleaning up dust that may contribute to employee exposures to respirable crystalline silica, employees must:
* Not use dry brushing and sweeping unless methods such as wet sweeping and HEPA-filtered vacuuming are not feasible.
* Not use compressed air to clean clothing or surfaces, unless the compressed air is used together with a ventilation system that effectively captures the dust cloud, or no other cleaning method is feasible.
If compressed air cleaning is unavoidable because other cleaning methods are infeasible, local exhaust ventilation must be used to capture dust.
When removing the dust bag (whether plastic, paper, fleece, or wet/dry slurry bag is used) or replacing the filter from the automatic filter cleaning vacuum cleaner, the Bosch Assembly & Preparation and Operating Instructions will be followed to minimize potential exposure. Dust bags and filters will be placed in a sealed container and disposed of appropriately.

Medical Surveillance:
Diamond & Thiel will make medical surveillance available at no cost to the employee, at a reasonable time and place, for each employee who will be required under the silica standard to use a respirator for 30 or more days per year. Diamond & Thiel will ensure

that all medical examinations and procedures are performed by a physician or other licensed health care professional (PLHCP) as required under the silica in construction standard.

Other Considerations:

There are a number of factors that may have an impact on employee protection from respirable crystalline silica; the Competent Person must evaluate these at each job site.

* Weather conditions: It is unsafe, for example, to expose the dry/wet vacuum to rain or wet conditions. The vacuum is not intended to be immersed or submerged in a fluid.
* Presence of flammable liquids, gases, or dust: Appliances create sparks, which may ignite the dust, vapors, gases, or fumes.
* Electrical Hazards: The proper condition of the cord and plug of the vacuum; potential body contact with grounded surfaces such as pipes, radiators, etc.; and use of extension cords rated for outdoor use are among the factors to be considered.
* Impact of wet cutting on materials being used: the time that may be required to allow masonry materials to dry after cutting and before use will depend on the material, the amount of water used, and the application.