



HEALTH AND SAFETY MANUAL

Environmental Crossings, Inc.
HEALTH AND SAFETY MANUAL

Project:

Contract No.

Date:

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1.0 INTRODUCTION

A project has many phases and is also likely to have many work sites. There are certain safety risks inherent in each phase of a project. At each work site, there are Environmental Crossings and non-Environmental Crossings personnel and certain precautions are needed to ensure that these persons understand the hazards associated with the work and the procedures to provide a safe, effective and environmentally responsible project.

The work situation is likely to vary from day to day as different operations are executed. To ensure that a safe, healthy and environmentally responsible work site is maintained, according to the relevant regulations and the objectives of Environmental Crossings management, this General Health and Safety Plan has been prepared. The health and safety of Environmental Crossings personnel is paramount, and all employees must familiarize themselves with the safety program set forth in this manual.

Every employer and employee on the different work sites shall strictly obey the safety instructions as outlined in the General Health and Safety Plan and specified in the safety plan for the particular project. Every employee and subcontractor shall co-operate closely with Environmental Crossings to ensure the safety of every individual directly or indirectly involved with the work site.

The basic objectives of this manual are:

- ◆ To provide a safety program consistent with good construction practices
- ◆ To reduce the number of accidents to a minimum
- ◆ To create an attitude of safety consciousness in general management, field, and office supervision and employees
- ◆ To provide for assignment for specific responsibilities for effective implementation and continuation of our safety program
- ◆ To provide a basis for continuing safety education and training

In order to accomplish these objectives, our safety program will include:

- ◆ Pre-planning for safety in Environmental Crossings' operations through analysis of tasks performed. Management experience and expertise shall be used to anticipate and mitigate or eliminate accident producing situations.
- ◆ Providing mechanical and physical safeguards to the maximum extent possible.
- ◆ Conducting a program of safety inspection to discover and correct unsafe working conditions or practices
- ◆ Training all employees on good safety practices
- ◆ Providing necessary personal protective equipment
- ◆ Developing and enforcing safety rules and requiring that all employees comply with these rules as a condition of employment
- ◆ Investigating every accident promptly to find its cause and preventing the problem to prevent recurrence
- ◆ Provide on-the-job training programs.

Only by working together will we be able to achieve our objective of a safe and responsible work site.

2.0 ENVIRONMENTAL CROSSINGS, INC. HEALTH AND SAFETY POLICY

May 1, 2001

We hereby declare that, in all operations undertaken by or under the responsibility of Environmental Crossings, Inc., every effort must be made to achieve optimum safety, health, welfare and environmental protection for all persons involved either directly or indirectly in the activities.

This declaration emphasizes full adherence to all safety (safety, health, welfare and environment (SHW&E) requirements set forth in the acts, regulations and the contract requirements. Safety will be an integrated part of all activities and a line responsibility throughout the entire organization.

We require that all employees, subcontractors, and subcontractor's employees at all function levels cooperate fully to take all needed actions to achieve and maintain a safe, healthy and environmentally responsible work site. Personnel will not only be judged by production, quality and economic standards, but equally so by the standard of safety, environmental protection and housekeeping on the sites.

Environmental Crossings will provide an effective organization to achieve a work site free of accidents and free of harm to life, health and the environment. Therefore, we require all employees and subcontractors to give safety the required priority and to provide the necessary education, training, and means to all personnel to achieve this objective.

Every subcontractor must have a company developed safety plan which shall supplement the General Safety Plan of Environmental Crossings. Before a subcontractor commences work, their safety plan must be approved by Environmental Crossings.

Through their own performance, and by the established safety organization, every Environmental Crossings employee and subcontractor must strive to improve the working environment and overall safety of the work site. Environmental Crossings intends to achieve a sound, positive and challenging work site as well as job satisfaction to all concerned. All levels of Environmental Crossings management shall have responsibility to implement and monitor this declaration.

William Gardner
Vice President Operations
Environmental Crossings, Inc.

3.0 APPLIED STANDARDS

The safety policy of Environmental Crossings emphasizes full adherence to all safety, health, welfare and environmental requirements set forth in applicable regulations and the provisions contained in the contract documents.

We all have to realize that contract regulations have to be consistent with all applicable laws and regulations. All project participants must adhere to legislation in such areas as working conditions, labor, and environmental protection. In addition, project participants must also adhere to legislation to client's regulations, client's safety requirements, and any project regulation/restrictions to be imposed by Environmental Crossings.

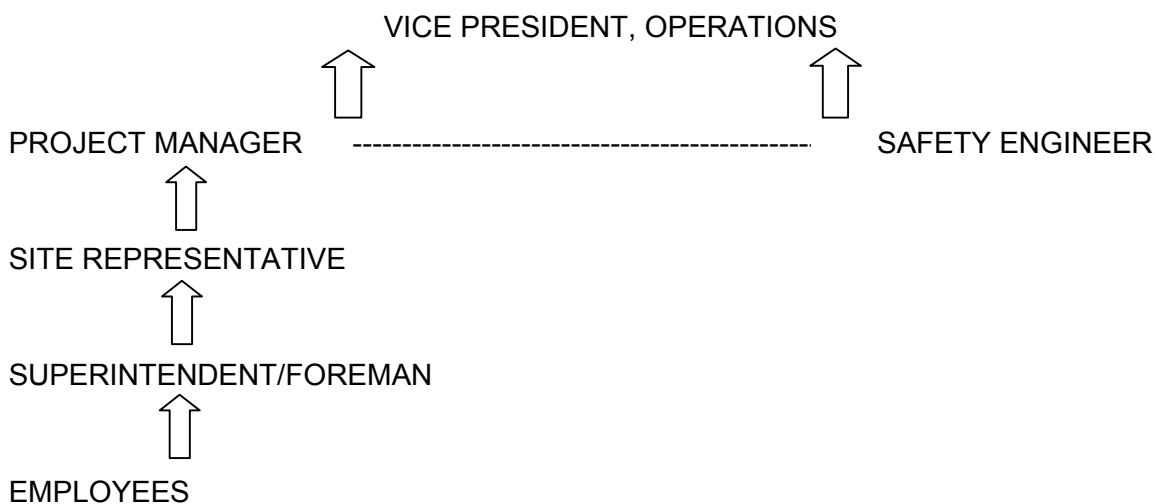
4.0 OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS

Environmental Crossings acknowledges and endorses the requirements of Occupational Safety and Health in the jurisdiction of the work throughout the United States, Canada and Asia. Whenever work is to be carried out in any territory, the applicable Acts will be reviewed and enforced. As a minimum, the following shall be adhered to:

1. At every job site location, Environmental Crossings will provide and maintain suitable first aid services.
2. Suitable signs will be posted indicating the location of the materials.
3. All first aid kits at a minimum shall include but, not limited to the following:
 - a. Four (4) bandage compress 150mm
 - b. Six (6) bandage compress 100mm
 - c. Ten (10) gauze pad 100 mm x 100mm
 - d. Ten (10) gauze pad 50mm x 50mm
 - e. One (1) gauze compress
 - f. Two (2) conform gauze bandage 50mm
 - g. Two (2) crepe bandage 75mm
 - h. Three (3) crepe bandage 50mm
 - i. Six (6) triangular bandages
 - j. Fifty (50) adhesive dressings
 - k. Twenty (20) antiseptic swabs
 - l. Two (2) adhesive tape 25 mm x 5m
 - m. Ten (10) safety pins assorted
 - n. One (1) pair scissors
 - o. One (1) pair tweezers
 - p. Ten (10) towlettes, pre-moistened
 - q. Two (2) eyedressings, dry
 - r. Tubular finger bandage and applicator 5m
 - s. Condensed version, St. John Ambulance First Aid Manual
 - t. OHS injury record book
 - u. Inventory of kit content

4. In addition to the first aid kit, each job site will have:
 - a. A stretcher.
 - b. Three (3) blankets sealed in watertight, dust proof packages.
 - c. One (1) set of standard splints.
5. Depending upon the location of the project, the job site may have an emergency vehicle as follows:
 - a. Sufficient size to accommodate a stretcher and accompanying attendant.
 - b. Maintained in a clean condition.
 - c. Provide a means of verbal communication between attendant and driver.
6. The corporate office will provide and maintain a Injury Record Book, which shall include all records for the past three years showing:
 - a. Job number and first aid personnel assigned.
 - b. Date and time of the injury.
 - c. Date and time injury reported.
 - d. Injured worker's full name.
 - e. Date of birth of injured worker.
 - f. Sex of injured worker.
 - g. Location and description of the cause of the injury.
 - h. Description of the injury.
 - i. First aid treatment rendered.
 - j. Name of first aid person.
7. Each employee will wear personal protective clothing and/or devices which, at a minimum, adhere to the applicable regulations in the jurisdiction of the work.

5.0 SAFETY ORGANIZATION CHART



6.0 TASKS AND RESPONSIBILITIES

6.1 General

Environmental Crossings personnel are to supervise all construction and installation work at the job sites including those of any subcontractor. Periodically, and as necessary, the Environmental Crossings site representative is to review the safety issues (and the results of the safety reviews and audits) with Environmental Crossings personnel and the subcontractor's project manager.

The subcontractors are all to have a project manager for coordination of the SHW&E precautions for their personnel. This person is to co-operate closely with the Environmental Crossings site representative concerning all safety matters. The subcontractor's project manager has the overall responsibility to ensure that all activities at the construction or installation site are carried out in accordance with the objectives and procedures of the Environmental Crossings safety plan.

The responsibilities pertaining to SHW&E for Environmental Crossings and subcontractor's personnel follow.

6.2 Environmental Crossings Vice President, Operations

The Vice President, Operations of Environmental Crossings is ultimately responsible for the implementation and effectiveness of the SHW&E policy. This person must ensure that the discussions taken in the course of management meetings are implemented. This person, as often as necessary but at least quarterly, investigates that staff members are working in accordance with their assigned SHW&E tasks. This person ensures that the SHW&E matters are discussed and reported during the management meetings. This person evaluates, at least yearly with those in charge, the implementation of their SHW&E tasks.

Amongst other responsibilities, the Vice President, Operations shall be responsible for:

- a. Development and implementation of the safety program.
- b. Assignment of appropriate persons to administer and enforce the program.
- c. Periodic review and evaluation of accident records of employees.
- d. Periodic field, yard, and office inspection to note safety conditions.
- e. Periodic participation in safety meetings.
- f. Set policy for the hiring and training of new employees.

6.3 Environmental Crossings Project Manager

The Project Manager has close communication with the Vice President, Operations to prevent possible unacceptable SHW&E conditions. During the implementation of the project, the Project Manager ensures that sufficient SHW&E measures have been included in the project preparation and may, where necessary, include supplementary measures. This person will discuss, in the project staff meetings, the implementation of the SHW&E policy and the results of the safety plan execution. This person shall report to the Vice President, Operations about the effectiveness of this policy.

The Project Manager is responsible for the SHW&E effected by the activities of the project. This person ensures, by selection and qualification, that staff members and the subcontractors involved in the project have sufficient knowledge, equipment and skill to implement the tasks assigned to them.

The Project Manager ensures that the working conditions' matters are discussed and reported on during the project meetings. If the working conditions' policy is not being implemented as intended, the Project Manager immediately shall inform the Vice President, Operations.

6.4 Environmental Crossings Site Representative

The Environmental Crossings Site Representative shall initiate the SHW&E activities at the work site. This person shall also have close contact with the subcontractors' project managers concerning the implementation and the effectiveness of the Environmental Crossings Safety Plan and the additional part of the subcontractor.

This person has the responsibility that all activities at the construction or installation site are planned and completed in accordance with the objectives and procedures of the Environmental Crossings Safety Plan and reports weekly to the Environmental Crossings Project Manager and the Environmental Crossings Safety Engineer.

If the working conditions' policy is not being implemented as intended, this person immediately informs the Vice President, Operations.

6.5 Environmental Crossings Safety Engineer

The Environmental Crossings Safety Engineer reports directly to the Vice President, Operations. This person has the authority and the organizational freedom to give instructions to Environmental Crossings personnel and to control the SHW&E at the construction and installation sites, including the sites and locations of the subcontractors. This person co-operates closely with the Environmental Crossings staff and especially with the Environmental Crossings Site Representative.

The primary function of this position is, in cooperation with management of Environmental Crossings, to supervise and coordinate the implementation of the SHW&E policy and the safety plan. This person audits the implementation of the safety plan by subcontractors and advises the Environmental Crossings Project Manager.

The Environmental Crossings Safety Engineer has the responsibility to:

- a. Implement the safety plan.
- b. Control of safety documentation and regulations used at the work sites.
- c. Audit the effectiveness of the safety plan.
- d. Judge the safety audits and reviews by the subcontractors and the external experts.
- e. Carry out the necessary incident investigation and to advise on measures to be taken.
- f. Development of techniques, ideas, and topics for presentation of the safety program to employees at all levels.
- g. Provide guidance to supervisors/foreman in enforcement of the safety program.
- h. Assist in new employment selection, training and safety indoctrination.

- i. Be available for consultation on all matters related to safety.
- j. Provide a program for disciplinary action for violations of safe work practices/safety policies.
- k. Judge the subcontractor's report or investigation and to advise on measures to be taken.
- l. Judge the instruction and training system provided to employees.
- m. Record employee training and verify that employee has sufficient training for his position.

If the SHW&E policy is not being implemented as intended, the Safety Engineer informs the Vice President, Operations.

6.6 Superintendent and Foreman

The Environmental Crossings Superintendent/Foreman, more than any other person, carries the responsibility of implementing, maintaining and enforcing the safety program at the job site. Their attitude towards safety will have the most significant impact upon the safety record of Environmental Crossings.

The superintendent/foreman is expected to reflect a positive attitude regarding accident prevention. They are the "key men" in the safety program. Their responsibilities include:

- a. Training and safety orientation of employees as to:
 - ◆ Understanding the requirements of all his employees' positions.
 - ◆ Proper clothing and personal protective equipment.
 - ◆ First-aid and doctor's treatment.
 - ◆ Encouraging safety suggestions from workers, asking them to report unsafe conditions, practices and equipment.
 - ◆ Having safety booklets signed.
- b. Conduct "tailgate" or "tool box" safety meetings. It is directed that each superintendent/foreman hold a safety meeting every week or more often if circumstances warrant.
- c. Being alert to recognize possible accident producing conditions in work practice and equipment operation and maintenance.
- d. Inspection of workplace each day to see that safe conditions and safe working methods are being used.
- e. Follow-up on compliance with safety recommendations made by management and/or other safety experts.
- f. Accident investigation and reporting

6.7 Subcontractors

All subcontractors shall comply with the Environmental Crossings safety policy and with the safety requirements of the client.

By accepting this requirement, the subcontractor declares automatically compliance with the Environmental Crossings safety plan and intends to familiarize himself with the contents, take the necessary steps to implement the procedures and comply with the rules and regulations.

The subcontractor is responsible for:

- a. The protection of life, health and welfare of all personnel engaged by him, including employees of the client and their visitors, employees of Environmental Crossings and their visitors, employees of his subcontractors and suppliers, third parties and visitors.
- b. The protection of the environment.
- c. The protection of any property.

The subcontractor is required to designate a site representative responsible for the implementation of SHW&E and the execution of the Environmental Crossings safety plan. The site representative shall have significant authorization and shall be permanently present at the construction site. In the Environmental Crossings safety plan, the subcontractor representative is identified as the Subcontractor Project Manager. This person ensures that the subcontractor's employees have sufficient knowledge, equipment and skill to implement their assigned tasks.

The subcontractor shall co-operate closely with Environmental Crossings, other Environmental Crossings subcontractors and Environmental Crossings suppliers and with his own subcontractors to provide a fully satisfactory working environment for all people at the work sites. Therefore, the subcontractor shall, among other things:

- a. Exhibit a safety plan for his work, which is in accordance with the Environmental Crossings safety plan.
- b. Notify his subcontractors of the safety regulations and other details that are of importance in connection with the work to be carried out.
- c. Ensure that his subcontractors satisfy all legal regulations and obligations and that the work is done in accordance with the Environmental Crossings safety plan and his own additional part.
- d. Inform the Environmental Crossings Site Representative and his subcontractors of those activities that could endanger personnel.
- e. Make written agreements with his subcontractors about:
 - ◆ The way in which they will co-operate.
 - ◆ What provisions should be made accordingly.
 - ◆ The way in which these provisions shall be supervised.

6.8 Subcontractor's Project Manager

The Subcontractor's Project Manager supervises all subcontractors' personnel and activities at the construction and installation site. This person co-operates closely with the subcontractor's safety engineer concerning all SHW&E matters to prevent possible unsafe working conditions, and to ensure that reasonable safety measures are taken. This person also co-operates closely with the Environmental Crossings Site Representative concerning the implementation and effectiveness of the safety plan and about the subcontractor's own additional part.

This person has overall responsibility to ensure that all activities at the construction site are completed in accordance with the objectives and procedures of the Environmental Crossings safety plan.

This person shall ensure that:

- a. Safe and suitable protection devices are available for all work conditions.
- b. Instructions and training are provided to the employees for using equipment and performing work in a safe manner.
- c. All machines and equipment are certified and controlled, if applicable, according to official regulations.
- d. The safety performance of it's own organization and/or subcontractors' organization are monitored and, if necessary, appropriate corrective actions are taken.
- e. The procedures for information and reporting on safety matters are implemented properly and that all compulsory reports are forwarded.

This person shall ensure that a contingency plan for the site is prepared to cover reasonable foreseeable emergency situations. It is therefore of great importance to have well trained personnel, knowledgeable in potential risks.

This person shall regularly perform a safety inspection in co-operation with subcontractor's safety engineer.

If the SHW&E policy is not being implemented as intended, the Subcontractor's Project Manager shall immediately inform the Environmental Crossings Site Representative.

6.9 All Employees

All employees are, as a result of their skill and training, specifically responsible for:

- a. Using, treating and maintaining properly all equipment and hand tools used.
- b. Maintaining and using safeguards in a proper manner.
- c. Using the personal protective equipment.
- d. Abiding by the existing written instructions and the additional verbal instructions of his supervisor.
- e. Ensuring that upon completion of the work, the working area, equipment and tools are left in a safe and environmental responsible condition.
- f. Practicing appropriate housekeeping to ensure that the work site is always clean and tidy.

- g. Attending, when required, instructional and safety meetings and safety inspections when asked for.
- h. Immediately reporting to his superior of any violation or potential violations of the SHW&E policy and any incident.

All employees may:

- a. Interrupt their work if, in their opinion, their safety, health or the environment is in jeopardy and then immediately inform their supervisor.
- b. Demand consultation with officers of Environmental Crossings in the event that they believe appropriate safety procedures are not being implemented.

Before assuming the duties of the position, each employee shall:

- a. Have appropriate training, experience and orientation to perform these duties in a safe and effective manner.
- b. Be familiar with the work environment, emergency procedures and the use of safety related equipment.
- c. Have received and understood this safety manual.
- d. Complete and sign all required indoctrination forms indicating a willingness to abide by the rules and regulations of the project.
- e. Be knowledgeable in the safe handling and storage of materials (i.e. WHMIS) and operation of equipment.

7.0 Hazard Identification

7.1 General

Hazard identification is essential to ensure that safety is achieved throughout the project. The purpose of the hazard identification is to identify specific SHW&E precautions for the safe execution of a certain phase of the project, and to agree on the necessary action to be taken by those who are directly involved. All partners involved by the realization of this project are ordered to analyze all aspects of their role of the job and the risks pertaining to SHW&E. They must not only review their own work, but they must also inform Environmental Crossings and the other partners about the precautions to be implemented.

Environmental Crossings has established a system for identifying, evaluating and preventing workplace hazards. This system includes the following:

- a. Environmental Crossings has reviewed the industry and general information on potential health and safety hazards. Environmental Crossings reviews this information with employees and supervisors during periodic safety meetings.
- b. Environmental Crossings investigates and records all accidents, injuries and illnesses that take place during work.
- c. Environmental Crossings makes periodic inspections of the general work areas and specific work stations, and records the results of these inspections.
- d. Environmental Crossings evaluates information provided by employees on safety and health matters. Environmental Crossings encourages employees to report concerns regarding unsafe or hazardous conditions and has provided a written reporting system.

- e. Based on the foregoing, Environmental Crossings has promulgated a Code of Safe Practices, which is posted and given to each employee. The Code of Safe Practices is reviewed periodically at employee and supervisory safety meetings.
- f. Continued use of the principles and practices set forth in our on-going training programs.

7.2 Procedure

Each employee or subcontractor identifies the hazards for this work and prescribes applicable precautions for the containment of the hazards. He issues the identification and the precautions within his safety plan.

Before starting the project or a part of the project, the Project Manager of Environmental Crossings shall organize a meeting and invite those representatives who will directly be involved with the construction activities. The Project Manager checks if there are safety requirements, which are essential for a part of the work and have not yet been provided. The Project Manager takes care that the safety requirements are judged and sends these to the appropriate personnel. The Environmental Crossings Project Manager ensures that appropriate records are made and filed.

7.3 Required Attention

When identifying the safety requirements, the following shall be given adequate attention:

- a. Waste disposal.
- b. Material storage and handling.
- c. Guards or safety devices on equipment and at work sites.
- d. Personal protective equipment.
- e. Access ways, ladders, scaffolding, fall protection, safety nets, overhead protection, shoring.
- f. Communications.
- g. Lighting.
- h. Electrical safety.
- i. House keeping.
- j. Fire prevention and fire fighting.
- k. Health, medical and first-aid facilities.
- l. Specific procedures and working instructions.
- m. Emergency situations, escape routes.
- n. Environmental responsibility and response.

The specifics of any additional safety requirements shall be documented in a detailed safety instruction, which shall give clear information on actions to be taken. These can be issued in various forms:

- ◆ As an integrated part of a “method statement”.
- ◆ As an addition to a “method statement” in the form of an operation manual or safety instruction sheet.

8.0 WORK INSTRUCTIONS and SAFETY MEETINGS

8.1 Introduction of Management

It is of vital importance that management is aware of their safety tasks, responsibilities, safety regulations and procedures. Therefore, a proper introduction is required. Environmental Crossings will organize a Management Introduction Training (MIT) session for their managers who have a direct production management task. Each subcontractor shall similarly organize an MIT and invite the Environmental Crossings Site Representative. A written record will be maintained of all participants. An attendance list shall be signed and will be kept on file in the relevant safety plan by the Environmental Crossings Site Representative.

An MIT shall contain information concerning:

- a. The safety policy of Environmental Crossings.
- b. The general safety plan of Environmental Crossings.
- c. The safety policy and safety plan of subcontractor(s).
- d. The specified tasks and responsibilities of management.

8.2 Introduction of Employees

Employees who start at work at a “new” job site are often unfamiliar with the safety rules, procedures and the hazardous conditions and areas. It is compulsory for all employees to attend a safety introduction training (SIT) session on their first day of work at the project. No employee will be permitted to work on the site without having attended the SIT.

The SIT will be given by the Environmental Crossings Safety Engineer and/or the Environmental Crossings Site Representative and will last approximately 30 minutes. The employee shall receive an introduction booklet, which summarizes the SIT information. A written record will be maintained of all employees stating that they have attended the SIT and fully understand the rules and regulations. A form of this effect will be signed and dated by each employee who has attended and will be filed in the relevant safety plan by the Environmental Crossings Site Representative.

An SIT contains information concerning:

- a. The safety policy of Environmental Crossings.
- b. The general safety plan of Environmental Crossings.
- c. The safety policy and safety plans of subcontractor(s).
- d. The specified tasks and responsibilities of the employee.
- e. That failure to work safely and follow safe working practices may result in disciplinary actions, including expulsion from the site.
- f. Client's rules and regulations.
- g. Any particular hazardous conditions and/or materials at the project.
- h. Contingency plans and emergency response procedures.

8.3 Special Training and Instructions

Management and/or labor involved with potentially hazardous activities require special training and instruction. The requirement for these training activities will be established through hazard identification and will be recorded in the detailed safety instruction. The employees will be instructed about the precautions to be taken. The detailed safety instructions are also to be a part of the subcontractor's safety plan.

8.4 Regular Safety Meeting

At the commencement of the project and at least once in four weeks, the Environmental Crossings Site Representative shall organize a safety meeting for all employees involved with the project. At this safety meeting, the Site Representative will discuss general safety aspects of certain importance and/or review specific procedures or materials. A form to this effect will be signed and dated by each employee who has attended and will be filed in the relevant safety plan by the Environmental Crossings Site Representative.

8.5 Safety Huddles

Each foreman/supervisor will organize safety huddles for his personnel. Such meetings will be held at least once per two weeks or whenever necessary. The use of machines, tools and materials, unsafe behavior/practices and dangerous situations which could arise may be discussed. The safety huddles should normally last 5-10 minutes. The foreman/supervisor shall report on the safety huddles by giving a brief written summary on the topics discussed, a listing of the attendees, as well as comments of the participants. The report shall be sent to the Environmental Crossings Site Representative, the same day as the safety huddle.

8.6 Construction Meeting

The primary purpose of the construction meeting is to discuss whether procedures made during hazard prevention planning are carried out and whether they are effective. If necessary, new agreements shall be made to guarantee the safety of all employees. Agreements shall be recorded in the minutes of the meeting. The minutes of the meeting will be used to keep track of old and new business. A copy of the minutes shall be distributed to all participants as well as to the Environmental Crossings Site Representative within four days of the construction meeting.

9.0 SAFETY REVIEW and AUDITS

9.1 General

Environmental Crossings will organize safety audits throughout the project. The Environmental Crossings Safety Engineer will perform the execution of the safety audits.

Each subcontractor shall organize safety audits, for his part of the project, by his own safety engineer or, if not present, by an external safety expert. The safety engineer reports to the Environmental Crossings Site Representative concerning the results of the review and audits. The subcontractor shall issue to Environmental Crossings the audit and review program. Environmental Crossings shall have the right to join the subcontractor conducted safety audits as an observer.

During and after each part of the project, there will be a review by Environmental Crossings of the planned and realized SHW&E aspects. These reviews are based on audits, according to the audit program. Environmental Crossings will make periodic summary reports of the audits and review and send this to the client. The Environmental Crossings audit report will contain description over the intended period of:

- ◆ The activities.
- ◆ The executed audits and the results.
- ◆ Compliance with the safety plan.
- ◆ The events and precautions to guard against hazards.

9.2 Safety Inspections and Investigations

General

Environmental Crossings shall make periodic inspections of the general work area and specific workstations. General inspections are the responsibility of the Safety Engineer or superintendent/foreman. Reports of these inspections will be maintained on the forms provided.

Supervisory Inspections

The Environmental Crossings supervisor/foreman are responsible for making daily inspections of all job site work areas, machinery, equipment or work practices and of the employees under their authority. All non-compliance with Environmental Crossings' code of Safe Practice is to be corrected immediately. Any unsafe or hazardous machinery, equipment or area will be "red tagged" (shut down or evacuated) immediately. In the case of hazardous machinery or equipment, maintenance should be called. The machine shall remain shut down until it has been cleared for use by maintenance. Employees who violate the Code of Safe Practices shall be disciplined and a record of the warning notice or other disciplinary action shall be maintained on the forms provided.

Employee Inspection and Reports

Employees are responsible for inspecting their work areas, tools, safety equipment and machinery for unsafe or hazardous conditions. Employees should immediately correct all unsafe conditions and report them to their supervisor or other management personnel. If the supervisor fails to act upon a safety complaint, the employee should bring the matter to the attention of upper management or the Safety Engineer.

Employees may make anonymous reports. No employee shall be disciplined or otherwise discriminated against for reporting or correcting an unsafe condition.

Maintenance Inspection

Maintenance employees will, as a matter of course, be vigilant to the safety considerations of any machine or equipment they are called upon to repair, whether "red tagged" or not. Maintenance employees shall not sign off on the completion of any machine repair unless they are certain that the repaired machine has been properly inspected and/or tested for safe and hazard free operation. A detailed description of the repair, the reason for the repair, the date and time of the repair shall be maintained on the form provided. Preventative maintenance will

be undertaken for equipment, vehicles and other machinery in accordance with the schedule recommended by the manufacturer/supplier.

9.3 Audit and Review Program

Daily Inspections

The daily inspections will be a continuing task and made by Environmental Crossings' foreman/supervisor. Problems shall be solved directly by him.

The daily inspections will also be a task of the Safety Engineer. Problems or non-compliance to the safety plan will immediately be brought to the attention of the supervisory personnel with advice on the corrective action to be taken. In the event of repeated violations and/or non-conformance, the Safety Engineer will write a safety report to the Environmental Crossings Site Representative for further action. The Environmental Crossings Site Representative will inform the responsible senior officer to ensure prompt attention to the matter.

Inspections by Management

Environmental Crossings management shall regularly complete an inspection, with the assistance of the Safety Engineer, on the basis of the following safety inspection schedule:

- a. Bi-weekly: Inspection by Environmental Crossings Site Representative.
- b. Monthly: Audit by the Environmental Crossings Safety Engineer or, if applicable, by an external safety expert.
- c. Quarterly: Inspection by Environmental Crossings Project Manager and Safety Engineer.

Reporting and Documentation

All executed inspections will be reported by means of the Standard Safety Report (refer to appendix). Any matter observed during an inspection and corrected immediately shall still be registered on the safety report but with the notification "corrected". The safety reports shall be sent to the Environmental Crossings Project Manager.

Follow-Up and Verification

The Project Manager will complete the safety report by indicating the responsible person and the deadline for the corrective action(s). The person who is responsible for the corrective action shall, after completing the form with final execution date, send the safety report to the Environmental Crossings Site Representative.

The Site Representative shall control and verify the execution of the corrective action and report the results to the Environmental Crossings Project Manager.

The Environmental Crossings Site Representative shall send a copy of all relevant safety reports to the Environmental Crossings Safety Engineer.

10.0 EMERGENCY PLANNING

Prior to the commencement of work at any job site, the superintendent/foreman must prepare an emergency plan of action consisting of the following:

- a. Emergency phone number charts to be filled in and posted in office, survey van and crew trailers.
- b. Preliminary job site safety checklist.
- c. Project information sheet.
- d. Emergency medical plan to be filled in and posted in office, survey van and crew trailers.
- e. Monthly job site safety inspection forms.
- f. Basic Report of Injury forms.
- g. Employee safety violation forms.
- h. Tool box safety meeting report forms.
- i. Termination report forms.
- j. Vehicle Accident report forms.
- k. Equipment Theft/Loss report.
- l. OSHA no. 2000 form.

11.0 RECORD KEEPING

The Safety Engineer shall maintain appropriate records of steps taken to implement this safety program. These records shall be available for inspection at all times, and shall include the following:

- a. A report on every injury or illness requiring medical treatment.
- b. Record of each injury and illness.
- c. Maintain the last three years of these records at the corporate office.

The Safety Engineer shall be responsible for these record keeping requirements. The Safety Engineer shall periodically review these safety records to evaluate the safety program and formulate improved safety procedures.

12.0 SAFE AND HEALTHY WORK PRACTICES

12.1 Code of Safe Practices

Environmental Crossings has developed a Code of Safe Practices, which sets forth general and specific safety rules and procedures for all employees. A copy of the code of Safe Practices is given to each employee and is posted on the employee bulletin board.

12.2 Orientation

New employees are trained in the Code of Safe Practices and other safety procedures by the Safety Engineer or their supervisor/foreman. Documentation of receipt of and training in the Code of Safe Practices is to be completed by each employee.

12.3 Retraining

The Code of Safe Practices and other safety procedures are reviewed during periodic safety meetings for employees and supervisor/foreman. Documentation of safety meetings is to be completed by the supervisor or manager conducting the meeting on the forms provided.

A safety meeting at least every week shall be held by the jobsite superintendent/foreman, which is designed to:

- a. Provide an opportunity for employees to bring forward concerns and ideas about safety.
- b. Act as an occupational safety and health training program having as its objective to instill safe and healthy work practices.
- c. Provide specific instructions with respect to hazards specific to each employee's job assignment.
- d. Warn employees that they must comply with safe and healthy work practices as instructed or face disciplinary action.
- e. Reassure employees that they are encouraged to inform their employer or his designee of hazards at the work site without fear of reprisal.
- f. Instill a constant sense of safety-consciousness among the supervisor/foreman and his employee group.
- g. Identify potential work hazards in upcoming work.

The Safety Engineer or superintendent/foreman shall hold special training programs for all employees, in order to give them a framework of safety-consciousness, as well as to acquaint them with new substances, processes, procedures, or equipment that may be introduced into the workplace or jobsite especially when the employer becomes aware of, or receives notification of, a new or previously unrecognized hazard.

12.4 Discipline

Environmental Crossings requires that all employees and supervisors strictly adhere to the safety rules set forth in the Code of Safe Practices. If anyone violates a safety rule, he or she will be disciplined in accordance with the severity of the infraction. The discipline imposed will be in the sole discretion of Environmental Crossings (limited only by contractual or other legal restrictions), and may range from a warning, to a disciplinary suspension without pay, up to and including discharge. The supervisor/foreman or manager imposing the discipline will be responsible for documenting it on the forms provided. A copy of the form should be sent to the Safety Engineer. Again, safe work practices are a condition of employment.

13.0 CODE of SAFE PRACTICES

Environmental Crossings believes that the personal safety and health of our employees is of primary importance. We base this policy on a sincere desire to eliminate personal injuries and to prevent damage to equipment and property, both ours and that of others. Everyone's compliance with all safety rules is not only expected and appreciated, it is a condition of employment.

It is our policy to accomplish our work in the safest manner possible, which is normally the most efficient avenue. Safety is not to be sacrificed for production. Field superintendent/foreman are held accountable for the safety performance of employees under this direction. However, the ultimate

success of this program depends upon everyone's full cooperation and observance of these safety rules – from top management to the newest employee on the job.

General Safe Practice Rules

1. All employees shall follow safe procedures and operations, and report all unsafe conditions and/or practices to their superintendent/foreman immediately.
2. Superintendent/foreman are instructed to take such action as necessary to enforce these rules and to correct unsafe conditions/practices as soon as possible.
3. Superintendent/foreman are instructed to react to "imminent danger" situations immediately and to take whatever actions are necessary to protect all personnel, equipment and property in the surrounding area.
4. If you do not know or are in doubt as to the safest way of doing your job, always ask your superintendent/foreman before proceeding.
5. Help the new or inexperienced employee by pointing out potential hazards. Keep a close eye on new or inexperienced employees to prevent actions on their part that may cause injury to themselves or others.
6. Hard hats are to be worn at all times.
7. Safety glasses are to be worn at all times.
8. Earplugs are to be worn when near diesel engines for extended periods.
9. Safety work boots, with safety toes, in good condition, are to be worn on the jobsite. Boots with thin or badly worn soles are not to be worn.
10. Tennis shoes, sandals, loafers, etc. are strictly forbidden on the job site.
11. Gloves should be worn where exposure to abrasive materials is possible.
12. Wear clothing suitable to the job – no dangling or loose clothing or jewelry around moving machinery.
13. Shorts or cut-off type clothing are strictly forbidden.
14. Utilize other personal protective equipment (face shields, goggles, respirators etc.) as the job dictates.
15. Pile and unpile material carefully as to prevent tipping.
16. Personnel are to use proper lifting techniques when lifting any object, use the legs rather than the back, bend knees, and keep back erect. Get help when lifting heavy objects.
17. Personnel are not allowed to climb on crane boom without a safety belt. Have your foreman or a fellow employee inspect your belt at least once a week. Replace worn or frayed belts immediately.
18. Personnel are not to stand under any suspended load. Keep clear of reamer and drill pipe when being rotated to and from the ground.
19. Personnel are not to climb on drill pipe. Do not place hands or fingers on the end of drill pipe when handling it.
20. When necessary, use a "tag line" during loading/off loading operations.
21. Be alert to objects falling from crane, drill boom, etc. Keep employees away from rotary equipment as much as possible.
22. Alert employees to the dangers of standing near drill rig. Mud, dirt and debris are likely to fall from this equipment.
23. Keep all unauthorized people away from our equipment and work area. They are not aware of the hazards.
24. Personnel should be aware of objects around them at all times. Avoid standing between a moving and stationary object – stay out of the "bite". Train your people to watch out for each other at all times.
25. Personnel are not allowed to enter any excavation that is not properly sloped or shored in accordance with standards and safety codes.

26. When working with another person, let him know before you drop a load or do anything that might injure him.
27. Do not throw anything from a height until you have checked below. Make sure everyone hears your “headache” warning.
28. Only the foreman or the person he designates will give signals to the crane operator.
29. Use only the right tool for the job. Know how to use the tool properly. Do not use tools that are worn or are in poor condition. Avoid striking metal against metal.
30. Bend down or remove protruding nails, banding, etc.
31. Do not ride loads that are being carried by a forklift or crane.
32. Make sure ladders are in good condition. Have both hands free when going up and down ladders.
33. The use of intoxicating liquors or drugs during working hours will not be tolerated. You will not be permitted to work if you are or are reasonably believed to be under the influence of intoxicating liquors or drugs. Further, you will be subject to disciplinary action including dismissal.
34. For your protection, obey all warning signs, such as “Keep Out”, “No Smoking”, “Eye Protection Required”, etc.
35. You are specifically required to report all work-related injuries and illnesses to your foreman. Failure to do so may result in disallowance of the claim.
36. You will not knowingly be required or permitted to work while your ability or alertness is impaired by fatigue, illness or other causes.
37. All employees shall be given frequent accident prevention instructions. “Tailgate” safety meetings will be held prior to the start of the job and every Monday morning thereafter.
38. “Confined Space” entry of any place that receives little ventilation is prohibited unless it has been determined that it is safe.
39. Compressed air is very dangerous – do not “dust” yourself off using oxygen or an air compressor.
40. Employees shall cleanse thoroughly after handling hazardous substances and follow special instructions from authorized sources.
41. Gasoline shall not be used for cleaning purposes.
42. Possession of unauthorized firearms or other weapons is prohibited.
43. To maintain a safe and efficient operation, general housekeeping of the job site is a major part of everyday operations.
44. Proper respiratory and safety equipment will be worn when cutting mud sacks and mixing mud.
45. Be alert at all times to overhead and underground utilities. See that utilities are properly protected.
46. No one is to use a hazardous substance without proper training and instructions in its use.
47. A quick inspection for job site hazards will be conducted by the foreman each morning.

Additional Safety Procedures

Tools and Equipment

1. All tools and equipment shall be maintained in good condition.
2. Damaged tools or equipment shall be removed from service and “red tagged”.
3. Do not use pipe wrenches as replacement for the proper wrench. Use only the right tool for any job.
4. Wrenches shall not be altered by the addition of “cheater” pipes. Use a breaker bar instead.
5. Raise and lower portable electric tools by a rope, not the power cord. Inspect power cords frequently for frayed or broken areas.

6. In areas where the use of power or pneumatic tools is difficult, support the tool using rope or similar support of sufficient strength.
7. Shut off air supply to pneumatic tools before changing or repairing tools. Do not “crimp” air hoses as a means of shutting off the air supply.
8. To keep tools in good condition, put them back where they belong at the end of each shift.

Housekeeping

1. Job site and specific working areas are to be kept free of all debris, waste and combustible materials.
2. All scrap is to be removed and deposited in proper containers. When this is not practical, keep debris and scrap in one central location until it can be properly discarded.
3. Keep all materials and supplies piled and/or stored in such a way they cannot fall over.
4. As much as possible, keep pathways clear of hoses, welding leads, etc.

Personal Protection

1. Wear protective clothing and equipment. These items are essential for your safety and include: hard hats, sturdy work boots, eye protection to fit the need of the particular task, welding hoods/face shields when welding/burning/grinding/etc., ear plugs, gloves to fit the job, safety belts.
2. Help your fellow workers by reminding them to use their personal protective clothing and equipment.

Material Handling

1. Do not use ropes, chains or slings that are defective.
2. Use a “tag line” on all equipment and material that are past your controlled reach.
3. Be particularly alert when loading or off-loading pipe. Block pipe in such a manner that it cannot roll.
4. Know where your fellow workers are before picking up, moving or setting down any load.
5. Warn welders and others in excavations before passing any load over them.
6. Do not stand under any suspended loads.

Welding and Burning Operations

1. Inspect the immediate area to assure sparks or molten metal will not fall on combustible materials or fellow workers.
2. Keep a suitable fire extinguisher available at work area.
3. Mark metal “HOT” when welding is completed.
4. Only qualified welders are allowed to weld on any boom section.
5. Always use proper personal protective clothing and equipment when welding or burning.
6. Compressed gas cylinders must always be kept in an upright position and fastened to a stable structure with non-flammable restraints (No. 9 wire or chain) at all times.
7. All bottles must be capped when not in an “imminent use” situation.
8. Check area before burning to insure the “blow-by” will not hit fellow workers or passers-by.

Company Trucks, Automobiles, Equipment, Cranes and Forklifts

1. Inspect equipment daily before starting it up. Check all lines for broken or mashed strands. Inspect shackles, cable, clamps, etc.
2. Be certain the back-up alarm on your forklift is operable. Do not disconnect this.
3. Only trained, qualified personnel are to operate our equipment.
4. Do not attempt to repair, service or adjust equipment while it is in operation, except on equipment that is fitted with safeguards to protect the person performing the work. Leave all safeguards in place.
5. Do not start any equipment until you are certain everyone is clear.
6. Do not lift loads or reach beyond the rated capacities of equipment.
7. Shut engines down before refueling.
8. Report malfunctioning equipment immediately. Only qualified personnel shall work on or repair equipment.
9. Do not disconnect air hoses at compressors until hose line has been bled.
10. Never turn compressed air on yourself or others.
11. No person is permitted to operate any company vehicle without a valid driver's license.
12. No person is permitted to operate any company vehicle unless he is specifically authorized to do so.
13. Check your brakes and tires frequently. Keep your company vehicle in good, safe, clean running condition.
14. You represent Environmental Crossings when you drive a company vehicle – be a safe and courteous driver.

Job Injuries and Sickness

1. Foremen are to keep a fully stocked First-Aid Kit available at all times.
2. Do not remove an injured person unless it is necessary to prevent further injury.
3. The two instances that require speed are severe bleeding and artificial respiration.
4. Do not attempt to remove foreign objects from your eyes or body or from the eyes or body of co-workers. Get qualified treatment from a doctor.
5. Your foreman knows the telephone numbers and locations of the nearest emergency treatment facility.

IMPORTANT: All accidents and injuries must be reported to your foreman immediately.

Chemicals and Hazardous Materials

1. No chemicals or materials meeting the definition of "Hazardous Material" as defined Occupational Safety and Health in the jurisdiction of the work shall be purchased or brought onto the job site without:
 - a. Material Safety Data Sheet (MSDS) or equivalent information on site.
 - b. Express consent or approval of the designated safety officer.
2. No chemical or material meeting the definitions of a "Hazardous Material" as defined by the OHS Safety and Health Regulations shall be used without strict adherence to the data, precautions and procedures for handling, storage, usage, or disposal contained in the appropriate MSDS.
3. All containers shall be labeled as to their contents.
4. MSDS sheets are available for review and instruction from your foreman.

Disciplinary Procedures

It is imperative that all employees become thoroughly familiar with the “Code of Safe Practices” and “Additional Safety Procedures”. Failure to wear appropriate safety equipment or to follow these rules will result in disciplinary action up to and including dismissal.

14.0 HAZARDS and PROCEDURES in SPECIFIC ACTIVITIES

General

Environmental Crossings has developed procedures describing the safe performance associated with virtually all of the company’s activities. These procedures have been prepared with the purpose of providing a safe and effective basis for performing these activities. Environmental Crossings, however, believes that these procedures will be subject to review and modification as improvements become recognized. Environmental Crossings therefore encourages all employees to make suggestion and recommendation regarding these procedures. A sample form has been provided within this Manual, to facilitate and encourage suggestions pertaining to these procedures. Environmental Crossings welcomes any and all suggestions.

The following sections describe operating procedures for a few activities associated with the company’s operations.

14.1 Rig Up/Rig Out

Taking a rig apart, loading, moving and putting it back together can be a hectic procedure. The primary dangers are:

- ◆ Being trapped or pinched by a heavy, moving load.
- ◆ Suspended loads.
- ◆ Cables breaking under strain.
- ◆ The movement of trucks by operators whose view is obstructed.

To minimize the risk of loss or injury, the following precautions should be taken:

- ◆ Workers should be organized in teams or pairs to look out for one another.
- ◆ No one should stand under a suspended load. Tag lines are required if a load has to be moved while suspended.
- ◆ Winch cables should not be handled without protective gloves.
- ◆ Workers should not stand where a cable could strike them if it breaks under strain (between the winch and the load).
- ◆ A competent signaler should be appointed load master. It is his responsibility to ensure all workers are clear before equipment is loaded or moved.
- ◆ All handrails and guards should be installed as soon as possible when rigging up.
- ◆ A complete rig inspection must be conducted and recorded by the Drilling Superintendent before spud-in. Called a Pre-Job Safety Meeting, the report is to be filled out and signed by all crew members.
- ◆ In some situations, all personnel may be required to wear traffic controller vests.

14.2 Mud Tanks

- ◆ Hand rails at least one meter high should be installed around the edge of tank and wherever there is open access to it.
- ◆ Goggles, suitable respirators/masks must be worn when mixing dusty chemicals.
- ◆ Shaker motors, belts and vibrator shafts must have guards installed.
- ◆ Mud supplies should be stored neatly, no higher than chest level.
- ◆ Footing between mud supplies and the mixing hopper should be secure. The use of old pallets present a tripping hazard and are not acceptable.

14.3 Raising and Lowering the Mast

- ◆ The drilling superintendent must visually inspect the mast, all lines, and traveling assembly before raising and lowering the mast.
- ◆ All connecting pins must be secured with safety pin keepers.
- ◆ Electric fixture must be waterproof and vapourproof, cables and connectors in good repair.
- ◆ The mast will be inspected during daily maintenance routine for wear on sheaves and lines.
- ◆ Riding the travel blocks is prohibited.

14.4 Maintenance of Motors and Pumps

- ◆ No one should work on equipment or motors that are operating. Make sure that prior to regular maintenance, lubrication or repair, the equipment is SHUT OFF, disengaged and protected from accidental start-up.
- ◆ All fans and drive belts must be guarded to protect hands from pinch points. Rotating shafts should be covered.
- ◆ Watch out for burn hazards when checking coolant levels of motors and when working near exhaust lines.
- ◆ If work must be done close to operating engines, ear protection must be worn.
- ◆ Clean up oil spills and leaks immediately.
- ◆ The emergency shut-down system (motor-kill) should be tested weekly.
- ◆ The “motor-kill” switch must be clearly indicated and its location known by all workers.
- ◆ As virtually all pumps in the circulation system can be started remotely, it is essential that lock-out procedures be used whenever repairs are in progress.
- ◆ The pressure relief valves on the mud pumps must be vented, without obstruction to a safe location.
- ◆ Pressure relief valves must be guarded and the proper pins in place. Do not substitute bolts or other objects with high shear strength for the specified pins.
- ◆ High pressure lines must be relieved of all pressure before disconnection or repair. Never hammer on pressurized lines.
- ◆ Hose connections between high pressure mud lines must have restraints on both ends. The restraint is to be attached to the rubber portion of the hose.
- ◆ If pumps are belt driven, all guards must be in place before start-up.
- ◆ Proper tools for the removal of seats, liners, and rods should be available and in good condition.
- ◆ Pumps should never be engaged to drive out piston rods and heads.

15.0 PERSONAL PROTECTIVE EQUIPMENT

15.1 Clothing

The instructions set forth in this Manual are for your guidance and protection. Environmental Crossings strives to avoid accidents and injuries to our employees. Environmental Crossings is most interested in the safety of our employees and endeavors to aid employees in achieving this goal. It is the responsibility of each employee to make sure his clothing meets the requirements of his position.

- ◆ Head protection – All personnel on the site are required to wear hard hats.
- ◆ Footwear – All personnel on the rig site must wear hard toe boots suitable to the weather conditions. The boots should have at least 8-inch high tops and soles should be of non-slip material. Boots should be of proper fit to prevent excessive movement of the foot inside the boot. Hard toes should have Grade 1 rating (withstand up to 93 lbs).
- ◆ Hand protection – All personnel must wear hand protection suitable for the task being performed. All hand wear should be tight cuffed. Cotton gloves are suitable for general usage.
- ◆ Outer wear – All employees must wear clothing suitable for the weather conditions and the task being performed. Clothing should be close fitting with no parts hanging loose and are to be in good repair. Pant legs are to be worn outside of the boot tops. In cold weather, several layers of light clothing will best serve to keep workers warm. Appropriate rainwear will be required during wet weather.
- ◆ Flame Retardant Clothing- Certain clients may require Environmental Crossings personnel to wear fire retardant clothing. In such instances, the requirements of the client pertaining to this clothing shall apply.

15.2 Sight Protection

Eye injuries make up a large percentage of the lost time injuries. Scratches are the most common injury with most being caused by particles entering the eye. Early treatment of eye injuries is important but the best treatment is prevention.

It is recommended that eye protection be worn at all times when on location. Eye protection should be reinforced plastic frames with approved lenses and with side shields. Ordinary glasses do not provide suitable eye protection.

Eye protection should be cleaned before using. Dirty eye protection impairs the vision, contributes to eyestrain and can introduce foreign matter into the eyes leading to infections.

Using water to remove loose particles or chemicals from the eye can prevent eye damage. Eye wash stations shall be provided at appropriate locations on site, such as at the mud mixing tank, where there is a high risk of getting foreign material into the eyes.

The eye wash station must be installed in a readily accessible location. Access to it must remain clear and the location should be clearly marked with a sign having the eye wash symbol. The eye wash station should be protected from temperature extremes. The eye wash stations should be examined daily to ensure that they are filled and clean. Particles that enter the eye may be “floated out” of the eye by flushing with water or the particle may be removed with the tip of a clean cotton swab. Particles that are difficult to remove should be left for removal by a qualified medical person.

15.3 Hearing Protection

Loss of hearing resulting from exposure to high levels of noise is permanent. Hearing damage may not be evident immediately, the loss of hearing is gradual. Initially higher frequency sounds are lost and over a period of time, the frequency drops to normal speech range.

Hearing protection is rated by the level of protection given by the device. The protection may be either in the form of plugs or muffs or both in high noise level areas. For proper protection, ensure your hearing protection fits properly and that you wear the protection when needed. Ensure the protection is in good condition and clean. Ensure that manufacturers’ recommendations are followed for the insertion of plug type protectors.

15.4 Respiratory Protection

The air that we breathe may contain materials that are hazardous to health. Contaminants may be in the form of dust, fumes, mists or gases.

Disposable masks are simple filters that trap and hold hazardous particles as you breathe through the filter. A snug fit of the mask is essential. Follow the manufacturers’ fitting instructions. Ensure that the mask fits snugly around the nose by fitting the mask to your face. These masks are designed to be thrown away after they are used so if at any time during use, breathing becomes difficult due to clogging, throw the mask away and use a new one.

APPENDIX

SAMPLE FORMS



PROJECT INFORMATION SHEET

PROJECT DESCRIPTION:	DATE:
----------------------	-------

LOCATION	MAILING ADDRESS

TELEPHONE NO.:

INSURANCE INFORMATION	
Type	Carrier
Workmen's Compensation	
General Liability	
Auto and Truck	
Heavy Equipment	
Builder's Risk	

Location:	Telephone No.
Mailing Address:	

OWNER REPRESENTATIVE	OFFICE PHONE	HOME PHONE



Project Description: _____ Date _____

EMERGENCY PHONE NUMBERS

Physician _____ or _____

Hospital _____ or _____

Ambulance _____ or _____

Fire Department _____ or _____

Police _____ or _____

Environmental _____ or _____

Other _____ or _____



EMERGENCY MEDICAL PLAN

Job Name:	Telephone:
Address:	

Ambulance	
Fire	Police
Office	
Safety Director	

Approved Emergency Facilities (name, address, telephone)

Approved Doctors (name, address, telephone)
General
General
General
Back & Strains
Back & Strains

EMERGENCY PROCEDURE

1. Call for ambulance if injury is serious.
2. Render first aid if qualified to do so.
Do not move injured if not in danger.
3. Direct ambulance to the injured.
4. Call office to notify the Safety Director.

REPORT ALL INJURIES IMMEDIATELY



PRELIMINARY JOBSITE SAFETY CHECKLIST

Project Description

Job Folder Packet	Date Completed	Initial
Emergency phone numbers bulletin filled out		
Emergency medical plan filled out		
First aid signs posted		
First aid kits checked		
Stretcher, Blankets, and splints checked		
Project information sheet filled out		
First aid tickets of employees checked		
Copy of injury record book		
WCB – workers report form		
WCB – employers report form		
Tool box safety meeting report form		
Employee safety violation form		
Monthly jobsite safety inspection form		
Termination report form		
Accident investigation report form		
Any special safety requirements from the owner and/or general contractor		
Project Status	Date Completed	Initial
List any major accident types possible on project		
Unusual circumstances that may present high accidental risks		
Special safety equipment needed on project		
Special power tools, scaffolding, material handling equipment, etc. required		



Description of Operation: _____

General Description of Activity: _____

Suggested Description of Procedures:

Step 1: _____

Step 2: _____

Step 3: _____

Step 4: _____

Step 5: _____

Step 6: _____

Step 7: _____

Please Use Additional Pages as Necessary



MONTHLY JOBSITE SAFETY INSPECTION

Project Description: _____ Date _____

Job # _____ Supervisor/Superintendent _____

	YES	NO	CORRECTED
List of emergency phone numbers posted			
First Aid kit and instructions available			
Job personnel informed of accident procedure			
Someone on the job trained in first aid			
Housekeeping			
Aisles and stairs clear of obstacles			
Aisles and stairs adequately lighted			
Work area generally clean			
Holes, stair wells, openings, etc. barricaded			
Adequate and clean drinking water			
Disposable drinking cups available			
Materials stored safely			
Fire prevention equipment available as required			
Waste containers of adequate size and covered			
Electrical Equipment			
Tools properly grounded or double insulated			
Cords in good condition (no taped splices)			
Plugs and receptacles in good condition			
Tools operating properly			
Tools inspected and tested before use			
Other Safety Items			
Chemicals, acids, gasses, etc. safely stored			
Mechanical equipment checked and in good working order			
Ladders checked and in good condition and properly used			
Scaffolding checked, in good condition and properly guarded			



ATTENDANCE LIST OF SAFETY MEETING

Kind of Meeting		Date:
Instructor		Signature:
Number	Name	Signature
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		



TOOL BOX SAFETY MEETING REPORT

Supervisor/Superintendent:	Date:
Project Description:	

Subject of Meeting

Attendance (names)

Remarks (unsafe conditions and suggestions offered by employees or other subcontractors for correction of hazardous conditions)



BASIC REPORT OF INJURY

All Injury Reports must be reported immediately to Amy in the Traverse City office by fax (231) 941-7412 or phone (800) 331-7785

I. EMPLOYEE DATA

1. DATE OF INJURY	2. EMPLOYEE'S NAME (LAST, FIRST, MI)
-------------------	--------------------------------------

II. CURRENT EMPLOYER DATA

3. EMPLOYER NAME ENVIRONMENTAL CROSSINGS, INC.		4. INJURY LOCATION / JOB #	
5. ADDRESS (NUMBER & STREET) 868 ROBINWOOD COURT	6. CITY TRAVERSE CITY	7. STATE MI	8. ZIP CODE 49686

III. ALLEGED INJURY DATA

9. LAST DAY WORKED	10. DATE EMPLOYEE RETURNED TO WORK (IF APPLICABLE)		11. DID EMPLOYEE DIE ☐ YES ☐ NO
12. INJURY CITY	13. INJURY STATE	14. INJURY COUNTY	15. DID INJURY OCCUR ON EMPLOYER'S PREMISES OR WORK SITE? ☐ YES ☐ NO
16. DESCRIBE THE NATURE OF INJURY OR ILLNESS (EXAMPLE: AMPUTATION, BURN, CUT, FRACTURE)			
17. PART OF BODY DIRECTLY AFFECTED BY THE INJURY OR ILLNESS (EXAMPLE: HAND, ARM, CIRCULATORY SYSTEM)			
18. DESCRIBE THE EVENTS WHICH CAUSED THE INJURY (EXAMPLE: FELL, OPERATING MACHINERY, CHEMICAL EXPOSURE)			
19. DESCRIBE SAFETY EQUIPMENT IN USE			
20. NAME THE OBJECT OR SUBSTANCE WHICH DIRECTLY INJURED THE EMPLOYEE (EXAMPLE: KNIFE, ACID, FLOOR, OIL, UNIT #)			
21. WITNESS INFORMATION (NAME, PHONE #)			



All traffic accidents must be reported immediately to Amy in the Traverse City office by fax (231) 941-7412 or phone at (800) 331-7785.

Date: _____ Time: _____ City: _____ County: _____

State: _____ Location of Accident (Highway / Intersection): _____

DRIVER INFORMATION

Driver Name: _____ D.O.B.: _____ License #: _____

Home Phone #: _____ Unit #: _____

Describe what happened: _____

Describe Vehicle Damage: _____

Any Injuries to Driver or Passengers (name), Describe: _____

LAW ENFORCEMENT AGENCY

Accident Investigated by: _____

Report #: _____ Officer's Name and Badge #: _____

Phone # or any other information: _____

Attach police report if a given a copy.

OTHER VEHICLE INFORMATION

Other Drivers Name and Address: _____

Home Phone: _____ Work Phone: _____

Passangers Name and Address: _____

Home Phone: _____ Work Phone: _____

Other Vehicle Make and Model: _____

Describe Other Vehicle Damage: _____

Any Injuries to Driver or Passengers (Name) Describe: _____



EQUIPMENT THEFT OR LOST REPORT

All Equipment Theft or Lost Reports must be reported immediately to Amy in the Traverse City office by fax (231) 941-7412 or phone at (800) 331-7785.

Date: _____ Time: _____ City: _____ County: _____

State: _____ Location of Incident: _____

Describe Incident: (Theft) or (Equipment Lost Down Hole)

Witness information if applicable: _____

LAW ENFORCEMENT AGENCY

Incident Investigated by: _____

Report #: _____ Officer's Name: _____

Phone # or any other information: _____

Attach police report if given a copy.

Detailed list of Stolen or Lost Down Hole Equipment



**ENVIRONMENTAL
CROSSINGS inc**

Project Description:

You have been found in violation of Environmental Crossings safety program. Continued violations may result in termination.

Describe Rules Violation

3rd

No

Signed: _____
Employee

Signed: _____
Supervisor



TERMINATION REPORT

Project Description		Date:
Employee Name		S.I.N.
Craft	Date Hired:	Date Separated:

Discharged ☐	Lack of Work ☐	Voluntary Quit ☐
-------------------------------------	---------------------------------------	---

Discharge	Lay Off	Company Equipment
Inadequate: _____ Ability _____ Absenteeism _____ Cooperation _____ Dishonesty _____ Efficiency _____ Inadequate Safety _____ Consciousness _____ Rules Violation _____ Tardiness _____ Other Reason _____ Lack of Work _____ Bad weather _____ Other Reason _____ Hard Hat Returned _____ Other (Describe)		
Comments		

Signed: _____
Employee

Signed: _____
Supervisor

Title _____

Phone Number _____

Attached are supportive documents (if any)

THIS FORM SHOULD BE COMPLETED IMMEDIATELY AT SEPARATION TIME AND SENT WITH THE ATTACHMENTS TO THE MAIN OFFICE.



Location: _____

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[illegible]



CODE OF SAFE PRACTICES

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Purpose

The purpose of these guidelines is to help train employees in the safe and efficient performance of horizontal directional drilling operations. This document introduces the employees to safety concepts that will enable them to perform their duties without harm to themselves, co-workers, or result in property damage. This document should be used in conjunction with the standard company safety program. The information in this document is not intended to replace local, state, or federal rules or regulations. If a conflict should develop, abide by the applicable laws.

Scope

No written procedure can cover every situation that might arise in the field. However, with careful planning and following these guidelines, most safety-sensitive problems can be eliminated or at the very least minimized.

These guidelines were written to encompass both large and small drilling rig operations. Some material included here in might not be applicable to all situations.

Employees must remember that they are part of a team and that they are responsible for their own safety, as well as the safety of their team members. With everyone working together, a safe and healthy workplace can exist.

Job-Site Inspection and Briefing

There should be a briefing for all authorized jobsite personnel prior to beginning operations and periodically during the project. The briefing should include:

- Identification of those in charge and the chain of command.
- Location and access to local emergency facilities.
- Location and type of buried services and overhead obstructions.
- Jobsite security: warning signs, barriers, identification of the authorized personnel, required personnel protective equipment, and emergency procedures.

Job-Site Operations

There must be good communication with everyone on site. There should be 2-way radio contact between the drill rig operator, the locator and pipeside personnel to coordinate the drilling operation.

- Hand signals should be agreed on beforehand in case the radios fail or cannot be used.
- Do not rely on location instruments when crossing or near hazardous services. Expose hazardous services by careful hand digging-
- You may need to contact utilities to shut down services for the duration of the job. r
- Do not rely on locating done previously by someone else.

Overhead Hazards

Contact with overhead lines while handling drill pipe or heavy equipment is hazardous. Know the location of the overhead lines and use **extreme caution**. Always maintain 12 to 20 foot spacing, depending on line size, between the drilling equipment and power lines at all times.

Underground Hazards

Buried underground hazards are many:

- Electrical power cables, which can cause serious injury or electrocution-
- Fluid and gas carrying pipes, which may be carrying asphyxiating toxic or flammable and explosive gases or liquids.
- Fiber optic cables carry laser light signals, which can cause eye damage-
- Low-pressure sewage and storm water lines pose a unique hazard after an HDD gas line installation that has intersected the sewage line with subsequent plumber activity causing a possible gas leak or explosion.

Basic Precautions

Before beginning a job, there are certain basic precautions you should take:

- Call your One-Call hot-line!!! Call utilities not represented by the local system. In most cases, a minimum of 48 hours, more for weekends, lead-time is needed before digging begins.
- Once the utilities are located determine how deep they are installed by hand excavation or "soft"/vacuum digging if possible.
- Some questions about utilities that have to be crossed or drilled along side.
 - a) How were existing utilities installed? If it was plowed or trenched chances are it will not be over 48" deep.
 - b) Were utilities installed with a backhoe? If so, to what depth?
 - c) If the utilities were directionally drilled check for accurate as-built drawings.
 - d) Has fill dirt been added to the area after the utilities were installed?
- When going beside utility, you should confirm their location at intervals.
- Secure the job-site to keep bystanders clear of the operation. Place job-site pedestrian and traffic warning barriers in accordance with federal, state, and local regulations.
- If job-site workers are exposed to traffic hazards, high-visibility safety vests and other protective clothing required by federal, state and local regulations should be worn.
- Before and during operations, it must be recognized that the work area can become very slippery. This can create "slip and fall" hazards. Good housekeeping and footwear are necessary in these areas-
- Where there is a possible electrical hazard wear hard hat, eye protection, 20 KV (minimum) lineman's boots and gloves that are specifically made for electrical insulation and any other protective devices required by job conditions. Do not wear jewelry or loose clothing that may catch on controls.
- Where required use electrical mats (sometimes referred to as "equal potential mats" and/or "ground mats") provided with the drill rig when setting up a job-site in preparation of drilling.

- Take the time to thoroughly check the entire work site for indications of underground hazards, such as:

- a) Transformer boxes. Don't be satisfied if there is one line marked in and one out. It could be one line in and four out going in different directions. Example, a transformer that is in the middle of an apartment complex could have a line going every direction to every building in the complex.
- b) Any manhole within the drill area needs to be opened and inspected. Determine if it is a telephone vault, sewer, etc. If it is a sewer, check the direction of the flow of the water and the direction of the pipe. The flow direction will tell the grade of the sewer. It can help judge whether the sewer will be shallower or deeper where the drill is being made.
- c) If a manhole must be entered, it must be treated as a confined space. This means it must have its atmosphere tested, rescue procedures in place, and an entry permit issued. CFR 1926.21(b)(6)
- d) Any pole with wire extending from it, particularly in backyard easements, these wires may or may not be on the print. Alive wire can kill whether it is on a print or not.
- e) Water and gas shutoff. There is probably one for every house -find it. A shutoff can give a lot of information. One item is the depth of the pipe itself. Add 6"-8" for valves going to house services or more depending on the size of the valve.
- f) Out buildings (Examples: storage sheds, unattached garages, workshops) Check buildings to determine if they are heated or have electricity. These utilities could have been installed by the homeowner and are not marked on any prints.
- g) Ditch line depressions in the landscape indicate digging has taken place and something was probably buried there. Determine what it is and where it is.
- h) Especially when working in neighborhoods, a vast resource is retired people. They have a tendency to come and see what you are doing. Quiz them and find out how long they have lived there. At times they can give valuable information on what was installed 40 years ago, never taken out, and no one has a record of it.

- Use utility locating devices throughout the drill area. Remember they are not perfect even with an experienced operator. If in doubt, or if required by law, dig by hand or "soft" dig and expose the utility you are crossing underground.

Drilling Precautions

- Do not exceed the drill pipe manufacturer's maximum torque and tension stresses.
- If you experience a sudden slowness or stoppage in progress, do not proceed until determining if you possibly hit an obstruction.
- Be aware of the hazard of the hydraulic action of the drilling fluid as you pass by structures like roads, bridges, and buildings. There is a potential for subsidence or elevation of these structures.
- Always use caution when moving drill pipe with a crane. Use a tag line when possible.
- Workmen should not ride boom lines, crane hooks, headache balls, etc.
- Drilling involves rotating equipment that can create hazards at the drilling rig, point of entry, and point of exit. Caution must be taken to protect these areas with guards and barricades. Workers must not wear loose clothing or jewelry.
- Use drill pipe make-up/break-out wrenches as per manufacture's instructions.

Reaming and Installation Precautions

- Continuous two-way communication between the entry and exit sides is essential.
- Rotating drill pipe and reaming tools can be a danger to personnel and equipment on both sides of the river. A remote lockout type system can greatly reduce the possibility of an accident occurring while working out of sight of the drill rig operator.
- Be aware of drill pipe torque wind-up and the possibility of back lashing.
- Drill fluid can pose a slip and fall hazard to personnel in several different locations.
- When planning the clearance between pilot hole and adjacent utilities, remember to account for the size of the final reamed hole and the possibility of lop-sided reaming-
- Plan for additional workers or a second shift during long duration installation operations.

General Precautions

- Workers should wear the required PPE on the job-site.
- Dry powered bentonite can pose an inhalation hazard and proper PPE should be used.
- Adequate lighting at all work sites will help prevent accidents in low light situations.
- All equipment operators must familiarize themselves with rules for "Highway and Roadway Crossings".
- The practice of employees sleeping or resting under equipment during rest periods is prohibited. Pipelines being constructed in the vicinity of high-tension power lines must be properly grounded at all times.
- Moving parts of equipment must be properly guarded, and guards must be kept in position when the machine is in operation. CFR 1910.212

Machine Safety

- Hydraulic oil under pressure can penetrate the skin and burn or cause blood poisoning. Use a piece of cardboard or wood to check for leaks, not the hand! If contact is made with these or other petroleum based products, wipe the contaminant off immediately. Always seek medical attention.
- Before disconnecting any lines, relieve system pressure.* Before pressuring up system, be sure all connections are tight and lines, pipes, and hoses are not damaged. Oil escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for leaks. Wear protective clothing and eye protection. If injured by pressurized hydraulic fluid, seek immediate medical attention from a doctor familiar with this type of injury.
- Turning shafts can crush arms or legs. Do not touch rotating drill pipe. Do not wear loose clothing around rotating parts. Do not step over or stand above rotating parts.
- Use a pre-approved *Lockout-Tagout* program before working on any equipment.

Safety Summary

Be aware of all hazards: Investigate underground, surface and overhead hazards and obstructions before work begins. Telephone, electricity, water, gas, sewer all had to be installed somehow, and their location should be determined.

Take the necessary precautions to protect personnel and bystanders in case of an inadvertent utility strike or hit. This includes routine wearing of protective equipment by any observers and workers.
Be sure to follow all precautionary procedures recommended in these guidelines.

In the event of an accident or accidental strike, operations must stop immediately. Contact the proper local authorities.

APPENDIX

•See Procedures in the Event of an Electrical Strike

Procedures in the Event of an Electrical Strike

Several steps must be followed when the alarms sound/flash:

- Do not step off the grid mats and do not allow anyone to approach the work area. Note that it is also good practice not to have anybody, protected or otherwise, stepping on and off the grid mats while drilling is taking place.
- Move the drill head (or backreamer -if the initial drill has already been completed) away from the contact in hopes of disengaging from the line. Do not attempt to add or remove joints from the drill string.
Breaking of the drill string can result in lethal touch potential between the drill string and the rest of the drill unit. A crew member may become a path for harmful current flow in that instance.
- Attempt to reset the Strike Sensing Control Box. -It is possible that the Electrical Strike Sensing System in use may not have the reset capability. If this is the case check the operator's manual for proper procedures under the circumstances. If the crew cannot be certain whether or not the drilling machine is still "live" after an electrical strike, the best policy would be to stay on the grid until the power company has shut off electricity to the area. If it resets, go through its operational test. This verifies the current and voltage sensing circuits were not damaged by the strike. (Two sensing circuits give a backup in event one is disabled by the strike.) If the alarms continue after resetting, the drill string probably is still in contact with the power cable. For example, secondary power cables probably do not have high enough short circuit load to blow transformer fuses or open main line circuit breakers.
- Wait one minute or more for the power company's automatic reset breakers to complete all attempts to clear the short circuit. If Strike Sensing System is operational and alarms remain off, the crew may leave the work area to notify the Power Company. Resume work only with power company permission.
- If you cannot be sure the drilling unit is no longer energized, have a person outside the work area contact the power company to shut off the line before anyone moves from position.

The ability to follow these steps in a high-adrenaline situation requires crew member training and understanding the effect of their actions on personal safety. As in any construction job, it is essential to be prepared before starting.

ACKNOWLEDGEMENT

I the undersigned, acknowledge that I have read and understand the Horizontal Drilling Safe Operations Guidelines. Further, I will abide by its standards to the best of my ability.

Employee Signature

Date

Print Name

K:\BidDocuments\SafetyManual\CodeOfSafePractices