

**Pacific Gas & Electric – Embarcadero to Potrero (AZ-1)
San Francisco, CA**

**ACOE Permit No.:2012-00178S
Episode No.: 2**

Site-Specific Safety, Health and Environmental Plan

Prepared by:
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Submittal No.3

"I hereby certify that the Site Specific, Health, and Environmental Plan shown and marked in this submittal is in compliance with the contract documents, can be installed in the allocated spaces, and is submitted for approval."

Certified by QC Manager Line Chan, Date 11/13/2014
(QC Manager)



Pacific Gas & Electric – Embarcadero to Potrero (AZ-1) Health & Safety Plan



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INCIDENT AND INJURY PREVENTION PROGRAM

This Incident and Injury Prevention Program (IIPP) was prepared in accordance with section 6.1 and 6.2 of the BP Site Safety, Health and Environmental Plan Procedure. This document was made to assist project management, supervision, subcontractors, professional service providers and workers in understanding the Manson incident and injury-free philosophy and safety expectations and requirements.

Compliance of this Incident and Injury Prevention Program is expected and a condition of employment on this project.

Project managers/superintendents have overall responsibility for the implementation and execution of this Incident and Injury Prevention Program.

1. SIGNATURE SHEET

Name	Title	Signature	Phone
Plan Preparer:	Loretta Murrell	Loretta Murrell	510-773-6257
	Line Chan		
Senior Management Approval:	Area Manager	Ryan King	510-232-6319
	Project Manager:	Eric McMann	510-774-8396
	Superintendent:	Gordon Crocker	206-512-7146

2. PROJECT INFORMATION

Contractor: Manson Construction Co.

Project Number: _____

Project Name: Pacific Gas & Electric – Embarcadero to Potrero (AZ-1)

Project Description: The project is located in San Francisco, CA just south of the Bay Bridge. The derrick barge Einer will sweep 15 foot radius along the three cable routes to remove rocks and debris.

JOB PLAN

For detail a job plan please see “Dredgeand Disposal Plan”.

- ““DB Einer” - A Clamshell dredge operating on diesel power (116 ft. long and 52 ft. wide), with a 5 CY capacity bucket.
- “Manson 47 Barge” – flat barge (135 ft. long and 50 ft. wide, 749 tons Capacity)
- “Manson 62 Barge” – flat barge (180 ft. long and 44 ft. wide, 1599 tons Capacity)
- “Peter M” – 4,300 HP Tending/Towing Tug boat (100 ft. long and 36 ft. wide)
- “Westar”– Tending/Towing Tug boat
- CAT 973 FE - Loader
- CAT JD 225 – Excavator
- Dump Trucks

The following is the Mason’s planned sweeping sequence:

1. On December 1st, 2014, Mobilize the Einer and the Manson barge 62 to South of the West Cable at station 20+75 to begin removing debris listed as W28.
2. Have a safety meeting and review Work Plan, Activity Hazardous Analysis and Site Specific Health Plan
3. On December 1st, 2014, Einer will begin Sweeping in the southern End of the West cable route and work toward north.
 - a. Prior to sweeping, the bucket depth will be calibrated to fine tune the precision.
 - b. Before sweeping, the crew will prepare and review Job Hazard Analysis for all tasks to complete the job.
 - c. Once on site, Einer will lower the bucket into the water and remove rocks and debris to the permitted water level. All sweeping will be performed by experienced and certified crane operator.
 - d. All in water obstruction will be communicated with the crane operator and will be displayed on the dredge’s computer monitor in real time.
 - e. During, sweeping no one will be allowed to enter the yellow safety zone painted on the deck of dredge without the crane operator permission. Access to the crane operator’s cabin will also require the crane operator’s permission.
 - f. Material dredged will be placed on the barges. Dredged material loaded onto the barge will be contained to prevent material from falling into the bay during transit.
 - g. The USACE Permit and Water Quality Certification Required for sweeping will be printed and be available on the dredge.
 - h. Dredge Supervisor and Tug captain will monitor AIS for traffic. All crew members will be aware of events and traffic within the job site.
4. After debris removal along the west cable is completed, the Einer will work on the Center cable from the northern station 133+89 to south from Stations 134+00 to 127+51.
5. After the debris removal along center cable is completed, the Einer will begin removing rocks and debris along the east cable from the southern station 35+72 to the northern staion 136+83.
6. Demobilize all equipment from the job site.

MITIGATIONS FOR HAZARDS

1. A drill is conducted once a week. The following are a list of drill to be conducted:
 - Man Overboard
 - Fire Onboard
 - Oil Spill Response
 - Medical Emergency
 - Abandon Ship
2. Prepare and Review the work plan
3. Prepare and Review Job Safety Analysis for all tasks prior to work. All JSA prepared by the crew will be reviewed by the project manger and safety personnel to ensure quality.
4. Have a pre shift meeting to discuss works to be perform today and JSA requirements
5. Have a safety meeting to discuss safety tool topic
6. Wear proper protection equipments for the job
7. Give safety orientation to visitors. Visitors will be briefed on dangerous locations on board the dredge and locations to stay away. Visitors are expected to wear proper protection equipments on board any Manson's vessels. A crew member will be assigned to visitors to prevent injuries.
8. A new employee will have a detail safety orientation about the dredge and work activities. A mentor will be assigned to a new employee until a new employee can recognize hazards and prepare JSA.
9. Material Safety Data Sheets or Safety Data Sheets are on each of the Manson's Vessel for the crew.
10. Task will be assigned to qualify personnel. Task requiring crane operations will be assigned to an experienced and certified crane operator.

3. HEALTH AND SAFETY POLICY



The safety and well-being of our employees and all personnel working on our projects are paramount. Manson is committed to implementing and fostering an Incident and Injury-Free Environment throughout our entire organization. An Incident and Injury-Free Environment is a corporate mindset where no injury is acceptable and safety is not optional. At Manson, safety has become personal to each of us and is becoming a way of life. We value and respect every worker. Performing work in a manner that presents risk of injury is not how we conduct our business. All injuries are preventable when safety becomes an everyday personal value. Committing to an Incident and Injury-Free Environment is not just the right choice; it's really the only choice.


Eric V. Haug
President
Manson Construction Co.

4. RESPONSIBILITY AND LINES OF AUTHORITY

Commitment & Expectations

Manson Construction Co. expectation is that everyone who works for or on behalf of Manson returns home safely, irrespective of the type of work, activity or location.

Collective Expectations:

- Workers can expect Manson to provide them with a **safe** work environment
Manson expects each worker to know, understand, and follow this **Incident and Injury Prevention Program, safety procedures, client rules** and to behave in a safe manner.
- Every worker is responsible to **look out** for the safety of others
- Safety is inherent and at the forefront of **everything** that Manson Construction Co.

Collective Commitment:

- Every worker has the personal commitment from Manson that if you feel unsafe in any activity you have a responsibility and duty to **STOP** the work without fear of any retribution
- Everyone needs to work collectively together, including our sub-contractors, to achieve these goals
- Everyone understands that Safety is a value at Manson. Priorities and commitments may change but our values do not.

RESPONSIBILITY AND ACCOUNTABILITY

Manson is committed to creating a work environment absent of incidents and injuries. Everyone involved in this project must understand their health and safety responsibilities. Senior management, project management, supervision, subcontractors, and workers will be held accountable for their health and safety performance in accordance with their specific responsibilities.

Manson, subcontractor, and professional service employees are expected to work conscientiously to implement and maintain this Incident and Injury Prevention Program (also referred to as IIPP or I₂P₂). The following listed Manson personnel have the authority and responsibility for implementing this IIPP and ensuring its success. Any questions regarding this program should be directed to these individuals. This document also fulfills the requirements of the US Army Corps of Engineers (USACE) EM 385-1-1 requirement for an Accident Prevention Program (APP)

NAME	POSITION	POSITION TYPE	PHONE
Ryan King	Vice President	Senior Management	510-232-6319
Eric McMann	Project Manager	Project Management	510-774-8396
Gordon Crocker	Superintendent	First Line Supervision	925-998-0407
Gordon Crocker	SSHO	EHS/HSSO Representative	925-998-0407
Jim Spenser	SSHO	EHS/HSSO Representative	206-660-7828

ENVIRONMENTAL HEALTH AND SAFETY RESPONSIBILITIES BY POSITION TYPE

SUBJECT	SENIOR AND PROJECT MANAGEMENT	FIRST-LINE SUPERVISION*	WORKERS	PROJECT EHS/ SSHO REPRESENTATIVES
Incident & Injury Prevention Program	Understand, implement, and enforce the IIPP. Make sure all project personnel understand the IIPP and are in compliance with the rules and regulations.	Understand and implement the IIPP. Incorporate the IIPP in work planning and communicate it to workers.	Understand the IIPP and follow the established rules and procedures.	Advise management and supervision regarding conformance with the IIPP. Support administration of the IIPP.
Work Practices	Ensure supervision is communicating safe work practices to workers. Conduct Health and Safety Assurance Assessment Meetings when necessary.	Communicate all work plans and ensure they are followed.	Follow all safe work practices communicated by their supervisor.	Assess whether the project is compliant with federal, state, local, and company EHS rules, regulations, and procedures.
Site-Specific Safety Rules	Develop and enforce the site-specific safety rules and procedures.	Understand and implement the site-specific safety rules and procedures.	Understand and follow the site-specific safety rules and procedures.	Assess project conformance with site-specific safety rules and procedures.
At-risk Behavior	Communicate that at-risk or undesirable behavior will not be tolerated.	Conduct a risk assessment, plan of work, and work safely without engaging in at risk or undesirable behavior.	Do not participate in, condone, or encourage at-risk behavior. Participate in all risk assessments.	Assist management and supervision in recognizing at-risk or undesirable behavior.
Project Safety Leadership Committee	Create a Safety Leadership Committee and hold meetings as described in the IIPP.	Participate in the Safety Leadership Committee.	Participate in the Safety Leadership Committee.	Advise management and other Safety Leadership Committee members.
Emergency Action Plan	Develop and Implement an Emergency Action Plan and a Crisis Management Plan.	Communicate the project Emergency Action Plan.	Understand the project Emergency Action Plan.	Assess the project Emergency Action Plan and Crisis Management Plan.
Training	Develop and implement training programs. Ensure resources are available to implement health and safety training. Monitor all training results to ensure training is resolving issues presented in safety training needs assessment.	Attend required project EHS training. Ensure workers are properly trained in hazard recognition and safe work practices.	Attend required project EHS training. Understand and follow the work practices and guidelines discussed during the training.	Verify that all personnel have received proper EHS training. Assist in training workers on hazard recognition and safe work practices. Monitor daily safety meetings.
Hazards	Ensure supervision is identifying, evaluating, and controlling work site hazards. Ensure resources to implement controls are available.	Identify, evaluate, and control all hazards.	Understand the hazards of the work and follow the safe work practices and controls developed for those hazards.	Assist in evaluating hazards and determining methods of eliminating or reduction.
Daily Safety Inspections	Ensure supervision performs daily safety inspections.	Conduct daily safety inspections, identify hazards, and implement any controls necessary.	Conduct individual hazard assessments of assigned tasks and report hazards to supervision.	Support supervision in their daily worksite inspections. Ensure worksite inspections are documented.
Incidents:	Ensure all incidents are investigated thoroughly.	Conduct a thorough incident investigation and develop a plan to prevent similar occurrences. Conduct "Safety Down Meetings" for minor incidents and near misses.	Cooperate and participate in incident investigations, and contribute ideas and possible solutions.	Assist first-line supervision in investigating incidents. Maintain monthly incident statistics.

* First-line Supervision includes general superintendents, superintendents, project/field engineers, general foreman and foremen.

Compliance of safety and health procedures, policies, and guidelines are expected and is a condition of employment with Manson. Executive Management, Project Management, First-Line Supervision and non-supervisory employees that repeatedly fail to comply with company health and safety policy or whose safety performance is below acceptable levels can expect to be held accountable.

SAFETY REGULATIONS

Manson and subcontractors will incorporate, at a minimum, OSHA 1926 Construction Safety Standards, OSHA 1910 General Industry Standards (as applicable), OSHA 1915 Shipyard Industry, USACE EM-385-1-1, Coast Guard Maritime Safety, State or local specific governmental, and specific client or owner rules, regulations and requirements (as applicable), and this Accident Prevention Plan when determining the safe work practices and protection of our workers. If any of these standards, requirements, rules or procedures conflict, the most stringent one will prevail.

WORKER RIGHTS AND RESPONSIBILITY

Every worker has the right to stop or not perform work when they feel the work environment or task assigned is not safe, without fear of retribution. Workers are responsible to ensure their work environment hazards have been identified, adequate controls are in place to protect the worker from the hazards, and that they have been properly trained in recognizing those hazards and in the controls to protect them from the hazards. If a change occurs or a new hazard is recognized, the worker is responsible to stop his or her work, re-plan the work task, and ensure the work environment is safe.

Every worker has the right to review all of their individual medical records and testing data upon request.

INCIDENT AND INJURY-FREE ENVIRONMENT

Manson is committed, both personally and organizationally, to a work environment absent of incidents and injuries. Manson is intolerant of any level, frequency, or severity of incident or injury. Incident and Injury-Free Environment (IIF) is not a goal or a result to seek zero injuries, but the mindset and environment that everyone working on this project will embrace the conviction that injury-free operations are possible and doing something safely is an inseparable element from “doing the right thing.”

Incident and Injury-Free Environment is value-based and not a trade-off with cost and/or schedule. Injury-Free is of continuous improvement from the present Accident and Incident Prevention Program, and processes, to a state of betterment. Incident and Injury-Free Environment is where individual workers choose to hold themselves accountable for their own safety and the well-being of their fellow workers on this project.

SAFETY ESSENTIALS

Manson believes that these Safety Essentials are crucial in developing an Incident and Injury-Free Environment on this project. The Safety Essentials are the foundation of Manson’s Safety Culture and compliance is required by all employees:



Always Take Care – Each worker is to be observant, take their time, and think safety first. Nothing any worker does is so important that they cannot take the time to do it safely. Each worker has a responsibility to care for their fellow worker and not allow them to perform unsafely.



Follow the Rules – Safety procedures and policies are designed to stop workers from getting hurt. Ignoring them is unacceptable and will not be tolerated. If a work or safety procedure is unclear or unworkable, then the worker must stop and inform their supervisor.



Do a Risk Assessment – Before starting any work, a personal risk assessment must be performed to identify potential hazards and selected control measures are put in place. If a worker is unsure they are responsible to ask their supervisor.



You Must Intervene – Any worker that believe their safety or the safety of others is being compromised, have the right and obligation to intervene to stop and correct the work. Every worker has Manson’s senior management total support to exercise this right without any repercussions.



Manage Any Change – If there is a change or deviation to the planned activity, workers must stop the work and re-evaluate the risk assessment and ensure the controls provide adequate protection from any new hazard.



Wear the Correct PPE – Every worker must ensure that when they undertake any work, they will wear the required PPE correctly as identified in the risk assessment for that specific task.

PROJECT SAFETY LEADERSHIP COMMITTEE

Refer to Manson EHS System Procedure 6 – Health and Safety Leadership Committee and Safety Meetings

A safety leadership committee made up of project management, supervision, workers and safety representative from Manson, and all major subcontractors, will meet regularly to discuss project safety rules, discuss any incident trend, compliance issues, and upcoming project work or activities that may require additional safety controls. At a minimum, these meetings will be held monthly. Manson project management will prepare meeting minutes. The project Safety Leadership Committee will be made up of Manson and subcontractor’s project management, safety representative(s) and craft representation. The craft representatives will serve for a minimum period of ninety days.

To make each meeting productive and informative, subcontractors must be prepared to discuss any items and/or issues provided by Manson prior to each meeting.

DESIGNATED QUALIFIED OR COMPETENT PERSON(S)

No work requiring review by a competent or qualified person shall be performed unless the designated competent person(s) are present on the job site. The following person(s) have been identified as the qualified or competent person for the listed categories:

Crane Lifting Supervisor	Steve Pennitk
Qualified Electrical Person(s)	NA
Scaffold Competent Person(s)	NA
Excavation Competent Person(s)	NA
Fall Protection Competent Person(s)	Gordon Crocker
Steel Erection Competent Person(s)	NA
Shipboard Competent Person(s)	Gordon Crocker
Cadmium Competent Person(s)	NA
Hexavalent Chromium Competent Person(s)	NA
Lead Competent Person(s)	NA
Silica Competent Person(s)	NA

PROJECT WORK PLANNING

Refer to Manson University Module 8 - Planning

All work performed by Manson, subcontractor(s) at all tiers, and professional service providers shall be analyzed to identify hazards and sufficient controls to protect workers from those hazards. No work or task will be conducted without a completed hazard analysis through the Work Element Plan and Job Safety Analysis described below.

Work Element Plan (WEP):

This planning level is at the Manson or subcontractor project management and discipline superintendent.

Prior to the start of any work activities, each discipline superintendent will analyze each component of the work that he/she has responsibility for completing and identify each element of the work, the proper equipment and tools to perform the work, the hazards associated with the work and adequate and sufficient controls to protect his/her work crews from those hazards.

A written Work Element Plan for each identified work component is required. Additional work components that may come up later in the project will be analyzed once they are known.

Work Element Plan templates are available on the Operations page of the Manson Intranet SharePoint site.

Only one Work Element Plan needs to be completed for each identified work component. If the Work Element Plan needs revision due to scope of work changes, unanticipated or new hazards plan changes, etc., then all work pertaining to that work component will stop until a new Work Element Plan is completed.

Job Safety Analysis Plan (JSA) or Activity Hazard Analysis (AHA):

This planning level is at the Manson or subcontractor foreman, crew, or individual worker. JSA or AHA forms are available on the Manson Safety Intranet SharePoint site under forms.

Consult the project’s Project Plan and Work Element Plan (WEP) to identify the work activity steps. Each work activity step identified in the WEP usually requires a JSA or AHA; more often, it will require multiple JSA or AHA. Sometimes JSA or AHA’s should be written that do not originate from a WEP. In any task that is performed there will be hazards; because of this, the crew that will perform the task needs to perform a “Hazard Recognition” analysis:

- In each of the work steps listed in the JSA; the question must be asked, “How can we hurt someone?” This will help to define the hazards in each step of the task.
 - A risk analysis must be done to analyze the likelihood of occurrence and severity of consequences for each hazard.

- Each hazard will be evaluated using the Risk Assessment Code (RAC) as to potential severity.
- Each hazard should be managed by going through the “hierarchy of controls” to either eliminate or mitigate the hazard to an acceptable level of risk. Controls will again be evaluated using the RAC matrix to determine effectiveness of the control.

Once a task-specific JSA or AHA is created, if there are no major changes in work conditions, a Standing JSA or AHA (with JSA Acknowledgement Form) may be used for repetitive work activities. Once the JSA or AHA is prepared or if there are changes in work conditions, just prior to performing the work the personnel involved in the work discuss and sign the JSA or AHA, signifying that they understand how to perform the work properly and that they will follow the procedures set forth.

The Project Manager and Project Team Members will review the JSA or AHA’s using the Manson “Planning and Ethics Tracking Form” on a weekly basis.

EHS representatives, project/field engineers, or other persons not involved in the direct execution of the work will not prepare Job Safety Analysis plans on behalf of first-line supervision.

The JSA or AHA will be clearly posted at the work location or on an individual’s person performing the work task.

Individual Hazard Analysis (IHA):

When after review of the work task JSA or AHA, an individual worker encounters a change in work condition or a new hazard was encountered, they will complete an Individual Hazard Analysis and attach to the original JSA or AHA.

Other workers engaged in the work or entering the work area will be required to review the IHA and sign off acknowledging the change of condition or hazard.

The original JSA must be referenced when completing an IHA.

Specific Occupational or Compliance Plans:


All work to be performed will have a risk assessment performed and evaluated to determine if an OSHA mandatory compliance plan is required. Occupational and compliance plans will be developed and placed in the appendix section of this Incident and Injury Prevention Program.

The below list identifies the possible occupational risk or compliance plans that may be required:

- | | | |
|---|--|--|
| • General layout plan of the project | • Crystalline Silica Compliance Plan | • Abrasive Blasting Plan |
| • Emergency Response Plans | • Night Operations Work Plan | • Diving Plan |
| • Spill Plan | • Hazardous Energy Plan | • Radiation Safety Plan |
| • Firefighting Plan | • Critical Lift Plan | • Explosive and Demolition Plan |
| • Emergency Action and Crisis Management Plan | • Severe Weather Contingency Plan | • Asbestos Exposure Plan |
| • Man Overboard Plan | • Float Plan | • Blasting Plan |
| • Abandoned Ship Plan | • Fall Protection and Prevention Plan | • Hexavalent Chromium Exposure Plan |
| • Medical Support and Injury Management Plan | • Demolition Plan | • Process Safety Management Plan |
| • Alcohol and Substance Abuse Plan | • Excavation or Trenching Plan | • Steel Erection Plan |
| • Sanitation Plan | • Emergency Rescue Plan | • Lead Abatement Plan |
| • Access and Haul Road Plan | • Compressed Air Plan | • Hazardous, Toxic, Radioactive Work Plan (HTRW) |
| • Respiratory Protection Plan | • Formwork and Shoring Erection and Removal Plan | |
| • Health Hazard Control Plan | • Precast Concrete Plan | |

Specific Occupational or Compliance Plans will be attached to the back of this Incident and Injury Prevention Plan in Section 12.

EXAMPLE INDIVIDUAL ANALYSIS



INDIVIDUAL HAZARD ANALYSIS

Overall Risk Rating for this work	Risk Assessment Chart (RAC)			
	A	B	C	D
1. Death, Loss of Limb	X	X	X	X
2. Serious Occupational Illness or Permanent Partial Disability	X	X	X	X
3. Serious Occupational Illness or Permanent Total Disability	X	X	X	X
4. Fatality	X	X	X	X

Work Location: _____ Date: _____
 Job: _____ Work Activity: _____
 Job Task Analysis Completed By: _____

BREAK TASK INTO STEPS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

HAZARDS ASSOCIATED WITH THE STEPS **RAC**

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

CORRESPONDING JSA: _____
DATE OF JSA: _____

* Attach to applicable JSA for submittal

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INDIVIDUAL HAZARD ANALYSIS

Overall Risk Rating for this work	Risk Assessment Chart (RAC)			
	A	B	C	D
1. Death, Loss of Limb	X	X	X	X
2. Serious Occupational Illness or Permanent Partial Disability	X	X	X	X
3. Serious Occupational Illness or Permanent Total Disability	X	X	X	X
4. Fatality	X	X	X	X

HAZARD CONTROLS **RAC**

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

NOTES: _____

EMPLOYEES INVOLVED IN CONVERSATION:

_____	_____
_____	_____
_____	_____

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DISCIPLINE PROGRAM

Refer to the Manson EHS Policy – Discipline

The Purpose

The Manson Discipline Policy is designed to help and encourage Manson and subcontractor/vendor employees to achieve and maintain acceptable standards of conduct and provide a structured corrective action process to improve and prevent a recurrence of undesirable behavior and contribute to an Incident and Injury Free Environment.

At-risk or undesirable behavior can contribute to an incident or injury and will not be tolerated within Manson.

Employees that display or condone at-risk and undesirable behavior will be held accountable for their actions.

Responsibility

Manson and subcontractor/vendor employees have an individual responsibility to thoroughly conduct a risk assessment, plan their work and work safely.

Among the many supervisor responsibilities, they are not to condone at-risk or undesirable behavior of their employees.

Discipline Policy

It is essential and expected that all Manson and subcontractor employees accept personal responsibility for maintaining high standards of conduct and job performance.

Many factors are taken into consideration when decisions about whether to discipline a Manson or subcontractor/vendor employee for a safety infraction.

For those acts or practices that were determined to be a minor lapse of a safety procedure, policy or not considered “Immediately Dangerous to Life or Health” or violation of an Inviolable Rule, Manson will respond with a discipline level that is appropriate for the severity and frequency of the violation as outlined below:

- Counseling and/or oral warnings
- Written warnings
- Suspension
- Discharge from employment with Manson or removal from project for subcontractor/vendor employees.

Immediately Dangerous to Life or Health or Inviolable Rules

Acts, behaviors or situations that any individual(s) willfully** violate including key Manson work standards or likely to cause death, serious injury, or irreversible health effects is considered Immediately Dangerous to Life or Health (IDLH) and will result in termination of employment or if a subcontractor/vendor, removal from the project or office.

The following acts or behaviors are not all inclusive. These will not be tolerated and will result in discharge from employment or if a subcontractor/vendor, removal from the project.

- Failure to adhere to the Manson policies regarding the use of drugs, chemicals, and alcohol.
- Failure to follow the Manson policy on firearms and other dangerous weapons.
- Willfully strike, physically or verbally threaten, or hit another or provoke another to strike, threaten, or hit another person.
- Failure to follow Fall Protection Procedures
- Failure to follow Confined Space Procedures
- Failure to follow Lock-out/Tag-out Procedures
- Intentionally fail to follow the Manson planning and hazard analysis requirements for all work.
- Any other at-risk behavior or act that could result in or contribute to a serious injury or incident.

** Willful is where an employee or subcontractor/vendor intentionally and not accidentally performs an act or engages in a behavior with knowledge that it could likely result in serious injuries; is against company policy; or with reckless disregard of its probable consequences.

Discipline Process:

Before any formal disciplinary action occurs the matter must be investigated by the employee’s supervisor to validate the facts and determine if a violation occurred and Manson Human Resources Department consulted.

Employee may be suspended without pay until the investigation is completed. If the investigation determines discipline is not required, employee will be reinstated with full pay for days suspended.

If the investigation confirms an undesirable act, behavior, or situation did occur, the supervisor shall communicate the findings to their manager and the HR Department.

Progressive discipline may be increased or decreased depending on the seriousness and nature of the situation.

Any action requiring discipline shall be documented in accordance with Manson procedures. When a subcontractor is involved, the subcontractor/vendor management will be expected to take appropriate action.

Any deviation to the above policy requires authorization of Human Resource Director, Area VP, and EHS Director.

When an act, behavior, or situation was an "Immediately Dangerous to Life or Health" or a Manson Inviolable rule violation, the individual(s) directly involved will have their employment with Manson terminated.

Subcontractor or professional service provider employee(s) that commit an act, behavior, or involved in a situation that was an "Immediately Dangerous to Life or Health" or violated a Manson Inviolable rule violation will be immediately removed from the Manson project.

ALCOHOL AND SUBSTANCE ABUSE PROGRAM

Refer to Manson EHS System Procedure 40 – Alcohol and Substance Abuse Program

Substance Abuse Policy:

Manson is committed to maintaining a safe and productive workplace for our employees and others who enter the facilities or the jobsites on which Manson works. As such, Manson has a strict policy against the use, possession, distribution, or sale of narcotic drugs, controlled substances, controlled substance analogs, any drug illegal under federal law (including but not limited to marijuana), intoxicants (including alcohol), controlled or narcotic-based medication not prescribed by a licensed physician to treat a current, specific physical, emotional, or mental condition, and any other substances, specifically including any psychoactive substances, capable of creating or maintaining function-altering and /or adverse effects on one's physical, emotional, or mental state (hereinafter referred to as "illegal and illicit substances") in the workplace.

It is therefore a condition of employment that all employees, probationary, prospective, or otherwise, adhere to Manson's Employee Alcohol and Substance Abuse Program.

Violations will result in immediate termination of employment.

All other persons entering Manson jobsites must also adhere to Manson's commitment to maintaining a workplace free of illegal and illicit substances. Failure to adhere to this Program will result in the immediate removal of that person from the jobsite.

This Program applies to all Manson, subcontractor, and professional service provider employees, both DOT and non-DOT-employees, during all duty periods, and where specifically applicable, to pre-and post-duty periods. The Program applies wherever Manson works, including all Manson worksites, jobsites, facilities and vessels.

Synthetic Designer Drugs:

The use of synthetic or designer substances can pose a significant risk to the safety and health of the employee or others. The use of or being under the influence of any synthetic or designer drug while at work is prohibited if such use or influence may affect the safety of the employee, the employee's co-worker or members of the public.

Synthetic and designer drugs are commonly obtained over the counter and have proven to be deadly. Salvinorin –A is as potent as LSD in being a hallucinogenic drug. Synthetic cannabis can have 3x – 800x the potency of THC. Bath Salts are in par with cocaine and methamphetamine and have caused coma and death.

Synthetic and designer substances are:

- Synthetic Marijuana (K2, Spice)
- Salvinorin A and B (Salvia; Diviner's Sage; Magic Mint; Sally-D; Salvia Divinorum; Seer's Sage)
- Kratom (7 - Hydroxymitragynine; Mitragyna speciosa; Mitragynine)
- Mephedrone, Methylendioxyprovalerone (MDPV) and Methylone (Bath Salts; Bliss; Ivory Wave)

These substances are included in the definition of illegal and illicit substances for the purposes of this Policy. Manson prohibits any employee, contractor, or any invitee to use, possess, promote, introduce and or distribute any such substance.

Manson hereby notifies each employee, contractor or invitee of its intention to test for these substances in any of the circumstances identified in this Policy, or in its sole discretion, in any other circumstance that Manson believes is necessary for legitimate business purposes.

Any person who has a verified positive drug test result for any of these substances, or who refuses to be tested for any of these substances, will be terminated immediately.

Recreational and Medical Marijuana:

Several states have enacted laws legalizing recreational use of marijuana or authorizing the dispensing and use of medical marijuana. Manson Construction and Manson Gulf follow the Department of Transportation regulations when administering DOT and non-DOT drug urine screens.

Manson has classified all jobs as safety sensitive and therefore will adhere to the DOT rules on recreational or medical marijuana use. 49 CFR Part 40 does not authorize the use of Schedule I drugs, including marijuana, for any reason.

Subcontractor and Professional Service Providers

Each subcontractor or professional service provider will have a substance abuse program similar to Manson.

The subcontractor or professional service provider substance abuse program will be similar to or more stringent than the Manson substance abuse program contained in this Incident and Injury Prevention Plan. As a minimum, the substance abuse program will include the following topics:

- Pre-employment drug testing (alcohol if required by the client).
- Reasonable cause drug and alcohol testing.
- Post-Incident drug and alcohol testing.
- Random testing.

Any subcontractor or professional service employee ruled by a Medical Review Officer as positive will be removed immediately from the Manson project.

Substance Abuse Program

Individuals will be subject to drug testing for:

- Pre-employment/Initial employment
- Post incident
- Reasonable Cause
- Pre-access to an owner or client facility
- Random
- Reinstatement

Employees will be immediately terminated if they:

- Have a verified positive drug test
- An alcohol test result of 0.04 BAC or greater
- Refuse to sign the Chain of Custody form
- Fail to cooperate with collection personnel
- Consumed any legal prescription medication not prescribed to them
- Refuse to submit to a drug or alcohol test
- Adulterate, tamper, substitute, or delay a drug or alcohol test
- Positive drug test for recreation or medical marijuana

Individuals that may be taking a legal prescription drug have the responsibility to inquire whether the drug manufacturer or physician warns against driving, operating machinery, or performing other work-related safety sensitive work tasks. If such warning exist, the individual taking the medication must inform his or her supervisor, the Safety representative, or Human Resource Department of such restrictions before reporting to work under the influence of such substances. Manson follows the DOT guidelines for ALL drug and alcohol testing.

Individuals will be tested for drugs and alcohol if they:

- Caused or contributed to an incident resulting in personal injury or illness or damage to property occurs.
- Caused or contributed to any incident classified as a serious near-miss incident, meaning that the employee's action could have resulted in a work related injury, death, or damage to property.

Alcohol testing will be conducted for Reasonable Cause and Post Incident. Individuals that have a test result of 0.02 to 0.039 BAC will be suspended for twenty-four (24) hours. Individuals who have a positive drug test result may ask that an independent laboratory test of their original urine specimen be conducted, unless the original test result indicated the specimen was substituted or contained an adulterant.

All urine drug specimens will be confirmed by laboratory tests and any non-negative test result will be reviewed by a Medical Review Officer. You may request a full copy of the Manson Substance Abuse Program from Project Management, Safety Department, or Human Resources.

SHORT SERVICE EMPLOYEES

Refer to Manson EHS System Procedure 48 – Short Service Employees

Manson supervision will assure that all new, transferred, and temporary employees have been through the project Health and Safety Orientation and have a complete knowledge of the expectations for their job function.

Supervision will identify all employees and temporary personnel with less than 180 days of service or those employees they desire to return to a mentoring status for improvement in job and/or safety performance. Any short service employee (SSE) that experiences a serious injury during the initial 180 days will repeat the mentoring program.

Supervisors and mentors will provide more direct supervision to SSE and not allow them to perform any task in which they have not been properly trained. Whenever possible no SSE will be allowed to work alone or with another SSE.

Supervisors and mentors shall ensure all SSE's understand the task(s) to be performed and the associated hazards.

Mentoring Provisions and Processes

Mentors will set the proper safety example for any Short Service Employee assigned to them.

Primary responsibility of a mentor is to educate new employees on how Manson performs assigned work or tasks, the necessary safety policies and procedures to follow when performing work, and Manson's general safety culture.

Mentors monitor the new workers work with specific concentration on safety behavior. When at-risk behavior is observed, the mentor will take appropriate action to correct the new employee.

Identification

It is important for co-workers, supervision, project management, and client representatives to recognize a Short Service Employee; therefore, an identification system is developed for this purpose.

The identification system is a means of communicating to the general workforce that the Short Service Employee is in a transitional period

Short Service Employee identification is not intended to designate in-experience or lower skill sets.

The Short Service Employee should be identified by high visible yellow band stretch around the hard hat. Some clients may require the SSE to wear a different color hard hat, a specific color vest, a high viz reflective tape on the side of the hard hat, or some other means of identification. Manson in addition to its unique identification will also adhere to the client's requirement.



Supervision will remove the high visible reflective tape and all other identifiers upon expiration of the SSE term and after verifying that the SSE exhibits a knowledge and skill level to perform the job tasks assigned.

SANITATION

Toilet Facilities

Manson and subcontractors will ensure adequate chemical toilets are available on the jobsite for the use of workers. Toilets should be located on or within two hundred (200) feet of each work area within the project. The following is the recommended minimum requirement for toilets:

Number of Employees	Number of Toilets Required
20 or less	1 Toilet seat and 1 Urinal
20 or More	1 Toilet seat and 2 Urinal per 40 Workers
200 or More	1 Toilet seat and 1 Urinal per 50 Workers

Note: This is the minimum recommended by OSHA. Clients could require more be provided.

Adequate chemical toilets will be made available for the female workforce.

Chemical toilets shall be serviced often enough to prevent overflowing, creation of an unsanitary condition, a health hazard or nuisance, and shall be maintained in good repair so as to prevent leakage of the contents to the surrounding ground or onto the floor or other portions of the structure.

Hand Wash Stations

Adequate hand wash stations will be provided at key locations such as break locations for use by workers. The hand wash stations should contain adequate soap and water or hand sanitizer for the number of workers.

Drinking Water

Manson and subcontractors will provide daily, fresh clean drinking water to their employees. Drinking water will be dispensed in containers with a tight sealing lid and labeled as Drinking Water. Drinking water containers are to be cleaned daily.

Adequate cups will be made available at each drinking water container. Cups will be stored in a durable clean dispenser. A trash can or other type receptacle will be provided to collect used cups. Manson and subcontractors are responsible for cleaning up around the water container area.

The use of a common cup, soda cans and bottles, drinking directly from the spout, and the placing of hands or material into drinking water is prohibited.

FATIGUE MANAGEMENT

Refer to Manson EHS System Procedure 23 – Fatigue Management

Fatigue is a physical condition that can result when an individual's physical or mental limits are reached. Fatigue can be associated with physical exertion, mental exertion or inadequate or disturbed sleep. Fatigue can also lead to long term health problems.

Managing fatigue is one of the components of an overall approach to fitness for work. Manson is committed to providing a safe working environment for all employees by attempting to eliminate conditions and work practices that would lead to illness, personal injury, equipment or other property damage. All employees are required to take reasonable steps to ensure their own and others health and safety at work by being fit for work and working safely.

Identification of Fatigue Factors

Identify factors within the workplace that may contribute to fatigue. To accomplish this, examine work processes; consult with the workforce to identify if any fatigue risk factors exist. Assess each job or task to see if there are hazards that could worsen the consequences of a fatigue-related error. For example:

Moving machinery poses a significant extra hazard if a worker falls asleep;

Carrying out a maintenance operation while fatigued could result in incorrect reassembly.

If documentation is needed tasks should be assessed and managed using the Job Safety Analysis Process (JSA).

Fatigue Assessment

A fatigue assessment must be conducted no later than two hours past the normal work scheduled day, with the maximum that anyone can work without an assessment being 12 hours.

No work to be carried out beyond twelve (14) hours without approval from the area manager.

Managers are required to pay particular attention to whether or not employees are, or appear to be, suffering fatigue as a result of their roster or work pattern and take appropriate action.

Employees shall inform their manager immediately if they believe that their work is being affected by fatigue.

Fatigue Management

Manson has set the following limiting work hours and controlling job rotation schedules, also known as staff/work balance, to help control worker fatigue.

Manson will set work hour limitations and will control job rotation schedules to control fatigue, allow for sufficient sleep and increase mental fitness in an effort to control employee turnover and absenteeism.

Every Employee shall have necessary work breaks in order to avoid fatigue. These scheduled breaks will apply to both driving and on site hours. Refer to collective bargaining agreements for other requirements or restrictions.

The following shall be a minimum:

- 15 Minutes each 2.5 hours
- 30 Minutes after 5 Hours
- 30 Minutes after 10 Hours

No Workers shall work more than:

- 12 hours per day unless govern by a collective bargaining agreement
- 24 Days Continuous

SMOKING POLICY

Manson requires a Smoke-Free Workplace. No worker will smoke any tobacco product within any Manson facility, building, on or in any vessel, equipment, or motor vehicle, unless designated as an approved Smoking allowed area.

In Smoke-Free workplaces, smoking is prohibited in buildings, structures, and vehicles on the project property, where others could be exposed to second hand smoke. Chew or other types of chewing tobacco will not be discarded on the floor or other working surface but disposed of in proper containers.



GENERAL SAFE WORK PRACTICES

Clean and safe working conditions are absolutely essential for achieving an Incident and Injury-Free Environment, as well as for the promotion of construction efficiency and progress. Each worker is valued not only for what they do, but for who they are. Everyone must maintain a strong personal desire to think and act safely, in an effort to create an Incident and Injury-Free Environment.

The following general safe work rules are a partial list of the general rules that apply to each worker on this project. There will be no tolerance for any worker who carelessly or callously disregards these rules or the other applicable health and safety rules.

1. It is the responsibility of each worker to perform their assigned duties so as to provide:
 - a. Safety for themselves
 - b. Safety for their fellow worker
 - c. Protection of the general public and all other workers
 - d. Protection of equipment, materials and tools
2. It is the responsibility of each worker to report all unsafe acts and conditions to their supervisor.
3. No worker will attempt to work under conditions that appear to be unsafe.
4. Each worker will report work-related injuries or illnesses immediately to their supervisor, including near-misses.
5. Workers will wear the minimum personal protective equipment (hardhat, safety glasses, reflective vest, shirt, trousers, work boots, and personal floatation device if applicable).
6. No worker will use damaged tools or equipment. Damaged tools or equipment must be removed from service and repaired before further use. Tools that are damaged beyond repair shall be removed from the work site.
7. Tools and equipment will not be operated without proper guards and safety devices in place.
8. No worker will attempt to operate equipment or machinery or any specialty tool (e.g. powder-actuated tools) unless authorized and properly trained.
9. No work will be performed on any equipment, machinery, or system without it being locked out and tagged.
10. It is every worker's responsibility to maintain his or her work area in a clean and orderly manner.
11. No radio, iPod, MP3 or cell phone is allowed in any work area unless authorized.
12. No cell phone or texting is allowed when operating or driving any Manson equipment or vehicle. Cell phone use during breaks is allowed.
13. No personal photography is allowed unless approved by management.
14. If a worker is unsure as to the safe performance of their work, they will request instruction from their supervisor.
15. No worker will enter a confined space without authorization and training.
16. No worker will cut, weld, grind, chip, or perform other tasks where the danger of flying debris exists without wearing proper eye and face protection.
17. Workers will use proper lifting techniques when required to lift material or other loads.
18. Workers will wear appropriate respiratory protection where respiratory hazards are present and engineering controls cannot eliminate the hazard or reduce the hazard to an acceptable level.
19. No worker will ride in the bed of pickup trucks.
20. No worker will be under the influence of drugs/alcohol or engage in any horseplay, fighting or gambling of any form.
21. No worker will cross, disregard, or enter a red barricaded, taped, or flagged area unless given approval.
22. No worker will intentionally discharge or remove fire-fighting equipment unless used for fire fighting.
23. No worker will remove barricades or floor covers without authorization.
24. No person shall be within six (6') feet of any body of water without a personal floatation device (PFD) on unless protected by standard guardrail.
25. No worker will work six (6') feet or greater above any surface without proper fall protection.

5. SUBCONTRACTOR AND PROFESSIONAL SERVICE PROVIDERS

Refer to Manson EHS System Procedure 45 – Subcontractor Management

Manson expects every subcontractor and professional service provider working on this project to comply with the requirements contained in this Incident and Injury Prevention Program and the specific requirements contained in this section. Manson project management is responsible to ensure vendors, and others not under a subcontract or service agreement, has been informed of the minimum safety requirements for the work or service that they will perform.

Subcontractor means one that has agreed to perform any portion of a contract Manson has contracted to perform. The subcontract relationship should be memorialized in a written document issued by Manson and signed by both parties.

Professional Service Provider means one that has agreed to perform intellectual services, design, monitoring, testing, inspection, analysis or other professional services in furtherance of a contract Manson has contracted to perform or in furtherance of Manson's' other business operations. The contractual relationship should be memorialized in a written document issued by Manson and signed by both parties.

SAFETY PERFORMANCE

Manson expects each subcontractor or professional service provider to execute their work on this project with a visible, proactive, and extraordinary commitment to safety at all levels. Each subcontractor must plan their work with a focus on protecting their workers from incidents and injuries.

Manson will continually monitor and assess each subcontractor for compliance to this Incident and Injury Prevention Plan (IIPP) and appropriate regulations. Manson will further evaluate subcontractors on safety leadership, ability to become a safety partner and adopt the incident and injury-free philosophy.

Immediate corrective action will be taken to eliminate discrepancies, hazards, at-risk behavior, or nonconformance to the IIPP observed.

DESIGNATED SAFETY REPRESENTATIVE

Each subcontractor or professional service provider with less than a total work force of twenty (20) workers on-site will designate a competent worker as their safety representative for their company prior to mobilization. Safety representatives are not necessarily expected to perform in this role as a full time job. The safety representative will take direction from the Manson project EHS/SSHO as required.

Subcontractors will have a full time project safety professional when there is a total work force of twenty (20) workers or more. Additional safety professionals will be required for each additional fifty (50) workers. (Worker count will include sub-tier subcontractors)

Subcontractors will submit the resume of their proposed full-time safety professional to Manson for review and acceptance. This person(s) shall have the authority and responsibility to ensure the proper implementation of this Incident and Injury Prevention Plan (IIPP).

Subcontractor safety professionals and representatives will be expected to have adequate knowledge of the OSHA construction and general industry standards. Subcontractor safety professionals at a minimum must have completed the OSHA Outreach 30 Hour Construction course. Manson will determine if the proposed safety representative has the training and experience required for this project.

Subcontractor safety professionals and representatives will have the full authority to implement safety corrections and recommendations. Subcontractor safety professionals and representatives will have authority to stop any work of that subcontractor that they deem unsafe.

Subcontractor project safety professionals shall have the following minimum qualifications based upon the extent of their construction safety supervisory experience and capabilities:

- Five years construction experience, three of which include full-time project construction safety experience
- Specialized safety training relevant to the project
- Demonstrated ability in creating a safe and Incident and Injury-Free Environment
- Working knowledge of safety regulations and hazard control methods
- Demonstrated ability to conduct safety training
- Working knowledge of any project specific hazardous work rules

The minimum duties of designated safety professional and/or representative will be:

- Investigate any incident or near miss and report the findings to Manson
- Attend safety meetings as required by Manson
- Conduct regular safety meetings with workers to instruct them on project safety practices and requirements
- Conduct written daily safety reviews of their work activities to ensure compliance with safe work practices, this Incident and Injury Prevention Program, and safety rules and regulations and make available to Manson for review

SAFETY ORIENTATION

In addition to any Manson project orientation, each subcontractor will conduct an additional safety orientation for their employees to ensure they understand the project safety requirements as well as their company's requirements.

ALCOHOL AND SUBSTANCE ABUSE

Each subcontractor or professional service provider will be committed to a drug free workplace and have a substance abuse program similar to Manson.

The subcontractor or professional service provider substance abuse program will be similar to or more stringent than the Manson substance abuse program contained in this Incident and Injury Prevention Plan. As a minimum, the substance abuse program will include the following topics:

- Pre-employment drug testing (alcohol if required by the client).
- Reasonable cause drug and alcohol testing.
- Post-Incident drug and alcohol testing.
- Random testing.

Any subcontractor or professional service employee ruled by a Medical Review Officer as positive will be removed immediately from the Manson project.

MONTHLY INCIDENT SUMMARY REPORT

Subcontractor or professional service provider shall provide Manson an Incident Summary Report with their **monthly pay application**. This report will be submitted even if the subcontractor has no incidents to report Information.

The report should include as a minimum the following:

- Monthly total man-hours worked
- First Aid cases
- OSHA Medical Treatment cases
- OSHA Lost Workday cases
- Restricted work cases
- Days Away from work

SAFETY SUBMITTALS

Prior to beginning work, each subcontractor or professional service provider shall submit to Manson as determined by work to be performed the following:

- Name(s) of designated safety representative(s)
- Name(s) and training verification of designated competent persons as required by the scope of work for trenching, scaffolding, rigging, shipboard, etc.
- Name(s) and training verification of trained and qualified equipment operators as required by the scope of work for cranes, forklifts, aerial lifts, etc.
- Letter from subcontractor or professional service provider stating compliance with Manson Alcohol and Substance Abuse Program.
- Name(s) and training verification of employees trained in First Aid and CPR
- Current annual crane inspections, by a third party crane inspection firm for any crane brought onto the project to perform work.
- Project-specific hazard communication program
- Master Chemical and Substance Inventory Sheet and make available a copy of the Safety Data Sheets to Manson representatives for all hazardous chemicals and materials to be used or stored on the project
- Training verification of OSHA or project required training as necessary. Verification can be training rosters or certificate of completion.

Examples of OSHA or project-required training are: Also refer to matrix contained in Training section of this IIPP.

- Fall Protection
- Confined Space
- Ladders
- Excavations and Trenches
- Scaffolding
- Crane Signals
- Hazard Communications

On-Going Submittals

Each subcontractor will be required to submit various on-going safety documents to Manson as required by the scope of work. These submittals may include the following:

- Monthly incident summary report (Due monthly with pay application)
- Incident Investigation Report (Within 24-hours of any incident or near miss)
- Weekly "Tool Box" safety meeting minutes

Maintain While Working on the Project

Throughout the course of the project, each subcontractor will maintain the following records or documents on-site and make available for inspection by Manson:

- Job Safety Analysis (Daily)
- Subcontractor Daily Work Site Safety Inspection (Daily)
- Daily Scaffold, Trench, Crane, Rigging, and Forklift Inspections (Daily as required by the work)

Permits or Safety Plans as Required

Subcontractors will submit to Manson work permits or plans for review and approval by Manson prior to start of work as required. Work permits or plans that are required are:

- Confined Space Entry
- Hot Work
- Excavation and Trenching
- Critical Lifts
- Fall Protection Plan
- Lockout/Tagout
- Equipment Start-up
- Other work plans as deemed necessary

Submitted Annually

Each subcontractor(s) will submit their OSHA 300 and OSHA 300A logs for the previous calendar year to Manson by January 31st of each year.



SUBCONTRACTOR MONTHLY INCIDENT SUMMARY FORM

Manson Job Number: _____ (COMPLETED BY MANSON PROJECT STAFF)

Subcontractor Name: _____

Project Name: _____

Reporting Period: Month: _____ Year: _____

This form must be submitted to Manson Project Manager or HSE Representative with monthly pay application. It is to be submitted even if no accidents occurred.

DIRECTIONS: Report OSHA recordable medical cases. Report number of OSHA recordable medical cases that had lost work days, and number of calendar days away from work (Do not count first day of injury, but the weekends must be counted). Carry-over Days are for a previously reported lost time case where the worker is still off work in this reporting period. Report the number of OSHA recordable medical cases that had restricted or light duty work and the total number of calendar days on restricted or light duty (Do not count the first day of injury, but the weekend must be counted). Carry-over Days are for a previously reported restricted or light duty case where the worker is still on restricted or light duty. Report number of first aid only cases for period as well.

	Man-hours Worked	First Aid Injuries	Medical Treatment Only	Lost Time Injuries	Days Lost	Restricted Work Injuries	Days of Restricted Work
Month							
YTD							

Attach copy of employer First Report of Injury or OSHA 301 Report for each recordable injury case reported.

Person Making Report: _____ Phone Number: _____

6. TRAINING

Safety and Emergency Response Training is a requirement and mandatory for all Manson, subcontractor (at any tier) and professional service provider workers assigned to this project to promote and ensure an Incident and Injury-Free Environment exists.

HEALTH AND SAFETY ORIENTATION

Every worker shall attend a health and safety orientation conducted by Manson, which will provide general health and safety information and project-specific work rules and procedures.

Even though Manson conducts a general informational project safety orientation, subcontractors are responsible to develop and conduct their own project-specific health and safety orientation.

Each subcontractor, at a minimum, will conduct a health and safety orientation that will include the project General Safe Work Rules and Procedures contained in this Incident and Injury Prevention Program (IIPP). The project-specific orientation will communicate each worker's responsibility to be compliant with the project safety rules and regulations, accountability, and the disciplinary program.

A new employee's attitude is greatly influenced by initial impressions, peer pressure and personal contact. Consequently, in order to create safe attitudes, it must be impressed on new employees, that safety is of primary importance and a condition of employment.

Solely relying on a video tape or DVD is to be discouraged.

Project Management or a senior project person will address each new employee to communicate what their responsibilities and expectations are for working safely. It is highly discouraged to have the EHS/SSHO professional or an administrative person conduct the health and safety orientation without input from the project manager or senior project person.

At a minimum, the following items should be discussed during the health and safety orientation:

- a. Report all injuries promptly to the Foreman / EHS representative.
- b. Report all hazards to the foreman.
- c. Short service mentorship program
- d. Personal protective equipment requirements in accordance with Manson policy.
- e. Six Safety Essentials indoctrination:
- f. Fire prevention, fire watch training, use of fire extinguishers, and emergency evacuation procedure.
- g. Ladders and scaffolds.
- h. Work areas and walkways in clean, neat order.
- i. Tools use and care.
- j. Lock-Out / Tag-Out procedures. This may include hold tag clearance procedures.
- k. Confined Space Entry procedures.
- l. Suitability of people, equipment and materials for intended use.
- m. Parking lot procedures.
- n. Effective intervention techniques
- o. Working according to instructions.
- p. Emergency evacuation and assembly plan. To include notification alarms or processes for each identified emergency.
- q. Review of basic Hazard Communication information such as location of SDS's and master chemical inventory sheet.
- r. Review all points on the Safety Orientation Checklist form and have employee sign.
- s. Specific training regarding hazardous chemicals or substances is required by OSHA for all employees who may be exposed. As a minimum for a new employee, this training must include awareness of hazardous chemicals, protective measures, and details of company's written hazard communication program.

Project Manager and the EHS/SSHO shall determine what job specific health and safety training is required. The project manager and EHS/SSHO can receive assistance from the Manson EHS regional manager or corporate EHS department.

If it is determined that specific health and safety training is required, the employee will receive all necessary instruction from qualified first-line supervision, competent persons, EHS/SSHO professional, or third part instructor.

Upon completion of any instruction, employee is required to sign the Manson Training/Meeting Attendance Roster. The training roster shall be retained in the project files.

Anytime that it is recognized an employee may be exposed to a specific hazard or hazardous chemical/substance, they will receive instruction on the hazard and the proper controls required to protect against the hazard prior to start of work on the job or task.

SAFETY MEETINGS

All workers assigned to this project will participate in safety meetings conducted by Manson or the subcontractor with whom they may be employed with. Manson reserves the right to remove subcontractor management/supervision that continually fails to attend or conduct weekly safety meetings on the project.

Safety meetings should communicate any incident that occurred on the project, safety concerns, new hazards that may appear on the project, etc. The safety meeting should be five to ten minutes in length.

HEALTH AND SAFETY TRAINING

In addition to the project-specific health and safety orientation, OSHA requires that workers receive specific task training. To help comply with OSHA minimum worker training requirements and assist in achieving an Incident/Injury-Free workplace, a training matrix has been included in this Incident and Injury Prevention Program.

Manson will evaluate orientations and training periodically to verify they are being properly conducted and that the contents adequately cover the standards, policies, rules, and procedures contained in the Incident and Injury Prevention Program or OSHA standards.

Project management or supervision will communicate the health and safety policies, rules, and procedures to all vendors and third party individuals having business on this project.

All safety training is to be documented. A safety-training roster has been included for documenting safety training on this project.

When workers whose native language is not English; training will be conducted in that individual's native language whenever possible.

Manson will routinely conduct emergency contingency drills to ensure all workers are familiar with the procedures and required actions. Emergency contingency drills may include but not all encompassing man-overboard, onboard fire, abandon ship, fire drill, and evacuation drill.

Safety training can consist of:

- In house instructor led training. Example – Rigging and Signalman course
- On-line or web base training. Example – Manson Online University or ClickSafety
- Third Party training. Example – Shipyard Competent Person

The following matrix attempts to identify minimum training required by regulatory or company procedures or policy.

MINIMUM TRAINING REQUIREMENTS

TOPIC	WHO NEEDS TRAINING	WHAT TRAINING IS NEEDED
Project-Specific Safety Orientation	All project management, supervision, and workers entering the project	<ul style="list-style-type: none"> Safety rules and procedures contained in the Incident and Injury Prevention Program (IIPP), project-specific emergency action plan, each worker's responsibilities, and disciplinary program
Hazard Communication	All workers entering the project	<ul style="list-style-type: none"> Hazard Communication Basic Training and Specific Hazard Communication Training (Refer to Hazard Communication Program in this IIPP)
Hearing Protection	Any worker exposed to loud noise	<ul style="list-style-type: none"> Dangers of loud noise Proper PPE
Environmental Management Program	All workers on the project	<ul style="list-style-type: none"> The content of the project Environmental Management Plan
Project Emergency Action Plan	All workers on the project	<ul style="list-style-type: none"> Contents of the Project Emergency Action Plan Emergency Evacuation Plan Primary and alternate assembly points Alarms
Fall Protection	Workers exposed to fall hazards of 6' or greater.	<ul style="list-style-type: none"> The nature of fall hazards Procedures for erecting, disassembling, maintaining and inspecting fall protection systems Use and operation of: guardrail systems, personal fall arrest systems, safety net systems, warning line systems, safety monitoring systems, controlled access zones and other protection when used Procedures for handling equipment and erection of overhead protection Fall protection standards
Project Offshore Plan	Any worker that must travel to or from offshore worksites	<ul style="list-style-type: none"> Emergency procedures PPE Vessel boarding procedures
Man Overboard, Onboard Fire, and Abandon Ship	All workers that will work from a boat, dredge, or barge	<ul style="list-style-type: none"> Vessel emergency procedures Alarm Drill to be conducted as a minimum quarterly or more frequent as required by client
Portable Fire Extinguishers	Workers assigned as fire watch, welders, or engaged in welding, cutting, or grinding	<ul style="list-style-type: none"> Familiarization of portable fire extinguisher Use of the portable fire extinguisher Hazards involved in incipient stage fire fighting Retrain annually
Forklifts	Operators of powered industrial trucks	<ul style="list-style-type: none"> Types of trucks operated Hazards of the workplace Hands-on performance evaluation
Basic Electrical Safety	All workers on the project	<ul style="list-style-type: none"> Electrical hazards that could be encountered ARC flash dangers
Confined Spaces	Workers entering or working within a confined space	<ul style="list-style-type: none"> Hazards of the space Duties of entrants and supervisors Measures used to eliminate or control hazards Air monitoring requirements Emergency procedures/rescue equipment Communications PPE
Power and Hand Tools	Workers required to use any power or hand tool	<ul style="list-style-type: none"> Hazards using power or hand tools Safe work practices
Lockout/Tagout Procedures	Workers affected by hazardous energy sources	<ul style="list-style-type: none"> Nature of known hazardous energy sources Project-specific Lockout/Tagout procedures
Gas Welding & Cutting	Workers conducting gas welding and/or cutting	<ul style="list-style-type: none"> The safe use of fuel gas
Respiratory Protection	Workers required to wear respiratory protection, including common dust masks	<ul style="list-style-type: none"> OSHA 1910.134 & 139 or 1926.103. Includes any other government regulation or standard
Hot Work	Workers conducting hot work activities	<ul style="list-style-type: none"> Hazards of the area Permits Duties of Fire Watch How to use a fire extinguisher
Scaffolding	Workers working from scaffolding	<ul style="list-style-type: none"> The nature of any known hazards Proper erection, maintenance and disassembly of fall protection systems Falling object protection Material/equipment handling from scaffold Maximum load-carrying capacity Scaffold tagging system
Ladders	Workers working from any ladder	<ul style="list-style-type: none"> Safe work rules Maximum load carrying capacities of the ladders to be used Fall protection plan Proper placement and care of ladders
Hot and Cold Work Environment	Workers that work in extreme hot or cold work environments	<ul style="list-style-type: none"> Hazards associated with extreme heat or cold Symptoms of hot or cold related injuries or illnesses First Aid PPE

7. HEALTH AND SAFETY INSPECTIONS AND ASSESSMENTS

DAILY WORK SITE SAFETY INSPECTION

Superintendents (Manson and subcontractors) shall perform daily work site inspections of their work and the work of subcontractor's under their direction to identify and control hazards and unsafe conditions.

These inspections are separate from any inspection performed by the EHS Department.

Inspections shall be documented on the Daily Work Site Safety Inspection Form or an acceptable equivalent. The Daily Work Site Safety Inspection form can be found on the Manson Safety Intranet site under forms.

The daily safety inspection reports shall be maintained in a binder or file available for review.

External Inspections/ Certifications: Insert any external inspections/certifications that may be required (e.g. USGC).

CORPORATE AND REGIONAL EHS ASSESSMENTS

Manson corporate EHS Department shall periodically assess projects to ensure they are compliant with company and regulatory health and safety rules, regulations, procedures, and policies.

Safety assessments should be conducted within an 8-hour workday.

The auditor(s) will conduct a brief opening meeting with the Project Manager/Superintendent to answer any questions they may have.

All assessment results will be documented and objective evidence (photographs, videotape, etc.) obtained, if required, to clarify a nonconformance.

The EHS Auditor(s) will document all safety nonconformance and concerns on a Notice of Safety Nonconformance Form.

The EHS Auditor(s) will conduct a closing meeting with the Project Manager/Superintendent. At this meeting, the EHS Auditor(s) will discuss with the Project Manager/Superintendent any nonconformance discovered.

The EHS Auditor(s) may make suggestions or recommendations to the Project Manager/Superintendent during this meeting on how to correct specific safety nonconformance or concerns.

The EHS Auditor(s) will advise the Project Manager/Superintendent that a formal assessment and nonconformance report will be sent to them within one week of the assessment date.

Safety Assessment Report

The Safety Auditor(s) will summarize all assessment findings in a Safety Assessment Report.

Objective evidence, documentation, recommendations, and other exhibits will be located in a separate exhibit section attached to the back of the Safety Assessment Report.

Nonconformance or Concerns, as described in the Safety Assessment Report, will be documented on a Notice of Safety Nonconformance Form.

The Project Manager/Superintendent will submit a Safety Corrective Action Report for each major nonconformance detailing the corrective action taken or planned.

When nonconformance issues have been corrected and verified, the EHS Director will close the assessment file. The EHS Director will maintain assessment files for a minimum of 3 years.

Follow-up Safety Assessments

The Director of Safety may schedule follow-up safety assessments to verify corrective actions implemented were effective in eliminating the nonconformance.

If nonconformance issues remain, the Regional Vice President will be notified and additional follow-up safety assessments could be conducted until all nonconformance issues have been corrected.

EXAMPLE FORM



NOTICE OF ENVIRONMENTAL, HEALTH, or SAFETY NONCONFORMANCE

Assessment Number: _____ Nonconformance Number: _____
Project Name: _____ Project Number: _____
Date of Nonconformance: _____ Time of Nonconformance: _____
First-line Supervisor or Subcontractor Name: _____

Description of work:

[Empty box for description of work]

During an inspection of work operations, the following environmental, health, or safety nonconformance were observed:

[Empty box for observed nonconformance]

Reference: (Corporate policy or procedure, Regulatory standard or law)

[Empty box for reference]

MAJOR WRITTEN CORRECTIVE ACTION REPORT (CAR) IS REQUIRED
SERIOUS INJURY, DEATH, PROPERTY/EQUIPMENT DAMAGE, OR ENVIRONMENTAL ASPECT LIKELY
MINOR CORRECTIVE ACTION REPORT IS NOT REQUIRED
SERIOUS INJURY, DEATH, PROPERTY/EQUIPMENT DAMAGE, OR ENVIRONMENTAL ASPECT UNLIKELY
Opportunity For Improvement TO BE CORRECTED BY: _____
ISOLATED LAPSE OF A RULE OR PROCEDURE OR AN OPPORTUNITY FOR IMPROVEMENT
WORK IS SUSPENDED Date: _____ Time: _____

Assessors comments:

[Empty box for assessors comments]

Assessor(s): _____ Date: _____

EXAMPLE FORM



CORRECTIVE / PREVENTIVE ACTION REPORT

Assessment Number: _____ Nonconformance Number: _____
Project Name: _____ Project Number: _____
Date of Nonconformance: _____ Type of Nonconformance: _____

DESCRIPTION OF NONCONFORMANCE that this Corrective/Preventive Action Report is responding to:

[Empty box for description of nonconformance]

Corrective Action Team consisted of: _____

ROOT CAUSE - At the conclusion of our investigation into the nonconformance, it was determined the root cause(s) were:

[Empty box for root cause]

CORRECTIVE or PREVENTIVE ACTIONS TAKEN (Use additional paper if needed)

1 Describe Immediate Action(s) Taken Action taken immediately to correct the nonconformance.

[Empty box for immediate actions]

2 Describe Intermediate Action(s) Taken Action taken until a permanent fix has been implemented.

[Empty box for intermediate actions]

3 Describe Permanent Action(s) Taken Action taken to eliminate future or similar nonconformance.

[Empty box for permanent actions]

APPROVALS:

Project Manager: _____ Date: _____

Area Manager: _____ Date: _____

Assessor(s): _____ Date: _____

Equipment Group: _____ Date: _____

Nonconformance is:

Closed - Corrective/Preventive Action acceptable
Still Open - Corrective/Preventive Action unacceptable

Equipment Group:

Still Open - Work Order has been issued on
Closed - Work has been completed on

If nonconformance involves a piece of Manson equipment

8. INCIDENT AND NEAR-MISS REPORTING

Refer to Manson EHS System Procedure 43, Incident Notification and Investigation

An **incident** is defined as any unplanned or undesired event that results in or has the potential to result in a work-related injury/illness including simple first aids, property damage, or disruption of business where the cause was from human errors of omission or commission.

A **near miss** is any situation that has the potential to result in a work-related injury/illness, property damage, serious environmental impact, or disruption of business under slightly different circumstances.

Every incident and near miss will be reported immediately in accordance with Manson EHS System Procedure 43, Reporting and Investigation of Incidents.

All incidents will be documented using the Incident Report or Near-Miss Form shown on the following pages. Online forms can be obtained from the Safety Page on the Manson Intranet.

Manson project management will notify the Manson Corporate EHS Department of any incident or near miss and will thoroughly investigate to determine the probable root cause(s). Preventive action will be required to eliminate future occurrences.

Manson project management is responsible to notify the client of incidents and near-miss occurrences and provide them results of investigations.

Manson and/or subcontractor first-line supervision will be involved in the investigation of incidents and near misses. Safety representatives **will not** conduct investigations alone. The Incident Notification form must be completed and submitted to the Manson Corporate EHS Department within **TWENTY-FOUR** hours of the occurrence.

Injured workers should be accompanied to the medical facility by a supervisor or management representative.

To ensure continual improvement of the Manson health and safety program all incident and near-miss incident investigations will require development and implementation of corrective actions to eliminate or lessen exposure of future similar situations.

The following individuals will be notified immediately in the event of a fatal injury, a permanent total disability, a permanent partial disability, a hospitalization of three or more people resulting from a single occurrence, or property damage of \$200,000 or more. **Any of the people listed below may initiate the incident notification procedure and provide injury case management if needed.**

Name:	Phone Number:
Ryan King	510-730-9326
Loretta Murrell	510-773-6257
Eric McMann	510-774-8396
Gordon Crocker	925-998-0407

HEALTH AND SAFETY ASSURANCE ASSESSMENT MEETING

Major nonconformance(s), serious incidents, near misses, and all injuries requiring medical treatment will result in all involved parties participating in a Health and Safety Assurance Assessment meeting. At this meeting, the Manson Business unit Vice President and regional safety manager will discuss the nonconformance, injury, root causes, and corrective action plan with the project management, supervision, and involved subcontractor(s). The President of Manson Construction and EHS Director may also participate in this meeting.

Nonconformance of statutory health and safety regulations or the project rules contained in this Incident and Injury Prevention Program will not be tolerated. It is expected all nonconformance issues identified are abated immediately.

EXAMPLE FORM INCIDENT REPORT



1 This is a _____ Investigation Report

This form will be used to document all incidents in accordance with Safety Procedure 43

2 PROJECT INFORMATION

Business Unit: _____ Project Name: _____ INCIDENT NUMBER: _____
Project number - Sequential #

Project Number: _____ Project Location: _____ Employee Type _____

Job Phone: _____ Subcontractor Name _____ Address: _____

Vessel Involved: _____ Other Vessel or Equipment not listed: _____

Incident Type: _____ Injury Severity _____ Incident Severity _____

Client: _____ Was client notified of incident? _____ How were they notified? _____

3 EMPLOYEE INVOLVED

Use the Incident Investigation Continuation Form if more than one employee is involved

Employee Name _____ Address _____ Employee Number _____

City _____ State/Province: _____ Zip/Postal Code _____ Phone Number _____

SSN Last Four _____ Sex _____ Date of Birth _____ Marital Status _____ Dependents _____

Primary Language _____ Date of Hire _____ Shift _____ Hours Per Shift _____ Days Per Week _____

Craft/Position _____ Title _____

4 INCIDENT INFORMATION AND INVESTIGATION FINDINGS

Date of Incident _____ Date Incident Reported _____ Time of Incident _____

Type of Incident Select one _____ Lighting: _____ Weather: _____ Temperature: _____

Exact Location Where Incident Occurred: _____

What specific job/task was being performed when incident occurred? _____

Was a tool/equipment involved? _____ What: _____ Any Defects: _____

Briefly describe the Incident - Use the Incident Investigation Continuation Form if additional space is required

Causes of Incident? _____ Root Causes? _____

Causes of Incident? _____ Root Causes? _____

5 INJURY/ILLNESS INFORMATION

Nature of Injury _____ Part of Body Injured _____ Side _____

Direct cause of injury: _____ Refer to Section 6.6.3 in Safety Procedure 43 "Reporting and Investigating Incidents"

Name of Physician/Hospital/Clinic _____ Address _____

City _____ State/Province: _____ Zip/Postal Code _____ Phone Number _____

Physicians Diagnosis _____ Prescriptions Given _____

Restrictions Given _____ Estimated Days of Restriction/Off Work _____

6 SUPERVISOR AND WITNESS INFORMATION

Foreman _____ Contact Number _____ Witness: _____ Contact Number _____

Superintendent _____ Contact Number _____ Witness: _____ Contact Number _____

7 CORRECTIVE ACTION AND IMPLEMENTATION PLAN

Action Item	Responsible Person	Completion Date

8 When checked, a more detail investigation is being conducted and will follow when complete

Report Submitted By: _____ Date: _____

Distribution Instructions: Complete this form and send by e-mail to the Regional HSE Manager, Corporate HSE Director Larry Moore, Project Manager over the project, Business Unit VP and Worker Compensation Jan Lindsey.

EXAMPLE FORM

NEAR-MISS REPORT



Near-Miss: Any situation, when given slightly different circumstances, could result in a work related injury, death, or significant damage/loss of property.

Business Unit: Project Name: Project Number:
 Project Location: Job Phone:
 Vessel Involved: Other Vessel or Equipment not listed:
 Near-Miss Type: Incident Severity:
 Was client notified of incident? Client: How were they notified?

Date of Near-Miss: Near-Miss Location: Actual location where near-miss occurred

 Time of Near-Miss:

Near-Miss Description: Describe fully the near-miss including substances, equipment, and machinery being used which was related to the near-miss.
Use additional paper if more space is required.

Analysis of Possible Failures: Refer to Safety System Procedure Section 6.6.7 for more detail

Condition Failures		System Failures	
Unsafe Behavior / Acts	Description	Personal Factors	Description
Unsafe Conditions	Description	Job Factors	Description

Unusual Hazards Identified: Personal Protective Equipment (PPE) Used: (if applicable)

Severity: Check the level of severity which you feel could have occurred if such an incident evolved using the Incident Potential Matrix to the right. (Example - High = Fatality, lost time injury; Medium = Restricted work case or a moderate loss or damage; Low = Minor or no injury)

HIGH MEDIUM LOW

Probability: Check the level of probability which you feel that a person or property may be exposed to in a similar situation and that required hazards or system failures may be present or likely. (Example - High = tasks occur frequently and by numerous individuals; Medium = tasks occur on a regular basis by certain individuals; Low = tasks occur infrequently by few individuals)

HIGH MEDIUM LOW

		Injury/Illness	Environmental	Damage	Number of People Involved				
					0	1	1-2	3-10	11+
CONSEQUENCE	1 Minor First Aid	Minor/reversible environmental impact	Minor Accidents/business impact	A1	B1	C1	D1	E1	
	2 Medical Treatment Only Case	Minor pollution with short term impact	Moderate Accidents/business impact 1-1000	A2	B2	C2	D2	E2	
	3 Restricted case	Violation of standard or regulation	Moderate Accidents/business impact 1 1000 - 10000	A3	B3	C3	D3	E3	
	4 Lost time	Moderate pollution with short term localized impact	Significant Accidents/business impact 1 10000 - 100000	A4	B4	C4	D4	E4	
	5 Fatality	Major pollution with long term environmental change	Major Accidents/business impact > 100000	A5	B5	C5	D5	E5	
					A	B	C	D	E

Corrective Actions: What should be done or has been done to prevent recurrence of this near-miss? e.g. employee training, change in work procedures, use of different equipment, etc.

Miscellaneous Information: What other information or recommendations which you feel are pertinent to this near-miss

When checked, a more detail investigation is required: Usually any near-miss with a severity rating of High or Medium requires a full investigation.
 Report Submitted By: Date:

Near-Miss report submitted to the Area and Regional Manager, Safety Manager, and Corporate Safety Director within twenty-four (24) hours of near-miss

9. PROJECT SPECIFIC EMERGENCY ACTION PLAN

EMERGENCY ACTION PLAN

Each project or vessel shall identify likely potential emergency scenarios and develop written Emergency Action and Evacuation Plans. During orientation each Manson, subcontractor, and professional service employee will be advised of the:

- Project specific Emergency Action and Evacuation Plan
- Project requirements and procedures
- Coordination with local emergency response personnel

This Emergency Evacuation Plan is to be posted throughout the jobsite and communicated to workers during the Safety Orientation and weekly safety meetings.

At a minimum, the project specific Emergency Action and Evacuation Plan should contain detailed procedures for the following emergencies:

<ul style="list-style-type: none"> • Medical Emergency 	<ul style="list-style-type: none"> • Map/drawing detailing assembly points
<ul style="list-style-type: none"> • Fire 	<ul style="list-style-type: none"> • Man Overboard
<ul style="list-style-type: none"> • Severe Weather 	<ul style="list-style-type: none"> • Abandon Ship
<ul style="list-style-type: none"> • Bomb Threat 	<ul style="list-style-type: none"> • On board fire
<ul style="list-style-type: none"> • Chemical spill 	<ul style="list-style-type: none"> •
<ul style="list-style-type: none"> • Evacuation of the work area and assembly points. Include "Stand In Place" evacuation plan 	

Project Information	
PROJECT NAME	BP Richmond Terminal Maintenance Sweeping
ADDRESS	1306 Canal Boulevard
CITY	Richmond, CA

MEDICAL EMERGENCY

Refer to Manson EHS System Procedure 15 – Injury Illness Management System

Call medical emergency phone number (check applicable):

- (x) Paramedics
- (x) Ambulance
- (x) Fire Department
- () Other-

9-1-1

Provide the following information:

- Nature of medical emergency,
- Location of the emergency (address, building, room number), and
- Your name and phone number from which you are calling.

Do not move victim unless absolutely necessary.

If personnel trained in First Aid are not available, as a minimum, attempt to provide the following assistance:

- Stop the bleeding with firm pressure on the wounds (note: avoid contact with blood or other bodily fluids).
- Clear the air passages.

In case of rendering assistance to personnel exposed to hazardous materials, consult the Safety Data Sheet (SDS) and wear the appropriate personal protective equipment. Attempt first aid ONLY if trained and qualified.

The following personnel are certified in Emergency First Aid:

Name	Title	Phone
Bryce Whitcomb	Deck Hand	NA
Eric McMann Jr.	Deck Engineer	NA
Jarred Redding	Deck Hand	NA
Bob Leverich	Crew Boat Operator	Na

All occupational injuries or occupational illnesses are to be treated immediately by a person qualified to perform the treatment. All employees are to be informed of this requirement during their initial safety orientation and periodically during safety meetings.

Medical Care Facilities		
Facility	Address	Phone
Hospital or Acute Care Facility:	Saint Francis Memorial Hospital <i>Hospital: General Acute Care Occupational Medicine Clinic</i> 900 Hyde St San Francisco, CA 94109	415-353-6000
Occupational Medical Clinic:	Concentra Medical Center <i>Occupational Medicine Clinic</i> 2 Connecticut St San Francisco, CA 94107	415-621-5055
<u>On Site Health & Safety</u>	On-Site	<u>510-245-2700</u>

No employee should be allowed to transport themselves to a medical facility for immediate treatment. A representative of management familiar with this system procedure and Manson's return to work policy should always accompany.

Employees are required to report all work related injuries/illnesses no matter how slight to their supervisor or the EHS/SSHO representative

Employee's going to a medical clinic after hours without the knowledge of Manson for treatment of an alleged work related injury/illness will be responsible for all charges until authorized by the Project Manager or EHS/SSHO representative.

Manson Worker Compensation carrier is Zurich North America. Policy number is WC6738633-01

Manson Worker Compensation Claims Manager is Jan Lindsey. jlindsey@mansonconstruction.com; 206-764-8666

Directions to Concentra Medical Center

A Westar Marine Services
Terry A Francois Blvd

1. Head north on Terry A Francois Blvd toward Pier 48
About 58 secs

➤ 2. Turn right onto 3rd St/Lefty O'Doul Bridge
Continue to follow 3rd St
Parts of this road may be closed at certain times or days
About 4 mins

3. Continue onto Kearny St
About 1 min

↶ 4. Turn left onto Pine St
About 2 mins

↶ 5. Turn left onto Hyde St

B 900 Hyde St, San Francisco, CA 94109



Doctors Medical Center San Pablo

A Westar Marine Services
Terry A Francois Blvd

1. Head south on Terry A Francois Blvd toward Pier 50
About 1 min

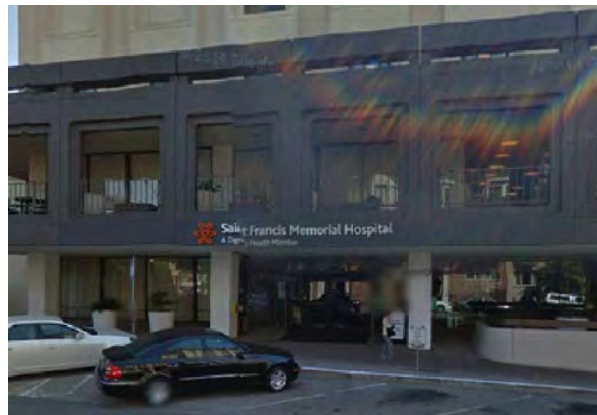
➤ 2. Turn right onto South St
About 47 secs

↶ 3. Turn left onto 3rd St

➤ 4. Turn right onto 16th St
About 1 min

↶ 5. Turn left onto Connecticut St
Destination will be on the right

B 2 Connecticut St, San Francisco, CA 94107



FIRE

In case of a fire, workers will evacuate their work area immediately and report to the pre-determined assembly area.

Workers will not attempt to put a fire out unless they have received special instruction on use of portable fire extinguishers. After reporting the fire, workers will evacuate the work area and report to the pre-determined assembly area that was stated during the safety orientation.

When fire is discovered:

- Activate the nearest fire alarm (if installed)
- Notify the local Fire Department by calling.
- If the fire alarm is not available, notify the site personnel about the fire emergency by the following means (check applicable):
 - () Voice Communication
 - () Phone Paging
 - () Radio
 - () Other (specify) _____

Fight the fire **ONLY** if:

- The Fire Department has been notified.
- The fire is small and is not spreading to other areas.
- Escaping the area is possible by backing up to the nearest exit.
- The fire extinguisher is in working condition and personnel are trained to use it.

Upon being notified about the fire emergency, occupants must:

- Leave the building using the designated escape routes.
- Assemble in the designated area (specify location):
On Deck
- Remain outside until the competent authority (Designated Official or designee) announces that it is safe to reenter.

Designated Official, Emergency Coordinator or supervisors must (underline one):

- Disconnect utilities and equipment unless doing so jeopardizes his/her safety.
- Coordinate an orderly evacuation of personnel.
- Perform an accurate head count of personnel reported to the designated area.
- Determine a rescue method to locate missing personnel.
- Provide the Fire Department personnel with the necessary information about the facility.
- Perform assessment and coordinate weather forecast office emergency closing procedures

Area/Floor Monitors must:

- Ensure that all employees have evacuated the area/floor.
- Report any problems to the Emergency Coordinator at the assembly area.

Assistants to Physically Challenged should:

- Assist all physically challenged employees in emergency evacuation.

SEVERE WEATHER OR NATURAL EVENTS

Project management will evaluate weather conditions, such as severe thunderstorms, flash flooding, cold/ ice conditions that could develop around or near this project and develop contingency plans. Workers will follow the direction of their immediate supervisor. Workers may be directed to a safe area where they will remain until weather conditions improve.

Some common weather or natural event occurrences are:

Tornado:

When a warning is issued by sirens or other means, seek inside shelter. Consider the following:

- Small interior rooms on the lowest floor and without windows,
- Hallways on the lowest floor away from doors and windows, and
- Rooms constructed with reinforced concrete, brick, or block with no windows.

Stay away from outside walls and windows.

Remain sheltered until the tornado threat is announced to be over.

Hurricane Plan

A natural disaster is something that cannot be avoided. However, plans can be made that will assist in reducing the amount of damage and loss of life. In the project area, the biggest threat of a natural disaster is a hurricane or tornado.

A hurricane is a large storm with circular winds that exceed seventy-five (75) miles an hour. Winds around the eye wall of the hurricane can exceed two hundred (200) miles an hour. In addition to the dangerously high wind conditions, areas of low elevation are subject to extreme flooding and therefore demand considerable attention. Local authorities release information concerning the status of a hurricane based on the following Levels of Alert.

Levels of Alert

- **Hurricane Season** – June 1 through November 30 annually. Be aware that this is the time of year when hurricanes are most likely to occur.
- **Hurricane Alert** – Hurricane has been detected in the Atlantic or Caribbean. Necessary preparations should be evaluated.
- **Hurricane Watch** - Hurricane conditions are possible within thirty-six (36) hours. Prepare to take immediate action to safely prepare property.
- **Hurricane Warning** – Hurricane conditions are expected within twenty-four (24) hours. Complete all hurricane preparations and, if necessary, evacuate.

To safely protect lives and property in the event of a severe hurricane is Manson's objective; therefore it is necessary to plan in advance what preparations are required and how they will be carried out. The following is a hurricane preparation plan for this project. This plan shall be implemented and will serve as a required guideline for Manson supervisory and subcontractor personnel to follow in order to safely and effectively prepare and manage the project before and after a hurricane.

During hurricane season the Manson Project Management will be responsible for communicating and implementing the plan of action for hurricane preparation, and project inspection post hurricane. To begin with, the Project Manager and safety manager will monitor the area weather reports and tracking potentially hazardous storm systems, paying special attention to all advisories that local authorities prepare.

If the area officials determine that an approaching hurricane system poses a threat, then Manson Project Management will initiate all feasible efforts to best protect the project from hazardous conditions related to the storm. If a hurricane is scheduled to impact at night, on a weekend and/or holiday Manson Project Management will develop a plan to accommodate these non-working hours. This plan will include activities to be carried out according to number of hours remaining before a hurricane impacts. Included will also be a list of essential emergency and personnel phone numbers.

The following is a detailed description of what will be accomplished should a hurricane situation arise.

- **Hurricane Alert:**

Advisories indicate that a storm system has formed and may be a threat to the region, therefore preliminary preparations should begin.

Create awareness on project that a potentially threatening hurricane exists and may impact this region, which will require project preparations by personnel.

Evaluate job progress: which stages of construction will be completed before hurricane impact, as well as evaluate what stages may need to be postponed until after the hurricane passes. Defer deliveries of unessential materials until threat of hurricane passes.

Put all subcontractors on notice with pre-planned guidelines for project preparations should the hurricane continue to pose a threat.

Conduct a preliminary clearing of all trash and debris from project to avoid unnecessary accumulation of trash at impact time.

Determine the special needs of personnel. In the event that the authorities issue a hurricane watch, some personnel may not be available due to personal considerations. It will be necessary to know what personnel and subcontractors will be available to assist with the final preparations before an evacuation.

Procure necessary materials for project preparations, i.e., bracing material, plywood, banding equipment, visqueen.

- **Hurricane Watch:**

Authorities may issue a hurricane watch, indicating that hurricane conditions are possible in the specified area within 36 hours.

Begin securing and/or removing unnecessary equipment from the project as per manufacturers recommendations, i.e., trailers, storage containers, signs, dumpster, etc. Make arrangements for remaining equipment to be removed should advisories release a hurricane warning.

Protect or remove materials, and tools susceptible to water damage.

All materials not currently being used should be bundled, strapped securely and relocated above the flood plain or moved off project to a more suitable location.

- **Hurricane Warning:**

Authorities may release a hurricane warning, indicating that hurricane conditions are expected in the specified area within 24 hours. It is essential that all storm preparations be completed at this point.

Move critical supplies and materials above flood plain.

Remove all on project documents, i.e., plans, permits, inspection logs, daily logs.

Disconnect power sources, gas lines, etc.

Manson Project Management will be making inspection of the project and any buildings will be conducted before re-entry will be allowed.

Manson Project Management will analyze the status of the community to identify any situations, which may require postponing returning to the project after a hurricane. Returning to the project after a hurricane should not be attempted without first having communicated with Manson Project Management or the Manson safety manager.

When returning to the project, the following are important considerations to address.

Coordinating restoration plans for area.

- If phones are out, supply battery operated 2-way communication devices to necessary personnel.
- If power is out, temporary power may be supplied by an on-site generator, separate and disconnected from main power grid.
- Establish communication with personnel and necessary parties to initiate activity on project.

Earthquake Plan

It is not possible to prevent or predict earthquakes. Manson employees can greatly increase their safety and survival, by being aware and prepared.

The actual movement of the ground in an earthquake is seldom the direct cause of injury or death. Most injuries occur from falling objects and debris or collapsing structures.

Injuries are commonly caused by:

- Building collapse
- Flying glass
- Overturned bookcases, file cabinets, fixtures, office furniture, office machines and appliances
- Fires, broken gas lines, etc.
- Fallen power lines
- Inappropriate action resulting in panic

Earthquake Safety Guidelines

The following guidelines should be followed in case of an earthquake:

- Remain Calm – Sound usually precedes earthquake motion by a split second. By staying calm, you will be better able to assess your situation. Think through the consequences of any action you plan on taking.
- If you are indoors – Stay there and if you are in danger:
 - Get under a sturdy desk or table
 - Brace yourself in an inside corner away from windows

- Move to a door frame or an inner wall or corridor. The door frame or interior core of a building are its strongest points and least likely to collapse.
- Watch for falling objects (plaster, bricks, light fixtures, etc.)
- Stay away from windows, sliding glass doors, and mirrors
- Use a jacket or shield your face and head from falling debris and splinting glass
- Do not Rush Outside – The greatest danger of falling debris is just outside doors and outer walls.
 - If outdoors, stay there – Move away from buildings, walls, power poles, and lamp posts.
 - Stay away from fallen electrical lines
- If you are in a moving vehicle – Stop as quickly as safety permits
 - Stay in your vehicle
 - Don't stop near buildings

After an Earthquake

Within the first several minutes after an earthquake:

- Remain calm and don't panic
- Do not use cigarette lighters, cigarettes, or turn on electrical switches
- Protect your hands and feet from broken glass and debris
- Check for injuries or persons trapped
- If possible turn off appliances and office equipment
- Extinguish small open flames

During the next several hours after an earthquake:

- Continue to not operate electrical switches, appliances, or open-flame equipment
- Further tend to injured or trapped persons
- Be prepared for aftershocks – these are weaker than the main shock but can cause additional damage
- Be aware of fires, flood, landslides or near water Tsunami's
- Use the telephone only to report extreme emergency situations.
- Inspect your area for structural damage
- Do not leave your immediate area unless instructed by your supervisor or until government authorities say it is safe.
- Do not go around sightseeing. It is important to keep streets clear for emergency vehicles.

TELEPHONE BOMB THREAT

- When receiving a bomb threat, the person receiving the call should immediately complete the following checklist.
- **Exact time of call:** _____
- **Exact words of caller:** _____
- _____
- _____
- _____
- _____
- **Questions to Ask:**
- 1. When is the bomb going to explode? _____
- 2. Where is the bomb? _____
- 3. What does it look like? _____
- 4. What kind of bomb is it? _____
- 5. What will cause it to explode? _____
- 6. Did you place the bomb? _____
- 7. Why? _____
- 8. Where are you calling from? _____
- 9. What is your address? _____
- 10. What is your name? _____
- **If possible, have a second person monitor the call; ask the caller to repeat the original message to permit possible correlation to the first copy to aid in possible identification of the caller.
- **CALLERS VOICE**
- Male Female
- Calm Disguised Nasal Angry Broken Stutter
- Slow Sincere Lisp Rapid Giggling Deep
- Crying Squeaky Excited Stressed Accent Loud
- Slurred Normal
- Were there any background noises? _____

SPILL RESPONSE PLAN –

Spill Containment Equipment locations: Peter M, Einer (Located on deck inside the double pack drums)

Personal Protective Equipment locations Galley on the Einer

When a Large Chemical Spill has occurred:

- Immediately notify the designated official and Emergency Coordinator.
- Contain the spill with available equipment (e.g., pads, booms, absorbent powder, etc.).
- Secure the area and alert other site personnel.
- Do not attempt to clean the spill unless trained to do so.
- Attend to injured personnel and call the medical emergency number, if required.
- Call a local spill cleanup company or the Fire Department (if arrangement has been made) to perform a large chemical (e.g., mercury) spill cleanup.
- Evacuate building as necessary and report to the assembly point as shown on the Emergency Evacuation Plan.

When a Small Chemical Spill has occurred:

- Notify the Emergency Coordinator and/or supervisor (select one).
- If toxic fumes are present, secure the area (with Red Danger tape or cones) to prevent other personnel from entering.
- Deal with the spill in accordance with the instructions described in the SDS.
- Small spills must be handled in a safe manner, while wearing the proper PPE.
- Review the general spill cleanup procedures.

CHEMICAL SPILL AND ONBOARD FIRE NOTIFICATION PLAN

When any chemical spill or onboard fire occurs, the following shall be followed:

- Maintain open line of communication to site of emergency.
- Designate onsite responsible person.
- You will need to provide the following:
 - Vessel name
 - Location
 - Number of and Names of crew members
 - Injuries
 - Amount of oil / fuel on board

If you suspect you need outside assistance, notify Manson Construction Management and appropriate organizations:

RICHMOND OFFICE:

- Area Manager, Ryan King: 510-232-6319
- Operations Manager, Eric McMann: 510-774-8396
- Safety Manager, Loretta Murrell: 510-773-6257

MAJOR OIL SPILLS CONTACT:

- **O'BRIEN'S RESPONSE MANAGEMENT-** (Oil spill, Salvage, Fire) **985-781-0804**
O'Brien's will make the following notifications if necessary:
 - NATIONAL SPILL RESPONSE CENTER - (Oil Spill) - Designate yourself as the Incident Commander 1-800-424-8802
 - MSRC: Marine Spill Response Corp.- (Oil Spill) 1-800-645-7745
 - MRA: Marine Response Alliance - (Salvage & Fire) 1-206-332-8200
 - **USCG SECTOR SEATTLE** - (Oil Spill, Salvage, Fire) **1-800-688-6664**

MINOR OIL SPILLS CONTACT:

- **GLOBAL DIVING & SALVAGE** **206-623-0621**

MAN OVERBOARD

Should a worker fall overboard and into the water the following steps should be followed. Note: Each vessel will have its specific man overboard procedure that each worker must know:

- Sound the alarm “**Man Overboard**” and give the vessel Captain or operator the location of the victim
- Maintain visual sight of the victim at all times as currents may be strong
- Throw the victim in the water a life ring or your life jacket if necessary to give him added buoyancy even if he or she has a floatation device on.
- Never jump into the water after a victim.
- Lower a rescue skiff or summon the rescue skiff to pick the victim out of the water as soon as possible. The water temperature may be too cold for the person to be in the water for a long time. The victim may have also swallowed water or need medical treatment.

ONBOARD FIRE

In case of a fire on board any vessel, the following procedure should be followed:

- Once a fire has been discovered, contact supervision immediately
- For small fires:
 - F**ind – The Fire
 - I**nspect/isolate – Determine if fire can be isolated and extinguished
 - R**eport – Raise the Alarm with crew and supervision
 - E**xtinguish – Use the appropriate fire extinguisher
- Use the proper fire extinguisher:
 - Type A – Wood and Paper (Not to be used with oil, diesel, or electrical fires)
 - Type B – Foam for use on oil and diesel fires (Not for use on electrical fires)
 - Type C – Electrical equipment
 - Type ABC – All types of fire
- Fire Hose – Fire hoses on board vessels are not to be used for firefighting.
- Fires in cabins or compartments:
 - Inform supervision immediately
 - Inform crew to stand back
 - Remove any flammable material if possible to the outer deck
 - Attempt to extinguish fire with portable fire extinguisher
- Fire in engine room
 - Inform supervision immediately
 - Do not open spaces from a position that could expose you to a rush of flames and heat
 - Shut down engines, turn off fuel, and close vents
 - Attempt to extinguish fire without entering engine compartment
 - If severe, initiate abandon ship procedures



ABANDON SHIP

In the event that a derrick, dredge, or vessel must be abandoned, the following procedure shall be followed:

- Crew is informed to prepare to abandon ship
 - Make "Mayday" call on SSB/Satellite Phone/VHF Radio to Coast Guard or Manson project shore office.
 - Crew gathers at "muster point" warmly dressed with PFD's on or wearing their immersion suit.
 - Account for all crew onboard
 - Ready life raft(s) for launching or have skiffs come along side. Have medical kits, blankets, food, and Emergency Position Indicator Radio Beacon (EPIRB).
 - Review with crew how the evacuation will be carried out
 - Review cold shock symptoms and how to counteract them.
- If the situation deteriorates, call for Abandon Ship
- Deploy life rafts over the side and have crew abandon ship. Keep the life raft attached to the vessel so long as it is safe to do so.
- If the derrick, dredge, or vessel will sink or capsize, move the life rafts or skiffs away.



EMERGENCY EVACUATION PLAN

THIS PLAN SHALL BE REVIEWED BY ALL MANSON WORKERS AND POSTED WITH A PROJECT PLAN IN PROMINENT LOCATIONS ACCESSIBLE TO ALL WORKERS. THIS PLAN IS A SUPPLEMENT TO THIS INCIDENT and INJURY PREVENTION PROGRAM.

PROJECT NAME: Pacific Gas & Electric – Embarcadero to Potrero (AZ-1)

WORK LOCATION: Westar Marine Services: 50 Pier # C, San Francisco, CA

1. This is an Emergency Evacuation Plan communicating evacuation procedures, specific alarms, and assembly points, should an emergency evacuation become necessary because of severe weather, fire, hazardous chemical release, explosion or other emergencies that could cause worker harm.
2. It is each worker's responsibility to familiarize themselves with evacuation routes, alarms and assembly points in case an emergency evacuation of the work area is required.
3. **Caution:** Evacuation routes, alarms or assembly points for one emergency may differ from another emergency. Therefore, familiarize yourself with each of the emergency plans below.

4. IN CASE OF FIRE OR MEDICAL EMERGENCY:

Emergency Phone Number(s): **9-1-1**
Alarm or Notification: **On board Alarm and VHF notification**
Evacuation Route: **Crew or Tug Boat**
Primary Assembly Point: **On Deck**
Secondary Assembly Point: **Parking Lot**

5. IN CASE OF SEVERE WEATHER OR HOMELAND SECURITY EMERGENCY:

Alarm or Notification: **On board Alarm and VHF notification**
Evacuation Route: **Crew or Tug Boat**
Assembly Point: **In Galley**

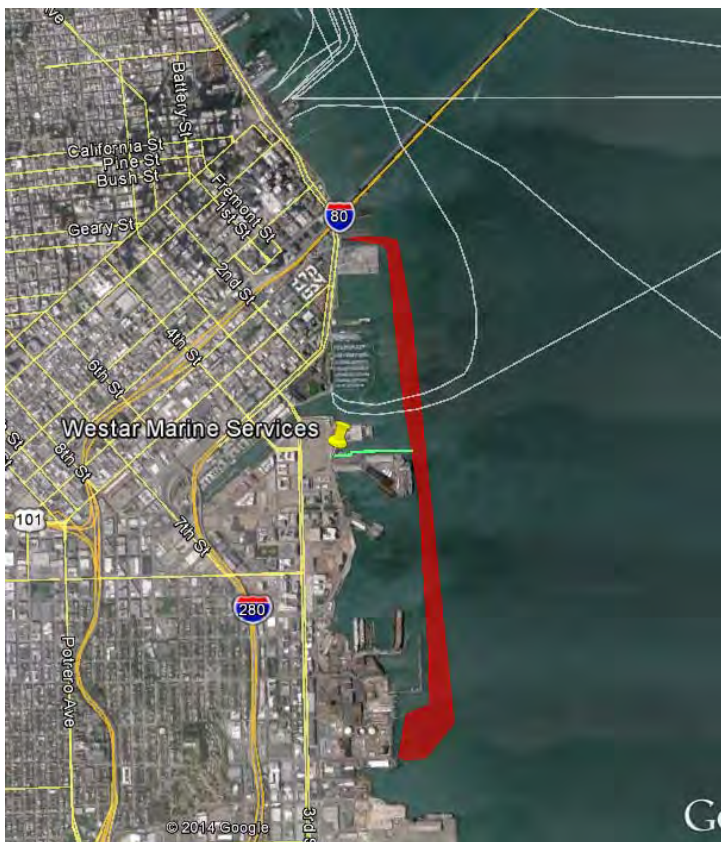
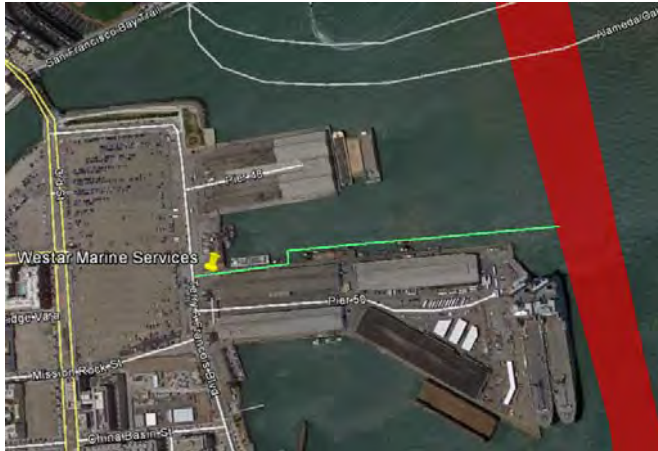
6. IN CASE OF A CHEMICAL RELEASE OR EXPLOSION:

Alarm or Notification: **On board Alarm and VHF notification**
Evacuation Route: **Crew or Tug Boat-Direction to be determined**
Primary Assembly Point: **Check wind patterns and point of release (ensure upwind)**
Secondary Assembly Point: **Same as above**
Spill Kit Location: **Upper deck Einer, Peter M and scows**

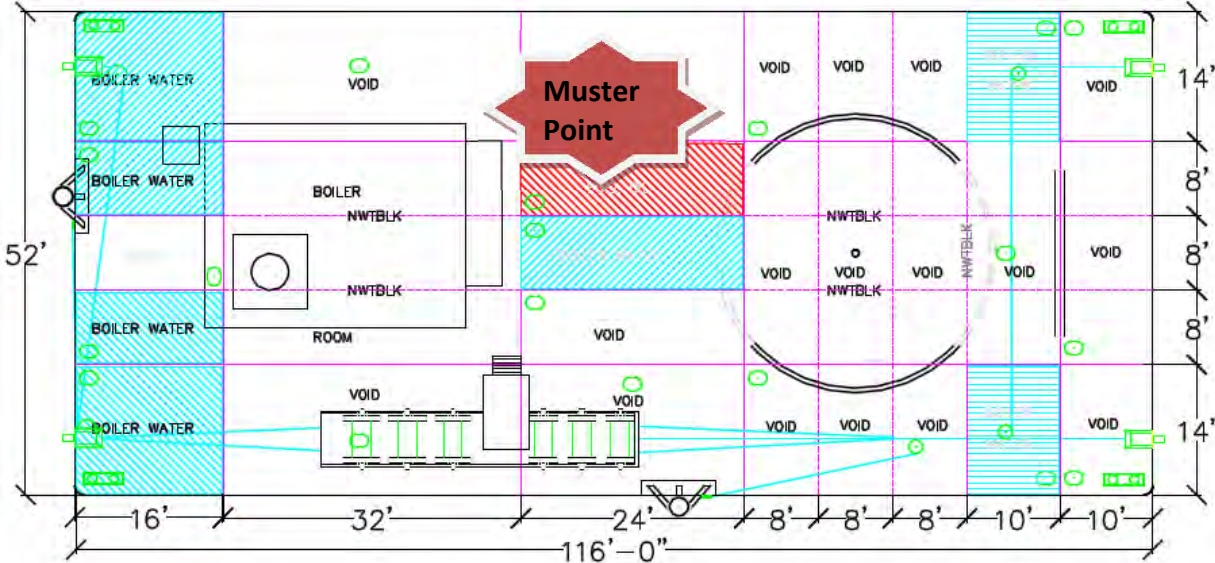
7. Workers will immediately evacuate their work area upon hearing the alarm or being notified of the emergency and ordered to evacuate. No worker is exempt from evacuation even if the evacuation is a drill.
8. Workers are required to report immediately to their designated assembly point and be accounted for. Failure to report may cause another to risk danger in an effort to search for you. **DO NOT** leave the project without prior authorization from first-line supervision.

EMERGENCY EVACUATION PLAN CONT.

Evacuation Route from the BP Richmond Terminal:



Einer's Muster Point



10. PROJECT-SPECIFIC SAFE WORK REQUIREMENTS

The project-specific safe work requirements are the minimum requirements for this project. The purpose of these requirements is to ensure an Incident and Injury-free (IIF) work environment and compliance of regulatory standards and regulations.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Refer to the Manson EHS Safety Policy – Personal Protective Equipment

All Manson, subcontractors, vendors, and third party individuals will, at a minimum, wear the following personal protective equipment without exception while on this project (except in office and lunch areas). **No individual owned personal protective equipment is allowed.**

FAILURE TO WEAR THE PROPER PERSONAL PROTECTIVE EQUIPMENT WILL NOT BE TOLERATED

Head Protection

Hard hats will be worn at all times unless indoors and outside an active work area; in addition the following rules apply:

- **HARDHATS WILL BE WORN WITH THE BILL FACING FORWARD:** The hardhat may be turned around to accommodate welder hoods but will be turned forward when not actively engaged in welding.
- Hard hats will have the Manson logo on the front and the employee name below.
- **Hardhats that have a manufacturer date of five years or greater will not be used on this project. Suspensions will not be older than two years.**
- Only authorized stickers or decals (qualified rigger, signalperson, etc.) will be authorized. All other decals or stickers must require approval from management.
- Ball caps, stocking caps, or other headgear not specifically designed to wear with a hardhat will not be authorized at any time. Personal hardhats including the “cowboy” style are not authorized.
- Meets ANSI Z 89.1 requirements

Eye and Face Protection

Safety glasses with side-shields that meet ANSI Z 87 criteria are to be worn at all times including inside enclosed equipment cabs.

Workers with prescription glasses must meet ANSI Z 87 requirements or will be required to wear over the glasses (OTG) safety eyewear.

Dark shaded lenses will not be worn indoors or where the ambient lighting is poor.

Safety glasses shall be fit tested to the individual to ensure adequate protection.

In addition, the following eye/face protective equipment must be used when performing the following work activities:

Activity	Safety Equipment
Welding	Welding Hood*
Burning	Burning Goggles
Abrasive grinding or cutting	Face Shield*
Drilling	Goggles/Face Shield*
Reaming	Goggles/Face Shield*
Chemical Handling	Goggles/Face Shield*
Molten Materials	Goggles/Face Shield*
Corrosive Liquids	Goggles/Face Shield*
Concrete Pouring	Safety Glasses/Face Shield*
* Safety glasses will be used in conjunction with face shields and welding hoods.	

Foot Protection

Minimum footwear for employees on all construction work sites, yards, and vessels will be durable work boots in good condition that covers the ankle. The sole must not be excessively worn.

On some projects safety toe or steel toe boots may be required. Other job functions may require a non-skid sole due to slippery conditions.

Tennis shoes, sandals, low-cut shoes, hiking boots or other street shoes are not permitted on a construction project.

Reflective Vest

Every worker, visitor, and vendor will wear an ANSI Class II, Level II high-visibility reflective vest when working and/or conducting business outdoors. Electricians and welders will be issued flame resistant style that meets NFPA 70E/ASTM F1506.

Work Attire

Manson employees are expected to wear the following minimum work attire whenever on a project.

- Full-length pants or overalls with no loose, torn, or dragging material. Shorts or cut-off pants are prohibited.
- Shirts with at least a four inch sleeve. Tank tops and sleeveless shirts are prohibited.
- Long sleeve shirts will be worn when pouring concrete or where other specific hazards exist.
- Certain projects may require the use of specific protective clothing such as: Flame retardant jacket/pants; Coveralls or disposable clothing for hazardous substances (lead, silica, asbestos)
- Hair lengths below the bottom of a normal shirt collar must be contained under a hard hat or other suitable head covering when working in close proximity of moving machinery.
- Jewelry such as rings, long earrings, necklaces or long chains, wallet chains, or watch chains should not be worn in any maintenance or operational areas where moving machinery is present.

Respiratory Protection

Refer to Manson EHS System Procedure 33 – Respiratory Protection

First-line supervision will determine if inhalation hazards exist requiring the use of respiratory protection prior to start of work. Written documentation supporting this hazard assessment will be made available to Manson upon request.

Whenever respiratory protection is deemed required or requested by a worker on this project, the requirements outlined in OSHA 1926.103 will be followed, which include:

- Have affected workers complete a Medical Questionnaire for Respirator Use.
- Submit questionnaires to a Physician or Licensed Health Care Professional (PLHCP) for review.
- Once medical approval to wear a respirator is received from the PLHCP:
 - Select the appropriate type of respirator to protect workers from the hazard(s)
 - For air purifying respirators, choose the appropriate filter/cartridge
 - For supplied air respirators, ensure breathing air source provides “Grade D” breathing air
 - Train affected workers about the specific type(s) of respirator(s) being used
 - Fit-test the workers with the specific type(s) of respirator being used

If a worker desires to voluntarily wear a filtering face piece (dust mask) and a respirator is not required, the first-line supervisor must inform the worker about the limitations of the selected respirator. Voluntary Use of a Disposable Respirator form should be used. **NOTE: disposable dust masks are prohibited for protection of silica exposure**

Hand Protection

Manson employees will have on their person as a minimum a pair of gloves.

When an employee is required to grab or hold something in a work area, gloves will be worn.

Appropriate gloves will be worn at all times when employees' hands are subject to sharp objects, abrasive surfaces, temperature extremes, hazardous chemicals, and electrical hazards.

Hearing Protection

Refer to Manson EHS System Procedure 20 – Hearing Conservation Program

Hearing protection (i.e. ear plugs or muffs) will be worn in all required areas and around high noise levels 85 dB or higher such as equipment, tools, and machinery. If you have to raise your voice to be heard, you need to wear hearing protection.

Refer to the project Hearing Conservation Plan to determine what hearing protection is required.

Duration per day, hours	Sound Level dBA Slow Response
8	85
6	92
4	95
3	97
2	100
1 ½	102
1	105
½	110
¼ or less	115

Impulsive Or Impact Noise	
Equipment or tools	Sound Level Created
Pneumatic chip hammer	103-113
Jack hammer	102-111
Concrete joint cutter	99-102
Chop saw	88-102
Stud welder	101
Bulldozer	93-95
Crane	90-96
Hammer	87-95
Backhoe	84-93
Above hearing exposure based on an 8 hour exposure	

NOTE: Any tool or equipment, which produces noise levels that require you to shout to be heard, will be considered to have exceeded the Permissible Exposure Level for noise and hearing protection is required – no matter the duration of use.

Personal Floatation Device (PFD)

Manson employees will wear a US Coast Guard approved PFD's whenever there is a drowning hazard or on structures or equipment extending over or next to water not protected by passive fall protection. PFD's are to be fully zipped up and all straps connected.

The PFD shall be high visible reflective orange/reddish in color to maintain compliance with the USACE EM 385-1-1-05.J.03. The PFD will be worn when in skiffs, small boats, or launches unless in an enclosed cabin.

Additional Protections

During the course of work or activity, Manson may require workers to wear additional personal protective equipment to reduce the likelihood of a work related injury or illness.

Personally owned protective equipment

Because of additional liability, Manson cannot certify personally owned protective equipment.

All employees shall not use personally owned protective equipment such as but not limited to hard hats, fall protection harness and lanyard, respirator, etc.

HOUSEKEEPING AND ORDERLINESS

Refer to Manson EHS System Procedure 16 – Housekeeping and Orderliness

Manson policy on housekeeping is that all equipment, tools, materials, or apparatuses will be stored, stacked, located, placed, temporarily spotted, or set up for manipulation in such a manner as to render it highly improbable that an incident or injury could occur on deck or in the work area. The area will give the direct and obvious impression of a clean and orderly work place.

Project management, supervision, workers, vendors and third party persons will maintain all work locations in an orderly and clean manner at all times.

The following are the minimum housekeeping and orderliness requirements for this project:

- Access walkways, gangways, decks, passageways, aisles, and stairways will not be blocked with material, tools, ladders, scaffolds, welding leads, air hoses or electrical cords
- Electrical extension cords, light stringers, air hoses, and welding leads should be elevated above walkways seven (7) feet or neatly laid out on deck and covered or marked with a sign stating: “ **TRIP HAZARD**”
- Welding rod, nuts, bolts, and washers will be kept in proper containers
- Pipe, rebar, all thread and other round stock will be stored properly away from access walkways and work common areas.
- Shackles, slings, chokers, ladders, and safety equipment will be removed from the work area when not needed and properly stored
- Trash containers will be placed at appropriate locations
- All nails will be removed from scrap and form lumbers and swept up daily
- Rubbish, trash, and debris will be removed from the work area daily
- At all locations where drinking water is dispensed, an adequate trash container will be located for disposal of used drinking cups.

WORK AREAS AND GENERAL ACCESS

Site Security

Work areas shall be delineated appropriately as required. Here are some general guidelines regarding site security:

- Fencing is recommended to be used around the perimeter of the construction area to restrict access to unauthorized personnel and vehicles
- Gates or key entry points shall be setup as the major points of access
- Ecology blocks can be used to prevent vehicles from entering the work area
- All tools and equipment shall be put away and locked up prior to leaving after each shift to prevent theft
- Remember that the goal is to keep the public safe from our operations, and keep us safe from distractions and hazards from unauthorized personnel or equipment entry

Traffic Control

Most upland construction projects will require some sort of traffic control. This can include controlling traffic on an operational roadway, closing streets, redirecting vehicle traffic, redirecting foot and bike traffic, and planning the movement of equipment for on-site operations.

For any sort of traffic control, the project management team must coordinate with the crew members to identify the goal of the traffic control, identify the potential hazards, develop a plan for implementing the traffic control, and perform the traffic control safely. If any changes to the plan are necessary, then they must be re-evaluated and implemented safely.

If any traffic control will affect traffic on public roadways, any and all applicable permits must be procured before implementation of the traffic control.

HAZARD COMMUNICATION PROGRAM

Refer to Manson EHS System Procedure 18 – Hazard Communications

All workers on this project are entitled to know the properties and potential health and safety hazards of chemicals or substances that they may come in contact with on this project.

The Hazard Communication Plan will be posted in a location where workers can easily access and review the plan.

Each subcontractor will submit to Manson a Master Chemical and Substance Inventory List and have available for review a copy of the Safety Data Sheet (SDS) of all known hazardous chemicals that are in their work area. Prime subcontractors will be responsible for obtaining all sub-tier subcontractors Master Chemical and Substance Inventory Lists and SDS's.

The Master Chemical and Substance Inventory List will be maintained, even if they do not have or will not use any hazardous chemicals or substances. *This is an OSHA requirement.*

Subcontractors will maintain a project-specific SDS on location for each hazardous chemical or substance listed on their Master Chemical and Substance Inventory List. Prime subcontractors will be responsible to ensure all sub-tier subcontractors have their project-specific SDS sheets at the project.

It will be the responsibility of each worker's supervision or project manager to assure Safety Data Sheets are received prior to, or at the time of delivery of, a hazardous chemical.

Project management and first-line supervision will ensure all hazardous chemicals are properly labeled in accordance with the SDS. Containers that hazardous chemicals have been transferred into for use during a single work shift will be labeled as to contents.

Every worker on this project shall receive instruction from their employer on their Hazard Communication Program, the location of the Master Hazardous Chemical and Substance Inventory list, the location of the Safety Data Sheets, labeling requirements and specific safety or health instructions about the hazardous chemical or substance.

Recommended minimum Hazard Communication Training will consist of:

1. The contents of the program
2. Prior to use of or the potential exposure to any hazardous chemical or substance, workers are to be instructed in:
 - Physical and health hazards
 - Personal protective equipment
 - Procedures to protect against the hazards
 - Emergency procedures in case of exposure or accidental spill
 - Engineering and administrative controls
3. Labeling requirements in accordance with OSHA 29 CFR 1910.1200
4. Whenever a new chemical or substance is introduced into the workplace, workers will be briefed of its hazards

Owner/clients, vendors, other employers and subcontractors that may have business in or near a work area will be notified that hazardous chemicals are being used and the hazards they may encounter.

WORKING WITH LEAD

Refer to Manson EHS System Procedure 24 - Lead

When welding, cutting, burning, grinding, chipping, abrasive blasting or rivet busting on painted or coated surfaces, a pre-assessment will be required to determine if the surface(s) contain lead-based paint. If sampling results indicate lead-based paint, OSHA Standard 1926.62 will be followed.

An initial hazard assessment is required and will be performed to determine worker exposure levels. The assessment will involve personal sampling of a representative group of workers performing different tasks. During the initial exposure assessment, workers will wear protective clothing and the proper respiratory protection until the results of the assessment are known.

Copies of sampling results will be made available to the Manson EHS Department. Area sampling of a work area will not be used for determining worker exposure levels.

If sampling results indicate the exposure limits are above $30 \mu\text{g}/\text{m}^3$ but below $50 \mu\text{g}/\text{m}^3$, the following are required:

- Written compliance plan
- Medical surveillance (Blood Lead and ZPP)
- Personal monitoring
- Hazard communication training for lead

If sampling results are above $50 \mu\text{g}/\text{m}^3$, the following are required:

- Written compliance plan
- Engineering controls
- Respiratory protection
- Protective clothing
- Medical surveillance
- Clean change rooms and showers
- Clean lunchrooms
- Warning signs
- Training

Each worker is to be notified in writing of their blood and/or personal monitoring results within five working days after the results are known.

INCIDENTAL EXPOSURE TO PRESUMED ASBESTOS CONTAINING MATERIAL (PACM)

Refer to Manson EHS System Procedure 3 – Asbestos

If presumed asbestos-containing material (PACM) is found during performance of the work; the following steps will be followed with no exception:

- Workers observing PACM will immediately stop work
- Warn other workers nearby of the disturbed or damaged material
- Contact your immediate supervisor
- Barricade the immediate area around the disturbed or damaged material
- Do not enter the barricaded area until the area is deemed safe by the abatement subcontractor

Manson project management will investigate and develop an action plan that may include testing PACM and/or abating suspected material.

ONLY A LICENSED CONTRACTOR WILL REPAIR AND CLEANUP DISTURBED OR DAMAGED MATERIAL

WORKING IN HOT AND COLD ENVIRONMENTS

Refer to Manson EHS System Procedure 21 – Working in Hot and Cold Environments

Workers who may become exposed to extreme heat or cold work environments may be at risk of suffering a heat or cold associated injury or illness.

Manson Construction Co. understands the effects heat and cold have on a workers body. Work may occur when the work environment is too hot or too cold only when special steps have to be taken to protect our workers and subcontractors from the hazards associated with it being too hot or cold.

If a worker must work in extreme hot or cold environments, a specific job safety analysis (JSA) will be completed. The plan shall be reviewed by supervision and EHS prior to any work being performed to ensure all hazards and controls have been identified.

All levels of supervision and workers required to work in extreme heat or cold will be trained and familiar with the health effects and symptoms of heat and cold related injuries or illnesses. The training will also include the safe work practices, protective clothing, and first aid treatment.

This training shall be documented on the Manson Construction Training Roster and entered in the employee training database.

Hot Environments

General

When planning work in extreme hot work environments the hazard is that the body cannot rid itself of the excessive heat.

Common heat related illnesses are:

- Heat Stroke
- Heat Exhaustion
- Heat Syncope
- Heat Cramps
- Heat Rash

Work or Task Planning

Supervision when planning work in hot environments shall take into consideration the physical and personal factors. The following must be addressed when planning work in a hot environment:

- Type of work
- Type clothing to be worn
 - Color
 - Weight
 - Breathable
- Prior heat related illnesses
- Levels of physical activity
- Worker acclimatization
- Duration of the work
- Weight/fitness of worker

Training

Supervisors shall be trained prior to being assigned to supervise other workers on the contents of this system procedure and the steps first line supervisors will follow if a worker exhibits symptoms consistent with heat illness.

Supervisors shall be trained on how to track the weather at a job site location to include knowing the heat index.

Supervisors will be instructed on how the heat index information is to be used to modify work schedules, to increase number of water breaks, and rest breaks or cease work early if necessary.

All workers and supervision will be trained prior to working outside in hot environments.

All workers and supervision will be trained on the steps that will be followed for contacting emergency medical personnel including how they are to proceed when there are non-English speaking workers.

All workers and supervision will be trained on heat related illnesses, symptoms, and first aid treatment.

All training shall be documented.

Water

Workers will have access to drinking water at all times when they must work in hot environments.

A minimum of 10 gallons of cool drinking water will be available and shall be checked periodically to ensure the drinking water will not run out. Drinking water shall be replenished when the water container is approximately 50% used.

Water containers shall be placed near where the workers are working.

Water containers shall be kept in sanitary condition with adequate cups for workers to use.

Workers are to be reminded daily during morning JSA meetings and throughout the day by first line supervision of the importance to drink water frequently.

When the temperature will exceed 90° Fahrenheit mandatory schedules for drinking water will be established.

Shade

Shade structures shall be made available for workers to get out of the sun and rest when the temperature equals or exceeds 85° Fahrenheit. The number of shade structures required should be able to accommodate 25% of the total work force at any one time.

Workers are to be instructed daily of where the shade areas are and encouraged to take a five minute cool down rest in the shade.

Monitoring the Weather

Supervision shall be responsible for monitoring the workplace temperature and humidity. As the heat index rises, the chance of a heat related illness also increases.

When the heat index increases, supervision will increase number of breaks for workers. If the heat index reaches a critical level of 5 (Refer to Exhibit 6.2), work will be suspended.

Environmental Factors

Environmental factors within the workplace can contribute to heat related illnesses. The following factors are to be taken into consideration during planning of the work:

- High air temperature
- Higher relative humidity levels
- Low air movement
- Radiant heat from equipment or machinery (dryers, oven, furnace) or processes such as smelting or molten metals.
- Radiant heat from working outdoors in the sun.

Protective Clothing

Clothing inhibits the transfer of heat between the body and the surrounding environment. Therefore, in hot jobs where the air temperature is lower than skin temperature, wearing clothing reduces the body's ability to lose heat into the air.

When air temperature is higher than skin temperature, clothing helps to prevent the transfer of heat from the air to the body. The advantage of wearing clothing, however, may be nullified if the clothes interfere with the evaporation of sweat. Loose clothing increases evaporation of sweat.

In dry climates, adequate evaporation of sweat is seldom a problem. In a dry work environment with very high air temperatures, the wearing of clothing could be an advantage to the worker. The proper type of clothing depends on the specific circumstance. Certain work in hot environments may require insulated gloves, insulated suits, reflective clothing, or infrared reflecting face shields. For extremely hot conditions, thermally-conditioned clothing is available. One such garment carries a self-contained air conditioner in a backpack, while another is connected to a compressed air source which feeds cool air into the jacket or coveralls through a vortex tube. Another type of garment is a plastic jacket which has pockets that can be filled with dry ice or containers of ice.

Physical Factors

Supervisors will take into consideration the work task to be performed when working in high heat environments. Supervisors will evaluate the type of work to be performed, level of physical activity, and duration of the work. Review any special protective clothing that must be worn to complete the work task.

Acclimatization

Acclimatization is the temporary and gradual physiological change in the body that occurs when the environmentally induced heat load to which the body is accustomed is significantly and suddenly exceeded by sudden environmental changes. The body needs time to adapt when temperatures rise suddenly.

Inadequate acclimatization can become perilous when conditions of high heat and physical stress occur.

Acclimatization usually occurs over a two week period. Supervision should identify those workers that are not use to working in the hot environment and ensure they work at a slower pace and assigned to less physically demanding work.

Heat Related Illnesses:

Workers who are exposed to extreme heat or work in hot environments may be at risk of heat stress. Exposure to extreme heat can result in occupational illnesses and injuries. Heat stress can result in heat stroke, heat exhaustion, heat cramps, or heat rashes. Heat can also increase the risk of injuries in workers as it may result in sweaty palms, fogged-up safety glasses, and dizziness.

Common heat stress disorders:

Heat Stroke

Heat stroke is the most serious heat-related disorder. It occurs when the body becomes unable to control its temperature: the body's temperature rises rapidly, the sweating mechanism fails, and the body is unable to cool down. When heat stroke occurs, the body temperature can rise to 106 degrees Fahrenheit or higher within 10 to 15 minutes. Heat stroke can cause death or permanent disability if emergency treatment is not given.

Symptoms

Symptoms of heat stroke include:

- Hot, dry skin (no sweating)
- Throbbing headache
- Slurred speech
- Hallucinations
- High body temperature
- Chills
- Confusion/dizziness

First Aid

Take the following steps to treat a worker with heat stroke:

- Call 911 and notify their supervisor.
- Move the sick worker to a cool shaded area.
- Cool the worker using methods such as:
 - Soaking their clothes with water.
 - Spraying, sponging, or showering them with water.
 - Fanning their body.

Heat Exhaustion

Heat exhaustion is the body's response to an excessive loss of the water and salt, usually through excessive sweating. Workers most prone to heat exhaustion are those that are elderly, have high blood pressure, and those working in a hot environment.

Symptoms

Symptoms of heat exhaustion include:

- Heavy sweating
- Nausea
- Muscle cramps
- Extreme weakness or fatigue
- Clammy, moist skin
- Slightly elevated body temperature
- Dizziness, confusion
- Pale or flushed complexion
- Fast and shallow breathing

First Aid

Treat a worker suffering from heat exhaustion with the following:

- Have them rest in a cool, shaded or air-conditioned area.
- Have them drink plenty of water or other cool, nonalcoholic beverages.
- Have them take a cool shower, bath, or sponge bath.

Heat Syncope

Heat syncope is a fainting (syncope) episode or dizziness that usually occurs with prolonged standing or sudden rising from a sitting or lying position. Factors that may contribute to heat syncope include dehydration and lack of acclimatization.

Symptoms

Symptoms of heat syncope include:

- Light-headedness
- Dizziness
- Fainting

First Aid

Workers with heat syncope should:

- Sit or lie down in a cool place when they begin to feel symptoms.
- Slowly drink water, clear juice, or a sports beverage.

Heat Cramps

Heat cramps usually affect workers who sweat a lot during strenuous activity. This sweating depletes the body's salt and moisture levels. Low salt levels in muscles causes painful cramps. Heat cramps may also be a symptom of heat exhaustion.

Symptoms

Muscle pain or spasms usually in the abdomen, arms, or legs.

First Aid

Workers with heat cramps should:

- Stop all activity, and sit in a cool place.
- Drink clear juice or a sports beverage.
- Do not return to strenuous work for a few hours after the cramps subside because further exertion may lead to heat exhaustion or heat stroke.
- Seek medical attention if any of the following apply:
 - The worker has heart problems.
 - The worker is on a low-sodium diet.
 - The cramps do not subside within one hour.

Heat Rash

Heat rash is a skin irritation caused by excessive sweating during hot, humid weather.

Symptoms

Symptoms of heat rash include:

- Heat rash looks like a red cluster of pimples or small blisters.
- It is more likely to occur on the neck and upper chest, in the groin, under the breasts, and in elbow creases.

First Aid

Workers experiencing heat rash should:

- Try to work in a cooler, less humid environment when possible.
- Keep the affected area dry.
- Dusting powder may be used to increase comfort.

Prevention of heat stress in workers is important. Employers should provide training to workers so they understand what heat stress is, how it affects their health and safety, and how it can be prevented.

Recommended Exposure Limits

These Threshold Limit Values (TLVS) refer to heat stress conditions under which it is believed that nearly all workers may be repeatedly exposed without adverse health effects. The TLVs shown in Table I are based on the assumption that nearly all acclimatized, fully clothed workers with adequate water and salt intake should be able to function effectively under the given working conditions without exceeding a deep body temperature of 38 degrees Celsius (100.4 degrees Fahrenheit).

Since measurement of deep body temperature is impractical for monitoring the workers' heat load, the measurement of environmental factors is required which most nearly correlate with deep body temperature and other physiological responses to heat. At the present time, Wet Bulb Globe Temperature Index (WBGT) is the simplest and most suitable technique to measure the environmental factors. WBGT values are calculated by the following equations:

Outdoors with solar load: $WBGT = 0.7 NWB + 0.2 GT + 0.1 DB$

Indoors or Outdoors with no solar load: $WBGT = 0.7 NWB + 0.3 GT$

Where: WBGT = Wet Bulb Globe Temperature Index
NWB = Natural Wet Bulb Temperature
DB = Dry Bulb Temperature
GT = Globe Temperature

The determination of WBGT requires the use of a black globe thermometer, a natural (static) wet-bulb thermometer, and a dry bulb thermometer.

The heat index for the work location can also be obtained from www.weather.com

Cold Environments

General

Working in cold environments can be not only hazardous to your health but also life threatening. It is critical that the body be able to preserve core body temperature steady at 98.6° F.

This thermal balance must be maintained to preserve normal body functioning as well as provide energy for the work. The body's mechanisms for generating heat (metabolism) have to meet the challenge presented by low temperature, wind, and wetness.

Common cold related injuries are:

- Hypothermia
- Frostbite
- Frostnip
- Immersion Foot (Trench foot)
- Chilblains
-

In cold work environments, the body will decrease blood flow to the extremities and outer skin and shift it to the body core organs.

Workers shall not be allowed to work alone when working in cold environments. Either have a supervisor or assign another co-worker be present in case of an emergency.

Cold weather supplies should be readily available for use by workers. Cold weather supplies should include but not limited to snow shovels, chemical hand warmers, and additional jackets.

When working in cold environments, special attention must be given to the working surface to ensure buildup of snow and ice is removed to prevent injuries.

Work or Task Planning

Supervision when planning work in cold environments shall take into consideration the physical and personal factors. The following must be addressed when planning work in a cold environment:

- Type of work
- Fatigue
- Previous cold related injury
- Levels of physical activity
- Worker acclimatization
- Duration of the work
- Use of certain drugs or medication

Training

Supervisors shall be trained prior to being assigned to supervise other workers on the contents of this system procedure and the steps first line supervisors will follow if a worker exhibits symptoms consistent with cold injuries.

Supervisors shall be trained on how to track the weather at a job site location to include knowing the wind chill factor. Refer to Exhibit 6.1.

Supervisors will be instructed on how the temperature and wind chill information is to be used to modify work schedules, to increase number of warming breaks, and cease work early if necessary.

All workers and supervision will be trained prior to working outside in cold environments. Specific training on the dangers of working around unstable snow and ice will occur if the working conditions warrant it.

All workers and supervision will be trained on the steps that will be followed for contacting emergency medical personnel including how they are to proceed when there are non-English speaking workers.

All workers and supervision will be trained on cold related injuries, symptoms, and first aid treatment.

Workers shall receive initial training and then annually thereafter.

All training shall be documented.

Cold Related Injuries

Hypothermia

Hypothermia is the prolonged exposure to the cold and body heat loss. It is when the body loses more heat than it can produce. It may occur at temperatures above freezing, especially when a worker is wet.

Symptoms

Symptoms of hypothermia include:

- Shivering
- Lack of Coordination
- Slurred speech
- Drowsiness
- Abnormal slow breathing
- Cold pale skin
- Fatigue
- Confusion or memory loss

First Aid

Take the following steps to treat a worker with hypothermia:

- Contact emergency medical services
- Remove wet clothing and wrap worker in blankets or a sleeping bag.
- Don't apply direct heat such as hot water, heating pad, or heating lamps.
- Don't give anyone suffering hypothermia alcohol or caffeine beverages.
- Don't massage or rub a person.

Frostbite

Frostbite is when skin and underlying tissues may freeze due to exposure to very cold temperatures. Areas that are most likely to be affected by frostbite are the hands, feet, nose, and ears.

Symptoms

Symptoms of Frostbite include:

- Skin is white or grayish-yellow
- Skin is very cold to the touch
- Skin has a hard or waxy feel
- Skin may itch, burn, or feel numb
- Blistering
- Skin is red and painful

First Aid

Take the following steps to treat a worker with frostbite:

- Protect exposed skin from further exposure to the cold
- Get indoors and remove wet clothing
- Gradually warm frostbit areas with warm water. Caution not to use too hot of water
- Avoid using direct heat such as a stove, heat lamp, fireplace, or heating pad
- Avoid walking on frostbit feet or toes.
- Get medical treatment immediately

Frostnip

Frostnip is when ice crystal formation occurs in the tissue of the skin but no tissue destruction occurs and the ice crystals dissolve as soon as the skin is warmed. Areas that are most likely to be affected by frostnip are the earlobes, cheeks, nose, fingers, and toes.

Symptoms

Symptoms of Frostnip include:

- Skin turns pale
- Numbness or tingling

First Aid

Take the following steps to treat a worker with Frostnip:

- Re-warm the area

Immersion Foot (Trench Foot)

Immersion foot or trench foot occurs when the feet are subjected to cold and wet conditions for a long period of time.

Symptoms

Symptoms of Immersion Foot include:

- Feet are cold
- Numb
- Shooting pain
- Feet swell
- Redness
- Bleeding

First Aid

Take the following steps to treat a worker with immersion foot:

- Re-warm foot by exposing to warm air
- Do not massage or rub exposed area
- Do not place exposed area in warm water.
- Avoid using direct heat such as a stove, heat lamp, fireplace, or heating pad
- Get medical treatment immediately

Protective Clothing

Protective Clothing is the most important way to avoid cold injuries. Proper protective clothing will be worn by workers when working in cold environments and conditions.

The type of fabric also makes a difference.

- Cotton loses its insulation value when it becomes wet.
- Wool, silk and most synthetics, on the other hand, retain their insulation even when wet.

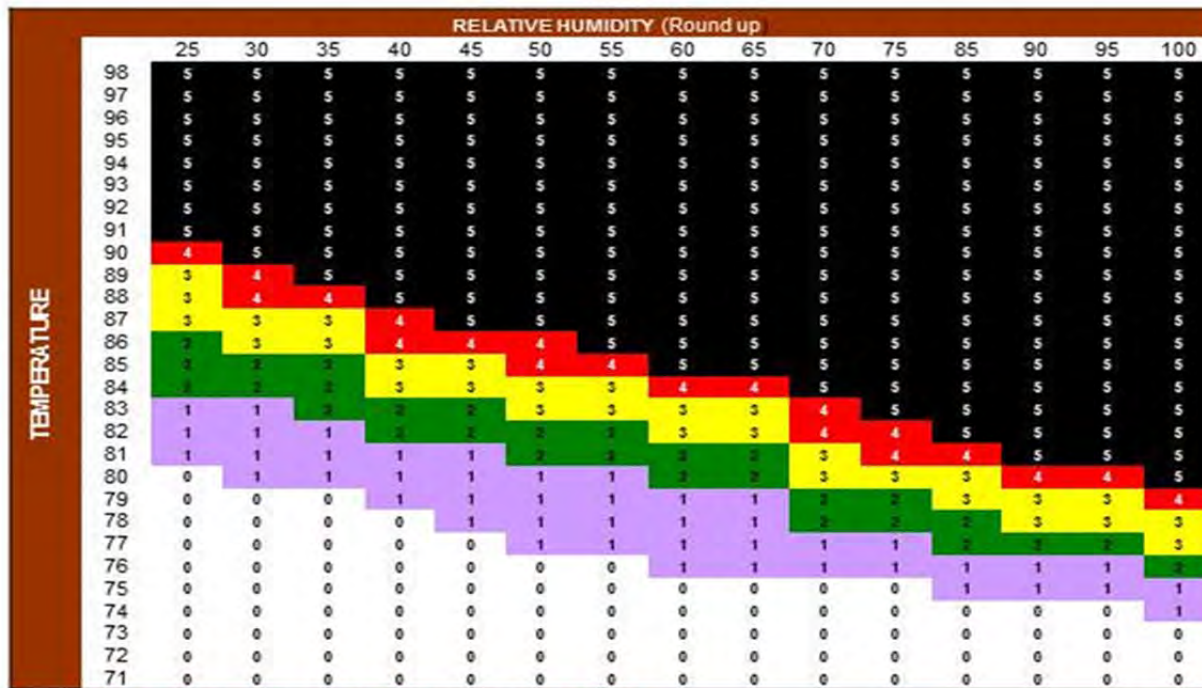
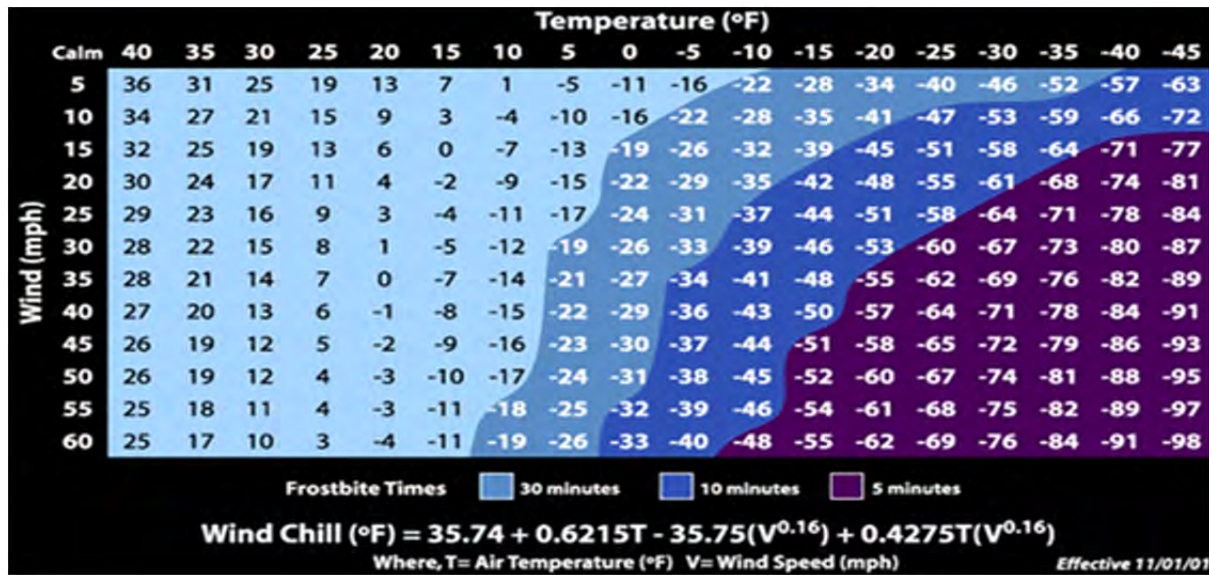
The following are recommendations for working in cold environments

- Wear at least three layers of clothing. An inner layer of wool, silk or synthetic to wick moisture away from the body. A middle layer of wool or synthetic to provide insulation even when wet. An outer wind and rain protection layer that allows some ventilation to prevent overheating.
- Wear a hat or hood. Up to 40% of body heat can be lost when the head is left exposed.
- Wear insulated boots or other footwear.
- Keep a change of dry clothing available in case work clothes become wet.
- With the exception of the wicking layer do not wear tight clothing. Loose clothing allows better ventilation of heat away from the body.
- Do not underestimate the wetting effects of perspiration. Often times wicking and venting of the body's sweat and heat are more important than protecting from rain or snow.

Preventive Measures

Some preventive measures include:

- Drinking plenty of liquids
- Avoiding caffeine and alcohol. It is easy to become dehydrated in cold weather.
- If possible, heavy work should be scheduled during the warmer parts of the day.
- Take breaks out of the cold. Try to work in pairs to keep an eye on each other and watch for signs of cold stress. Avoid fatigue since energy is needed to keep muscles warm.
- Take frequent breaks and consume warm, high calorie food such as pasta to maintain energy reserves.



WORK REST CYCLES/WATER CONSUMPTION TABLE

Heat Category	WBGT Index, F°	Easy Work		Moderate Work		Hard Work	
		VWork/Rest	VWater intake (Qt/hr)	VWork/Rest	VWater intake (Qt/hr)	VWork/Rest	VWater intake (Qt/hr)
0	77 Below	NL	NL	NL	NL	NL	NL
1	78 – 81.9	NL	1/2	NL	3/4	40/20 min	3/4
2	82 – 84.9	NL	1/2	50/10 min	3/4	30/30	1
3	85 – 87.9	NL	3/4	40/20 min	3/4	30/30 min	1
4	88 – 89.9	NL	3/4	30/30	3/4	20/40 min	1
5	>90	50/10 min	1	20/40 min	1	10/50 min	1

The work-rest times and fluid replacement volumes will sustain performance and hydration for at least **4 hours** of work in the specified heat category. Fluids needs can vary based on individuals differences and exposures to full sun or full shade

CAUTION: HOURLY FLUID INTAKE SHOULD NOT EXCEED 1.5 QUARTS.

DAILY FLUID INTAKE SHOULD NOT EXCEED 12 QUARTS.

FIRE PREVENTION PLAN

Refer to Manson EHS System Procedure 28 – Fire Prevention

Fire Protection

Temporary fire protection measures, such as fire extinguishers, temporary hose lines, and temporary standpipes, are required near hazardous locations.

Project team shall develop a fire protection plan in accordance with OSHA 1915 Subpart P and 1926 Subpart F.

Fire extinguishers will be:

- Conspicuously located
- Inspected monthly and by a third party annually
- Protected from freezing
- Placed within the immediate area of any welding/cutting operation or flammable liquid storage area
- Placed within five feet whenever gasoline operated equipment is used

If a fire extinguisher is discharged for any purpose, it should be reported to Manson.

Proper fire extinguisher Types:

- Type A – Wood and Paper (Not to be used with oil, diesel, or electrical fires)
- Type B – Foam for use on oil and diesel fires (Not for use on electrical fires)
- Type C – Electrical equipment
- Type ABC – All types of fire



Individuals required to use or have the potential to use a fire extinguisher will be trained in the proper use as well as basic firefighting and annually thereafter. Training is to occur prior to a possible exposure. This would include Fire Watch, welders, and all others that work with an open flame or work task that may produce a flame or fire. Retraining will occur annually.

When individuals are expected to use temporary fire hose lines, they shall be trained on its use and proper firefighting techniques.

All temporary buildings and trailer complexes (shops, field offices, Conex's, etc.) will have a class ABC fire extinguisher located within the building.

Access to fire hydrants will be maintained at all times. Access to buildings and other structures will be maintained at all times.

Fire Prevention

Temporary buildings located within another building or structure shall be constructed of non-combustible material or have a fire resistance rating of one (1) hour.

Plastic tarps or covers (visqueen) used for any purpose inside a building or where welding, cutting, or open flame is present will be made of fire retardant material.

Combustible refuse from construction operations will be removed at frequent intervals, as needed. Storage of large quantities of construction debris will be placed in metal dumpsters.

Storage of compressed gases will be:

- Stored with valve caps securely on when not attached to a regulator
- Stored in approved carts when transporting or lifting.
- Secured upright at all times, including when transported in vehicles
- Fuel and oxygen cylinders separated by 20 feet or greater or separated by an approved fire wall.
- Empty cylinders stored separate from full cylinders

Only approved high flash point solvents are to be used for cleaning purposes. High flash point solvents will ignite at a much greater temperature.

Oily rags and waste are to be stored separately in metal containers fitted with self-closing lids. Trash and refuse must be placed in trash containers provided for this purpose.

No open burning is permitted.

A minimum clearance of 15 feet from fire hydrants must be maintained at all times.

All fire safety rules and signs will be observed and obeyed.

Fire and Flammable Liquid Storage and Dispensing

Low flash point and methylene chloride solvents are prohibited.

Flammable Liquids will be:

- Stored outside not within 20 feet of any structure or in a properly constructed storage locker whenever possible
- Stored in approved portable containers that are marked as to its contents
- No more than 25 gallons stored inside any trailer or room
- Posted with "NO SMOKING" signs. When a large number of workers speak a foreign language, the warning signs will be posted in that language as well
- Outside storage areas kept free of weeds and other combustible material

All flammables will be stored in approved containers and marked as to the contents. If storing flammables for more than one day, contact Manson for approval.

Storage of flammables will be in an enclosure away from open flame, heat, direct sun or other sources of ignition.

Transportation and transferring of volatile liquids will be made in Underwriter Laboratory or Department of Transportation approved containers. Approved metal safety containers shall be used with flash arrestors installed.

All Gasoline or Diesel storage tanks/drums will be placed in a secondary containment.

Manson will approve vehicle refueling locations and procedures.

Fuel and flammable liquid tanks, drums, or barrels will have the proper DOT placard and be labeled as to content. If workers speak a foreign language, the labels will also be in that language.

LP gas storage tanks will be protected from vehicle traffic.

At fuel dispensing points, the following is required:

- Portable 20 B-C fire extinguisher within 25 to 75 feet from the fueling point
- No Smoking signs posted. Additional signs in a second language if required
- Self-locking fuel nozzle prohibited
- Spill kit stored nearby
- Tanks will be grounded and when dispensing flammable liquids, the containers will be bonded

HOT WORK

Refer to Manson EHS System Procedure 22 – Hot Work

General

Hot work is defined as the use of open flames, other heat sources and/or spark producing devices in areas where combustible or flammable materials may be or do exist or where there is potential for explosion or fire.

Hot work activities include burning, welding, cutting, grinding or other operations that produce a flame or sparks that could cause catastrophic results if not controlled.

Prior to performing “Hot Work” operations, workers will obtain a Hot Work Permit.

A Hot Work Permit is valid only for the date and shift that is stated on the permit.

The following measures will be taken prior to a Hot Work Permit being issued:

- Grating, openings, etc. will be completely covered in such a way to prevent sparks and slag from falling to a level below
- Work area has been tested and certified as “Safe for Hot Work”
- Fire extinguisher in the immediate area of work
- No flammable or combustible material stored within 25 feet in any direction
- Combustible/flammable materials that cannot be moved must be covered with fire blankets or other suitable material
- Worker(s) designated as fire watch will be trained and remain for one-half hour after work has ended
- Follow confined space entry procedures

When burning or welding using compressed gases, flame/flash arrestors will be installed on both the torch side and regulator side of the oxygen and gas hoses.

Welding screens will be used whenever possible to protect workers from welding flash.

Workers will be trained prior to performing any fire watch duties. The training will consist of:

- A review of the work to be performed
- Precautions to be taken
- How to use the fire extinguisher correctly
- Emergency procedure in case of fire
- Duties of fire watch

Fire Watch

A fire watch will be assigned to all hot work when any of the following conditions exists:

- Slag, weld splatter, or sparks might pass through an opening and cause a fire.
- When fire-resistant guards, curtains, or blankets are not used to prevent ignition of combustible materials on or near decks, bulkheads, partitions, or overheads.
- When combustible material is closer than thirty-five (35') feet to any hot work in either the horizontal or vertical direction and cannot be moved, protected with fire-resistant covers, or otherwise shielded with metal or other acceptable protection.
- When hot work is being performed on or near insulation, combustible coatings, or sandwich type construction material.
- When there is combustible material adjacent to the opposite side of a bulkhead, deck, overhead, metal partitions, or sandwich type partition.
- When hot work is being performed close enough to cause ignition through heat, conduction, or radiation on the following:
 - Insulated piping, bulkheads, decks, partitions, or overheads
 - Combustible materials and/or coatings
- The hot work is close enough to unprotected combustible pipe or cable runs
- When a Hot Work Permit is required
- When a marine chemist, USCG, or a shipyard competent person requires a fire watch

No person will be assigned as a fire watch without being trained as outlined in Section 6.13.

Personnel assigned as a fire watch must be physically capable of performing the work.

Personnel assigned as a fire watch are:

- Not to be assigned other duties while hot work is being performed.
- Always having a clear view of and immediate access to all areas in the immediate area of any hot work.
- Able to communicate with all personnel exposed to the hot work.
- Authorized to “Stop Work” if necessary when an unsafe condition exists and restore safe conditions before hot work resumes.
- To be trained to detect fires that may occur in hot work areas.
- To attempt extinguishing any incipient fires in hot work areas that are within the capability of available equipment and the individuals fire watch training
- To alert all personnel of any fire in the areas exposed to the hot work
- Activate the fire alarm or report the fire per established emergency procedures if unable to extinguish the fire.

Personnel assigned as fire watch must:

- Be familiar with all physical characteristics of the hot work area.
- Be aware of all obstructions and barriers in the hot work area.
- Be aware of the nearest exits, evacuation routes, assembly points and fire alarm locations or procedure.

Personnel assigned as a Fire Watch will remain in the immediate hot work area for a minimum of thirty (30) minutes after completion of hot work.

The Hot Work Permit can only be closed out when the Fire Watch is satisfied that no spark or fire hazard exists after hot work has been completed, and signs the bottom of the Hot Work Permit.



HOT WORK PERMIT

Welding, cutting, burning, or use of an open flame is not permitted without a completed Hot Work Permit.

Name of person(s)/subcontractor performing Hot Work _____

Date of Work: ____/____/____ Location of Work: _____

Description of Work: _____

This permit is valid from ____ am/pm on ____/____/____ to ____ am/pm on ____/____/____

Special Precautions: _____

The work site has been inspected by me and I have taken all precautions to protect property and equipment, move or protect any flammable/combustible material, and established proper ventilation.

Name: _____ Signed: _____ Date: _____
(Print name of person performing work)

I have inspected the work area and am satisfied that all precautionary steps have been taken and it is safe for hot work.

Name: _____ Signed: _____ Date: _____
(Print name of superintendent)

FIRE WATCH

The work site and all adjacent areas where sparks may have spread were inspected by me during and for at least thirty (30) minutes after the work was completed and no fire conditions were noted.

Name: _____ Signed: _____ Date: _____
(Print name of Fire Watch)

Hot work commenced at ____ am/pm Hot work completed at ____ am/pm

CONFINED OR ENCLOSED SPACE

Hot work will be performed in a confined or enclosed space.

Confined Space Entry Permit issued

I have inspected the confined or enclosed space and can authorize hot work to be performed

Name: _____ Signed: _____ Date: _____
(Marine Chemist or Shipyard Competent Person)

SCAFFOLDING OR STAGING

Refer to Manson EHS System Procedure 39 - Scaffolding

General Requirements

All scaffolding used on this project will meet the requirements established in Manson EHS System Procedure 39 and OSHA 1915.71 or 1926.451.

No scaffold will be erected, moved, dismantled or altered except under the direction of a competent person. The competent person will sign and attach one of the following color-coded scaffold tags to each scaffold:

- Green Tag: Scaffolding complete and ready for use
- Red Tag: Scaffolding incomplete and not for use
- Yellow Tag: Scaffolding usable but personal fall protection required



Scaffolding will be inspected daily by the competent person prior to use and sign the tag at the time of inspection.

Workers required to work from scaffolding will receive training on the following:

- Nature of any known hazards, such as electrical, fall or falling objects
- Correct method of erecting, maintaining, and disassembling fall protection systems
- Falling object protection system
- Proper handling of equipment or material on the scaffold
- Maximum load-carrying capacity of the scaffold
- Any other pertinent requirements about the scaffold

During erection and dismantling of scaffolding, if deviation of the fall protection procedure is required, the Manson EHS Director and Regional Vice President will be required to approve in writing.

Records will be maintained of scaffolding training and be available for review by Manson.

Prior to erection, all scaffolding components will be inspected for defects and any damaged components will not be used.

Scaffolding will be erected on a firm foundation/footing. Scaffold poles, legs, posts, frames and uprights will bear on metal base plates and mud sills where required.

Scaffold legs, poles, posts, frames and uprights will be pinned or locked to prevent uplift.

No scaffold will be enclosed unless a qualified engineer designed the enclosure.

Scaffold platforms will be constructed with no space between the platform components. The space between the platform components and the scaffold uprights will not exceed one inch.

Because of special circumstances such as building a scaffold around a pipe, the space opening between the scaffold and the object/structure cannot exceed 9½ inches.

Scaffold planks shall extend past the horizontal support a minimum of six inches and not more than 12 inches unless cleated or restrained by hooks.

Scaffold plank will not be overlapped unless:

- Overlap occurs at a horizontal support
- The minimum planking overlap is 12 inches

Scaffold plank will be only scaffolding-grade planking.

Ladders or stairs must be used to access any scaffold platform that is more than two feet above the point of access. End frames of tubular welded scaffold can be used as a ladder if the following criteria are used:

- Specifically designed and constructed as ladder rungs
- Rung length of at least eight inches
- Spacing between rungs not to exceed 16 ¾ inches

No worker will climb up or down a scaffold using the cross bracing.

Any worker working on an incomplete scaffold above six (6') feet without standard handrails will wear a full body harness and tied off to a fixed anchorage point.

Workers will not stand or place any platform on the middle rail of a scissor lift to gain added height.

The chain gates of scissor lifts will be properly extended across the opening and connected whenever the lift is in use.

Wheels on mobile scaffolding will be locked in place when workers are working from it.

A competent person will evaluate suspended scaffolding and anchorages before use and its suspension lines daily.

Workers working from suspended scaffolding will wear a full body harness attached to an independent vertical lifeline.

Scaffold platforms more than six (6') feet above lower levels will be equipped with guardrail systems. If guardrails cannot be used on a scaffold, workers will wear a full body harness and be tied off to a fixed anchorage point.

Workers that work from a scaffold will be protected from falling objects such as hand tools, debris, and other small objects from above.

Workers working below scaffolding will also be protected from falling objects. Scaffold will be equipped with toe plates, screening, debris netting, catch platforms, or a canopy structure.

When welding is required from swing stage scaffolding, the scaffold will be grounded and suspension ropes protected.

Interior or dry wall scaffolding (Perry or Baker type scaffolding) greater than one section high will be equipped with outriggers. All other built-up scaffolding will follow the four to one rule.

Suspended Work Platforms (Jilly)

Suspended work platforms or Jilly's will be used when work alongside a bulkhead, wing or fender walls, wharfs, docks, dolphins, and other mooring structures when no other feasible safe method is available.

Suspended work platform or Jilly will only be used if the work location is twenty five (25') feet or less from water level and the depth of water is ten (10') feet or greater. If the elevation is greater, a crane suspended personnel platform or crane basket will be used.

When a suspended work platform or "Jilly" is to be used, a specific Job Safety Analysis (JSA) will be completed for the work to be performed.

The first-line supervisor will ensure all personnel are briefed on the hazards, correct boarding and debarking from the work platform, and emergency action plan including man-overboard rescue.

Derrick or crane operator will swing the suspended work platform to the top of the wharf or dock to allow the work crew to board. Once all personnel are on board, the work platform will be lowered to the desired work elevation.

If work involves dolphins, wing or fender walls, or other mooring structures where the work crews cannot approach from land, they will board the work platform from water level from skiffs.

If the work crew cannot board the work platform from a skiff and must board from the deck of the derrick or float, the following will occur:

- The derrick or crane operator will not swing the work platform over any structure, barge, or land structure.
- When moving personnel on the work platform from the deck of a derrick, the safety chain guardrail will be securely in place until the work platform reaches the work location.
- The work platform shall not be elevated greater than twenty-five (25') feet above water when personnel are riding the platform to the work location.
- All personnel working from a suspended work platform over water will wear a personal flotation device (PFD) or work vest. Fall protection will not be worn for fear of drowning

Jitter Boards

When personnel must perform work behind vertical piling or under dock and wharf structures from the work platform and no other means such as scaffolding, articulating man-lift, ladder, or other floating work platform is available or feasibly safe, and the use of jitter boards may be used.

When jitter boards are used, the following will always be followed:

- A supplemental Job Safety Analysis (JSA) will be completed for the work to be performed and attached to the work platform JSA.
- First-line supervision will meet with all persons to work from a jitter board and review hazards, number of persons allowed on a jitter board, and rescue plans.
- Jitter boards will always consist of 2" x 10" scaffold planking. Regular 2" x 10" non-scaffold board is prohibited.

- First-line supervision will supervise the installation of jitter boards.
- Jitter boards will be inserted through the designed slots on the backside of the work platform with an overlap of not less than two (2') feet. Steel wedges will be inserted between the board and the work platform structure. First-line supervision will ensure wedges are tightly wedged.

Jitter boards will be secured from accidental movement by chain and ratchet or other methods before any personnel work from them.

LOCKOUT/TAGOUT

Refer to Manson EHS System Procedure 25 – Lockout Tagout

One of the most critical hazards to both maintenance and construction personnel is the danger of remotely controlled equipment being started accidentally by someone; by an interconnected system starting automatically; or by a breakdown in the electrical system, such as a short circuit in a cable or push-button.

All electrical, mechanical/piping, or any other stored energy system will be considered energized until the system has been de-energized and the system has been physically tested to ensure it is de-energized.

General Lockout/ Tagout (LOTO) Rules

- LOTO is the process of establishing a safe work condition on machinery, equipment, or processes prior to performing work.
- LOTO is required whenever construction, service, maintenance, modification, or demolition is being performed on or near machinery, equipment, or process systems in which unexpected energization or start-up or release of stored energy could cause injury to people or damage to equipment.
- All persons performing work on locked out machinery, equipment, or process systems shall apply their personal LOTO lock(s) and tag(s). Persons applying locks and tags shall be trained and designated as a LOTO Authorized Person.
- LOTO Authorized Person(s) shall only apply their personal LOTO lock and tag.
- No person shall ever remove another person's lock and tag, except under the restrictions of the Absent Person Lock Removal Procedure.
- No person shall operate or attempt to operate any energy isolation to which a LOTO lock and tag is attached except for purpose of testing the isolation.
- All Authorized Persons shall have knowledge of applying LOTO devices to ensure that the device is properly affixed for proper energy isolation. The improper application or wrong device could result in energy isolation failure or the device falling off entirely from a valve.
- All lockouts shall be established following the requirements in this LOTO program. Push buttons, selector switches, software interlocks, and control circuits are not energy isolations and cannot be used to isolate hazardous energy.
- The LOTO Responsible Person or PIC will ensure that a LOTO Safe Zone always matches the scope of work at any given time.
- A Lockout/ Tagout Compliance Checklist could be used as an aid to monitor compliance with applicable LOTO requirements.

Cord and Plug LOTO Process

- Cord and Plug equipment refers to any utilization equipment or machine that uses a plug and cord to connect to a source of hazardous energy. While most common application is with an electrical cord, other applications could include any type of quick-disconnect fitting such as for pneumatic tools.
- Manson employees do not need to be a LOTO Authorized Person to perform work on electrical equipment or machine if the following cord and plug criteria is present:
 - There is a single source of energy
 - The hazardous energy is controlled by unplugging the equipment or machine.
 - The plug remains under the continuous positive and exclusive control of the Manson employee.

- Positive control – The plug is within an arm’s reach of the employee
- Exclusive control – Only one employee is working on the equipment or machine.
- Examples that meet the requirements for cord and plug:
 - A computer powered by 110 VAC where unplugging the cord completely removes all hazardous energy from the device.
 - A welder with a 120 VAC, 100 Amp cord. It has no stored energy and unplugging the cord removes all hazardous energy from the device.
 - A pneumatic wrench with a 100 psig hose and quick disconnect fitting. It has no stored energy and unplugging the hose completely removes all hazardous energy from the tool.

Simple LOTO Process

- Simple LOTO process is a LOTO that does not require a written LOTO procedure.
 - A Manson LOTO Authorized Person may apply LOTO to any machine, equipment, or process system if the following conditions are met:
 - The equipment is fed from a single energy source that can be isolated with a single isolation that is lockable, is readily identifiable, and is in the same location as the machine, equipment, or process to be worked on is.
 - The machine, equipment, or process has no capacity for stored energy.
 - The machine, equipment, or process shutdown or startup steps do not require a specific sequence.
 - The work to be performed does not involve multiple crews, multiple crafts, or subcontractor/service providers.
 - The work to be performed can be completed within one work shift.
 - The LOTO Authorized Person is responsible for determining what should be isolated and how to establish the LOTO.
- NOTE:** The LOTO Authorized Person must be qualified to work on the machine, equipment, or process.
- To establish a Simple LOTO, the following steps will be followed:
 - Identify the energy source and related hazards/controls
 - Assess the type, magnitude, and hazards of the energy to be controlled.
 - If there is more than one source of energy or there is stored energy then a Simple LOTO cannot be used.
 - Determine the appropriate method of controlling the source of energy.
 - Circuit breakers
 - Disconnect switches
 - Valves
 - Determine the safe work practice for performing the isolation and verification of zero-energy state.
 - Notify all affected persons of the impending shutdown and lockout.
 - Shut down the machine, equipment, or process.
 - Isolate the energy source
 - Perform the work
- Release from a simple LOTO
 - Confirm that it is safe to re-energize
 - Remove the LOTO locks and tags
 - Notify all Affected Persons that the LOTO has been released and the machine, equipment, or process will be re-energized.
 - Re-energize and restore the machine, equipment, or process to the normal condition.
- Work cannot be completed in work day.
 - The LOTO Authorized Person cannot themselves extend the LOTO for more than a single shift.
 - Only a LOTO Responsible Person upon review of the situation, can extend the Simple LOTO process or covert to a Complex LOTO process.

Complex LOTO Process

- The complex LOTO process is triggered anytime the conditions for a cord and plug or simple LOTO cannot be met.
- **A complex LOTO requires a written LOTO procedure and appointment of a responsible person who is accountable for the safe execution of the LOTO.**
- Complex LOTO could involve group LOTO, tagout only, subcontractor/service provider LOTO, temporary partial restoration, or multiple shifts.
- Every complex LOTO shall utilize a written LOTO procedure (Exhibit 8.1) that is prepared by a qualified person who has intimate knowledge of the machine, equipment or process that will be locked out.
- The specific LOTO procedure (Exhibit 8.1) must contain the following minimum requirements:
 - Detailed purpose and scope of work to be performed under the LOTO and the energy isolation to be established.
 - Specific procedural steps for shutting down, isolating, blocking, and securing the machine, equipment, or process to control the hazardous energy.
 - Specific procedural steps for the placement, removal, and transfer of LOTO devices and the responsibility for them.
 - Specific requirements for testing a machine, equipment, or process to determine and verify the effectiveness of LOTO devices and other energy control measures.
- Preparation for LOTO
 - All persons involved in the work and LOTO will review the LOTO procedure.
 - Verify that the LOTO Safe Zone is adequate for the planned work.
 - If the LOTO procedure needs revision or is inadequate, STOP WORK and contact the individual that wrote the LOTO procedure.
 - Verify that all persons involved in the LOTO are properly trained and authorized to perform the work.
- Notify all affected persons of the impending shut down and lockout.
- Follow the LOTO procedure and shutdown the machine, equipment, or process as stated in the LOTO procedure.
 - Wear the appropriate PPE for shutting down the machine, equipment, or process.
 - Verify all energy isolations have been established and the absence of energy has been positively verified.
- Perform the work
- Release from a complex LOTO
 - Confirm that it is safe to re-energize
 - Remove the LOTO locks and tags
 - Notify all Affected Persons that the LOTO has been released and the machine, equipment, or process will be re-energized.
 - Re-energize and restore the machine, equipment, or process to the normal condition.

Group LOTO Process

- A group LOTO is a process used to perform a complex LOTO with a lockbox.
- The Responsible Person may elect to use the Group LOTO process at any time to facilitate the coordination of a LOTO.
- Each Authorized Person must verify proper LOTO was performed in accordance with the written LOTO procedure before apply their individual LOTO to the lockbox.
- Once all work has been completed and all Authorized Persons have removed their LOTO from the lockbox can the Responsible Person remove the LOTO keys and begin releasing the LOTO. Refer to Section 6.7 (J).
- The lockbox must be kept in a location that is accessible to each Authorized Person participating in the LOTO.
- A copy of the written LOTO procedure should be posted near the lockbox.

“Tagout Only” Process

- “Tagout Only” is the process of applying a LOTO tag without a lock because the energy isolation device cannot accommodate the attachment of a LOTO lock.
- Extra caution must be taken with this LOTO process as it is possible for a false sense of security.
- Criteria for selecting the Tagout Only LOTO Process
 - The energy isolation device is not capable of physically being locked out.
 - The energy isolation device is so located that there is no possible way to attach a LOTO lock such as a street valve.
 - When blanking, blocking, blind flanging, or capping a pipe system.
 - The “Tagout Only” tag will be distinguishable and different from regular LOTO tags.
- Implementing the “Tagout Only” process
 - The Responsible Person will state in the LOTO procedure that the isolating device is “Tagout Only”
 - Begin shutting down the machine, equipment, or process wearing the appropriate PPE in accordance with the LOTO procedure.
 - Isolate the energy source and directly affix the tag to the isolation device.
 - Verify all energy isolations have been established and the absence of energy has been positively verified.
- Follow the LOTO procedure when releasing the LOTO.

Shift Changes and Transfer of Control Process

- If a machine, equipment, or process will remain locked out after the end of one shift and work will continue by an oncoming shift, an orderly transfer of LOTO control must be performed.
- For a shift change
 - It is recommended but not required that all LOTO Authorized Persons going off shift remove their LOTO lock and tag.
 - The Responsible Person for both shifts LOTO lock will always remain on the isolating devices.
 - The off going and on coming Responsible Person will conduct a thorough briefing to include progress of work, any changes to the scope of work, and the LOTO Safe Zone during the previous shift.
- For a transfer of control
 - A transfer of control between two Responsible Persons is allowed except when:
 - Establishing a LOTO
 - When modifications such as a field change or temporary restoration
 - The off-going Responsible Person will thoroughly brief the oncoming Responsible Person on:
 - The status of the LOTO including all isolations, energy dissipation devices, scope of work changes, and any other changes to the LOTO procedure.
 - When the oncoming Responsible Person is satisfied they were fully briefed on all aspects of the LOTO, can they assume control of the LOTO.
 - The off-going Responsible Person will then hand over the LOTO procedure.
- As long as the Responsible Person LOTO locks remain in place on all isolation devices and the Responsible Persons lock is on the lockbox, then re-verification of zero-energy state is not required at the beginning of each shift.

Temporary Partial Restoration Process

- Temporary partial restoration is the process of restoring energy to a part of a system without clearing the entire LOTO. This is done for a short period of time under continuous supervision.
- Temporary partial restoration applies when a machine, equipment, or process needs some level of energized testing or repositioning.
- Steps to be taken for a temporary partial restoration or repositioning:
 - Notify all Affected Persons
 - Perform a LOTO briefing with all LOTO Authorized Persons participating on the LOTO.

- Direct all LOTO Authorized Persons to stop work and replace required guards or place a barricade around the hazard zone and clear the area of tools and materials.
- Direct the LOTO Authorized Persons to remove their personal LOTO lock and tag from the isolation devices that will be temporarily energized.
- The Responsible Person will remove their LOTO lock and tag from all necessary energy isolating devices.
- Energize and proceed with testing or repositioning.
- Once the testing or repositioning is complete, reestablish the LOTO following the steps contained in the LOTO procedure.
- The Responsible Person will reattach all energy isolating devices and place their LOTO lock and tag on the device.
- Perform a LOTO briefing with all Authorized Persons
- Direct all Authorized Persons to reattach their LOTO lock and tag to the energy isolation devices or lockbox.
- Verify all energy isolations have been established and the absence of energy has been positively verified.
- Resume work

Absent Person LOTO Lock Removal

- In the event of the absence of an Authorized Person or lost key, the following procedure shall be taken to remove the lock.
 - Any Authorized Person may remove their LOTO lock at any time with their key. However, in the event of a lost or misplaced key, the following will occur:
 - The Authorized Person must obtain verbal permission from the LOTO Responsible Person to remove the lock.
 - Once permission is granted the Authorized Person may cut the lock.
 - If the Authorized Person is absent or otherwise unavailable to remove their personal LOTO lock and tag, the LOTO Responsible Person may remove the LOTO by following these steps:
 - Verify that the Authorized Person is not available to remove their LOTO lock
 - Make all reasonable efforts to contact the Authorized Person and inform them that their LOTO lock and tag needs to be removed.
 - Obtain the following permission before removal of the LOTO lock.
 - The Authorized Persons immediate supervisor
 - The Area Manager or Manson VP of Equipment
 - After obtaining all required approvals, the LOTO Responsible Person will remove the LOTO lock(s) remains.
 - The Authorized Persons immediate supervisor will witness the lock removal and retain possession of the LOTO locks.
 - The Authorized Person that was absent will be presented with the removed lock(s) and informed of the reason for the removal, unless the Authorized Person is no longer employed by Manson.



Lockout/ Tagout Procedure

Page 1 of 2

Machine, Equipment Process to be locked out: _____

Vessel : _____ and/or Location: _____

Date Procedure was written: _____ LOTO Procedure prepared by: _____

Potential Hazards Electrical Rotational Chemical Hydraulic Non-Ionizing Radiation
 Mechanical Gravitational Pressure or Vacuum Pneumatic Thermal Other

Lockout Conditions Cord and Plug Multiple Lockout Sources Stored Energy Multiple Shifts
 Simple Lockout Isolation not identifiable Tagout Only Multiple Crews
 Temporary Partial Restoration Particular Shutdown or Startup Sequence

- 1. Make Notifications** Notify all Affected Employees that a lockout is required, the reason for the lockout, and the expected duration
- 2. Acquire all necessary equipment, tools, and personal protective equipment to perform the work**
Consider all of the hazards associated with the work and ensure you have all of the tools and equipment to perform the work safely.
- 3. Machine or Equipment Shutdown**
Determine all sources of energy feeding into the machine or equipment. Describe the steps needed to shutdown the machine or equipment

- 4. Isolation and Lockout/Tagout**
Describe steps needed to isolate machine or equipment from energy sources, including the location(s) to apply lockout/tagout devices.

Optional: For routine LOTO, you can attach a photograph showing the isolation location for easier identification

	Photograph		Photograph
	Photograph		Photograph
	Photograph		Photograph

Lockout/ Tagout Procedure

5. Release Stored Energy

List any device that may contain stored energy and the process to safely release or contain this energy.

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6. Verification of Isolation

To ensure that all energy sources have been isolated:

- 1.) Ensure no personnel can be exposed to operating machinery or equipment.
- 2.) Operate all controls to ensure that the machine or equipment will not operate. List all controls below that need to be tested and all indicators that should be observed to ensure the equipment has been isolated from all energy sources.

CAUTION Ensure all controls have been returned to the off or neutral position upon completion of the test.

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5. Temporary Partial Restoration

If during repair or maintenance activities, the machine or equipment is required to be jogged or cycled list the location of LOTO devices that can be removed to accomplish this. Only the LOTO devices absolutely necessary to allow the machine or equipment to be jogged or cycled will be removed. After the machine or equipment has been cycled the LOTO devices will be applied and zero energy verified.

	Photograph		Photograph
	Photograph		Photograph
	Photograph		Photograph

7. Release from LOTO and Restoring to Service

- Make sure all tools and other materials have been removed
- Make sure machines or equipment are fully reassembled and guards or other safety devices have been reinstalled
- Check the work area to ensure that all workers are clear of the machine or equipment
- Verify that all controls are in their neutral or off position
- Verify that each Authorized Person LOTO device has been removed from each energy isolation device or lockbox
- Indicate below any specific steps needed to safely re-energize the machine or equipment

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ELECTRICAL

Refer to Manson EHS System Procedure 26 – Electrical Safety

No work will be performed on any energized electrical circuit, busbars, equipment, or panels unless an approved written work plan is developed in accordance with Chapter 1 of NFPA 70E.


Electrical equipment and tools used on this project will be inspected to prevent any worker from receiving an accidental electrical shock. This rule will apply to all cord sets, portable electrical equipment, tools and appliances not part of any permanent building or structural electrical systems.

All temporary cords will be three wire types S, ST, SO, or STO with a 16 or greater wire gauge.

Ground Fault Circuit Interrupters (GFCI)

All cord sets and cord-plug electrical equipment, tools or appliances that are 120 volts will be connected to a ground fault circuit interrupter (GFCI). No cord set or cord-plug electrical equipment, tool or appliance will be plugged directly into any permanent building or structural electrical system not equipped with a GFCI. Exemptions are office equipment and appliances in site offices.

Double-Insulated Tools

Double-insulated tools are allowed on the project, if the case bears the Underwriter Laboratories “double-insulated”  label. No tool where this label has been removed, painted over or otherwise not readable will be allowed on the project.

Inspection Program

An inspection program will be established to inspect all cord sets, portable electrical equipment, tools and appliances as described below and before first use, before returned to service following any repair, and after an incident that could have caused damage.

Daily Inspection:

Each cord set, attachment cap, plug, and receptacle of cord sets, portable electrical equipment, tools or appliances connected by a cord and plug, will be visually inspected daily by workers for external damage, such as deformed or missing ground pins, insulation damage, frayed wires or indications of possible internal damage. Exceptions include cord sets and receptacles that are fixed to the permanent electrical system and are not exposed or damaged.

Any electrical equipment, tool, appliance or cord set that is damaged or defective will be immediately removed from service and tagged out as defective equipment for repair.

Monthly Inspection:

All cord sets, receptacles and cord-plug connected electrical equipment, tools or appliances not part of the building or structure's permanent wiring, will have the following performed each month:

- Visually inspect for damage or missing ground pin
- Inspect insulation for damage
- Inspect for frayed or exposed wires
- Inspect for signs of internal damage

General Electrical Rules

All cord sets will be elevated above the work surface when practical.

Cord sets and electrical tools that have the grounding prong missing will be cut and the offending crew or subcontractor shall roll back within 24 hours all cord sets and inspect for other damage. Manson first-line supervisor or subcontractor will supply written certification to Manson EHS Department that this inspection was completed.

Wire, nails or other conductive material will not be used to hang or attach cord sets or welding leads.

Cord sets that cross roadways will be protected from damage by vehicle and equipment traffic by devices such as hose bridges.

Light stringers will have the light bulbs protected from accidental contact or breakage.

Only qualified electricians will work on or near any energized electrical circuit, busbars, equipment, or panels.

Supervision will take all necessary steps to prevent unauthorized or unqualified workers access to energized electrical parts or equipment.

All de-energized unmarked or untagged electrical equipment, circuits, and wiring will always be treated as energized.

When working on high voltage circuits or equipment where the possibility of arc flash may occur, workers will be trained prior to commencing work on NFPA 70E requirements. Workers will wear proper PPE when exposed to potential arc flash.

SCISSOR AND ARTICULATING BOOM LIFTS

Refer to Manson EHS System Procedure 2 – Aerial Lifts

Only trained and authorized workers will be allowed to operate a scissor or articulating boom lift.

Scissor and articulating boom lifts will be inspected daily before use. Operators will use the Daily Equipment Checklist.

When working in a scissor lift, workers will use personal fall protection connected to the manufacturers tie-off points. Only personal retractable lanyards will be used to tie off on scissor and articulating boom lifts.

The safety chain or gate on each scissor lift will be fastened or latched.

When working from an articulating boom lift, workers will use a retractable lanyard. Regular six foot lanyards will not be used.

When working above areas where workers are below, the basket areas of articulating boom lifts will be equipped with screening or other means to prevent debris, material, or tools from falling to below levels.

NO WORKER WILL STAND ON THE MID OR TOP RAIL OF A SCISSOR OR ARTICULATING BOOM LIFT TO GAIN ADDITIONAL HEIGHT.

Workers cutting or welding out of an articulating boom or scissor lift will have a minimum 5 lb. portable fire extinguisher.

MARINE OPERATIONS

Water Access

Access to the water can be easy in some situations and difficult in others; but since our work is performed on, above, and near the water, it is always very important. Good access to the water allows project personnel to safely get to and from the work. It is also very important to ensure good access while on the water, which involves moving from one vessel to another. Here are some guidelines for access to the water and while on the water:

- The project management team must develop a plan for accessing the water from the land. This can include securing moorage for a crew vessel at a nearby marina, identifying a boat launch to be used, setting up a gangway and float, building a custom ladder and landing, or any other means necessary.
- All project personnel shall access the water from these designated access points.
- Personnel should not have to climb over riprap, jump into a skiff from an elevated bulkhead, or lower themselves off a structure to access the water.
- A gangway should be deployed for access between vessels.
- Personnel should not walk on tires to get from barge to barge.
- If there is a significant elevation difference, a ladder or stair tower should be used.

Worker Qualifications

All employees required to work off of a barge shall be informed on the contents of this Incident and Injury Prevention Plan.

Operators of tow boats shall provide copies of current U.S. Coast Guard licenses and be able to demonstrate to the project management that they can operate a tow boat safely.

Working On or Near Water

When work is to be performed over or near any water on this project where there is a drowning hazard, the following will be followed:

- Each worker will wear a Type III, Type V work vest or better US Coast Guard approved international orange personal floatation device with high viz stripping, unless guardrails or netting is installed. **WORKERS FAILING TO WEAR A FLOATATION DEVICE WHILE WORKING OVER OR NEAR WATER WILL FACE DISCIPLINARY ACTION TO INCLUDE TERMINATION.**
- Floatation devices are to be worn zipped up, tied, latched, or otherwise in a closed fashion.
- Floatation devices shall be inspected before each use to detect defects that could alter its strength or buoyancy.
- A ring buoy is required at all work locations near water every 200 feet. The ring buoy will have attached a minimum of 90 feet, 3/8 inch solid braid polypropylene rope.
- A rescue skiff will be immediately available at any work location where workers are working near or above water.
- Additionally the following will be followed in regard to the rescue skiff:
 - Worker(s) will be readily available to immediately to launch or man the rescue skiff without delay. Those assigned worker(s) will be trained in the launching, recovery, operation, and lifesaving operations of the rescue skiff.
 - The rescue skiff will be kept afloat or ready for instant launching.
 - As a minimum, OSHA and USACE requires each rescue skiff to have in it:
 - Four oars (two oars if the skiff has a motor on it)
 - Oarlocks attached to the gunwales or oars
 - Boat hook (ball-pointed)
 - Ring buoy with 90 feet of 3/8 inch braided rope
 - Sufficient personal flotation devices for everyone in the rescue skiff

Marine Operation Requirements

An approved U.S. Coast Guard life vest is required on board for every person working on a barge or other marine vessel. The life vest will be worn at all times when working or walking on any unguarded decks of barges

A 30 inch life-ring with a minimum of 90 feet of line and one portable ladder or permanent ladder that can reach from the deck to the water shall be required on all barges.

Employees working on a barge shall have a system to communicate with personnel on shore, in the event of an emergency.

No smoking will be allowed on any barge or marine vessel during refueling operations.

Portable fire extinguishers will be provided:

Length of Vessel	Fire Extinguisher
Less than 26 feet	One 1-A:10- B:C
26 feet or greater	Two 1-A: 10-B:C

Safe Practices

All cables or lines that secure the barge or marine vessel to the shore or mooring shall be clearly marked.

No fuel or grease will be allowed to be spilled or otherwise accumulate on floors, decks and in bilges.

No worker will dive off any barge or marine vessel for the purpose of swimming unless necessary to prevent injury or loss of life. Any person in the water shall be considered as a man overboard and appropriate action shall be taken.

Deck loading will be limited to safe capacity. Loads will be secured and holdbacks or rings will be provided to secure loose equipment during rough weather.

Guardrails, bulwarks, or cables guard line shall be provided at all deck openings, elevated surfaces, and similar locations where persons may fall or slip from the deck.

All projection and tripping hazards shall be immediately removed, identified with warning signs, or distinctly marked with "yellow".

Safeguards such as barriers, curbs, or other substantial structure will be provided to prevent front-end loaders, bulldozers, trucks, backhoes, cranes, or similar operating equipment from falling into the water.

When two or more barges are being used as one unit, they will be securely fastened together to prevent openings between them or the openings shall be covered or guarded.

Provisions shall be made to protect workers being transported by water to or from the barge or marine vessel.

When any barge or other marine vessel is idle or moored, warning buoys, signs, and lights will be installed in prominent locations.

Access

All means of access to a barge or other marine vessel shall be properly secured, guarded, and maintained free of slipping and tripping hazards.

Non-slip surfaces shall be provided on all working decks, stair treads, ship ladders, platforms, catwalks, and walkways.

Double rung or flat tread type Jacob's ladders shall only be used when no safer form of access is practical.

Safe means for boarding or leaving a barge or other marine vessel shall be provided and guarded to prevent a person from falling or slipping.

A stairway, ladder, ramp, gangway, or personnel hoist will be provided at all boarding points of access with breaks of nineteen (19") inches or more in elevation.

No worker will be allowed to pass fore and aft, over, or around deck loads unless there is a safe passage.

When cargo or material is stored on barges, the outboard edge shall not be used as a safe passageway unless at least two (2') feet of clearance is maintained.

Severe Weather

Plans will be developed when barge or other marine vessel work may be endangered by severe weather, high winds, hurricanes, or flooding.

Plan shall contain procedures for securing the barge or other marine vessel and the safe evacuation of workers in emergencies.

Weather forecasts shall be reviewed prior to any extended movement of a barge.

Emergency Planning

"Man Overboard" procedure is to be followed when employees are working on a barge or other marine vessel. The Man Overboard procedure is to be posted on each barge and marine vessel in a conspicuous location and each employee will be instructed on its contents.

When marine operations may be endangered by severe weather, plans shall be developed for removing or securing the marine vessels and evacuation of personnel in emergencies.

Emergency alarms will be developed to notify workers of an emergency.

Emergency plans shall be developed for response to marine emergencies such as fire, sinking, flooding, or hazardous material incident.

Each employee working on a barge or other marine vessel will be familiar with all emergency procedures and their specific duties.

Emergency procedure drills will be conducted monthly unless USCG regulations require more frequent drills.

Emergency procedure drills that require quarterly (EM 385-1-1 required monthly) testing are:

- Abandon vessel
- Fire
- Man overboard and rescue

Emergency lighting and power systems will be tested monthly

All emergency drills and tests will be documented.

Emergency hatches and exits shall be marked on both sides and kept clear of any debris or material.

All electrical power receptacles shall have a grounding conductor to prevent potential differences between the shore and the vessel.

All cord connected electrical equipment and tools shall be connected to a GFCI outlet.

Hazardous Material Spill Kit and adequate absorption booms will be immediately available in case of a spill.

Launches, Motorboats, and Skiffs

Crew requirements:

- In the following circumstances a qualified employee shall be assigned to assist with deck duties:
 - When extended trips including overnight trips are made from the work site;
 - When conditions of navigation make it hazardous for an operator to leave the wheel while underway;
 - When operations being performed, other than tying-in, require the handling of lines;
 - When operating at night or during inclement weather; or
 - When towing;
 - While a vessel is transporting crew or passengers.
- A qualified employee is any individual who has established, to the satisfaction of the operator of the vessel that he/she is physically and mentally capable of adequately performing the deck duties to which they were assigned.

Personnel and cargo requirements:

- The maximum number of personnel and weight that can safely be transported shall be posted on all launches, motorboats, and skiffs. The number of personnel (including crew) shall not exceed the number of PFDs aboard.
- Each boat shall have sufficient room, freeboard, and stability to safely carry the cargo and number of persons allowed with consideration given to the weather and water conditions in which it will be operated.
- Launches, motorboats and skiffs less than twenty (20') feet in length shall meet 33 CFR 183 requiring level floatation after flooding or swamping.
- All open cabin launches or motorboats shall be equipped with "kill (dead man) switches".

Fire protection:

- The minimum number and rating of fire extinguishers that shall be carried on all launches and motorboats, including outboards, are shown in Table 19-1:
- All launches and motorboats having gasoline or liquid petroleum gas power plants or equipment in cabins, compartments, or confined spaces shall be equipped with a built-in automatic CO2 fire extinguishing system meeting the requirements of 46 CFR 25.30-15.

Length	Extinguisher
Less than twenty-six (<26') feet	One 1-A 10-B:C
Twenty-six (26') or more	Two 1-A 10-BC

Float Plans

- Float plans shall be prepared by the operator of a launch or motorboat when engaged in surveying, patrolling, or inspection activities that are remote and are expected to take longer than 4 hours or when the operator is traveling alone. The plan shall be filed with the boat operator's supervisor and shall contain the following, as a minimum:
 - Vessel information (make/model or local identifier);
 - Personnel on-board;
 - Activity to be performed;
 - Expected time of departure, route, and time of return;
 - Means of communication (adequate means of communication shall be provided).

Training:

- All motorboat operators shall complete and document the following training:
 - A boating safety course meeting the criteria of the USCG Auxiliary, National Association of Safe Boating Law Administrators (NASBLA), or equivalent.
 - Motorboat handling training, based on the type of boats they will operate, provided by qualified instructors (in-house or other). Operators must pass a written and operational test.
 - Current USCG licensed personnel are exempt from the boating safety training, but they shall complete the written exam and operational test.

Inspections:

- Manson owned or leased launches, motorboats, skiffs and boat trailers shall be inspected, tested, repaired and maintained in accordance with manufacturer's recommendations.
 - Inspection shall be conducted by a qualified person (QP), documented and retained for a period of 5 years.

- Boats and boat trailers shall be inspected:
 - (1) Prior to each use, and
 - (2) Periodically, in accordance with manufacturer's recommendations

Scows and Barges

Scows dumping in open ocean waters should be equipped with remote opening devices to preclude the transfer of personnel between the vessels.

A safe means for transferring personnel between the towing vessels and scow shall be provided.

Manson will perform risk assessments to identify general and site-specific adverse weather and sea conditions (e.g., currents) under which the towing of scows or cargo barges is prohibited.

All barges and scows that are used as deck cargo barges shall comply with 46 CFR 174.010 through 174.020 for intact stability of deck cargo barges.

Personal fall protection devices or other fall protection shall be used on all scows and open barges to prevent personnel transiting between the stern and bow of the vessel from falling into the hopper or falling off the side of the vessel to structures (e.g., dock, vessels) located six (6') feet or more below.

Moving Anchors

Here are some basic guidelines for moving floating equipment using anchor lines:

- All personnel shall be made aware when a piece of equipment is moving on anchors.
- Care shall be taken to keep away from anchor lines and out of danger zones, look at where the anchor lines are running and imagine what they would do if something failed.
- The deck engineer shall be responsible for controlling the winches and moving the equipment.
- The crew foreman shall be responsible for directing the deck engineer via radio communication.
- Other water craft working in the area shall be notified of equipment movements so they can stay away.

SWEEPING

Prior to sweeping or disposal activity all crew member shall review the work plan and associated activity hazard analysis.

Mobilization, demobilization, and relocation of dredges, support barges, support tenders, tugs, and heavy equipment shall be performed by a qualified individual after reviewing proper work plans and activity hazards analysis.

Prior to sweeping operation, the certified crane operator will visually inspect the dig radius to ensure that all vessels are outside the dig radius. After the visual inspection, the operator will announce the commencement of work through the radio.

During sweeping all personnel must not enter the swing radius without the crane operator's approval. Review appropriate activity analysis prior to activity such as, but not limiting to landing scow, working on the scow, greasing buckets, crew change, fueling crane fleeting scow, etc.

Dredge disposal sites

Rocks and debris will be offloaded at the IMTT's yard which is located in Richmond, CA The landfill we will be using for disposal is "Potrero Hill Landfill"

Weather and traffic condition shall be determined prior to taking a trip to the disposal sites. The final decision on towing is made by the captain of the tug. Generally, a dump run will not be made if swell or wind wave height exceeds 10 feet with period less than 9 seconds or a wave height is greater than 16' regardless of the wave period. Crew shall inspect tow lines and riggings prior to towing and ensure that scow's load line is above the water level. All personnel on deck of the towing vessel shall be equipped with a life jacket and other PPE.

Towing vessel shall maintain a proper look out for obstructions in the water and maintain proper speed to prevent material from spilling into the bay during transit.

EQUIPMENT AND VEHICLES

Refer to Manson EHS System Procedure 44 – Motor Vehicle

Only authorized employees are allowed to operate Manson owned, leased, rented, or mobile equipment on a Manson project.

All equipment operators will operate the mobile equipment in accordance with the equipment operator's manual and in the manner in which the equipment was designed and intended for.

Equipment operators will possess the required training, certification and licenses as required by law and/or client policies for the equipment that they are required to operate.

Operators of over the road mobile equipment (dump trucks, fuel trucks, and service trucks) will have a valid driver's license.

All heavy equipment (cranes, forklifts, excavators/back hoes, man-lifts, etc.) used on this project will be inspected daily prior to use and comply with applicable OSHA and ANSI standards, which will be documented.

Forklifts will be equipped with rollover devices. Operators of forklifts will complete the Daily Forklift Safety Inspection Report or an acceptable equivalent.

Cell phone usage is prohibited when operating any equipment or vehicle

Equipment that is equipped with a windshield will be free of cracks or other visible damage.

All equipment will be equipped with rollover protective structures (ROPS).

Seatbelts are required to be worn at all times in any moving equipment or motor vehicle.

Vehicles one ton or greater and equipment used on-site must have an audible backup alarm. Those vehicles not equipped with an audible backup alarm will honk the horn twice before backing up.

The driver and all front seat passengers of any vehicle will wear seat belts.

No equipment or vehicle will be used to transport personnel unless it is specifically designed to do so. This includes beds of pickup trucks.

Equipment operators and vehicle drivers (including golf carts and utility vehicles) are responsible to check their equipment daily to verify it is working properly. Use the Daily Equipment Checklist. As a minimum, each operator will check:

- The brakes
- Lights
- Backup alarm
- Hydraulic systems
- Steering mechanism
- Operating controls
- Mirrors
- Fire extinguisher
- Limit switches
- Leaks

Equipment operators and vehicle drivers will possess a valid driver's license and the required training, certification and licenses as required by law and/or Manson safety policies for the equipment/vehicle that they are required to operate. This includes golf carts and all terrain utility vehicles.

SIGNAL PERSON

Refer to Manson EHS System Procedure 9 – Crane Management, Section 5.4

No worker shall signal any crane or forklift using hand signals or radio that is not a qualified signal person.

Qualified signal persons shall meet the following requirements:

- Be at least 18 years of age.
- Know and understand the Standard Method of crane hand signals.
- Been evaluated by a third party evaluator that documents the individual has met the requirements of this section and OSHA requirements.
- Know and understand basic safe rigging techniques and practices.
- Have basic understanding of crane operations and limitations including the crane dynamics involved in swinging and stopping loads and boom deflection from hoisting loads.
- Know and understand the relevant requirements for hand, radio, audible, and voice signaling.
- Demonstrate to appropriate management the personal skills required through a written and practical test.

Qualified signal person will perform at a minimum the following:

- Maintain clear visual or communication with the crane operator through standard hand crane signals, radio, or telephone.
- Maintain continual observation of the load being lifted.
- Ensure the load is stable and under control at all times.
- Stop all lift operations when a hazard or unsafe condition exists.

RIGGING

No Manson or subcontractor worker will rig material or equipment lifted by a crane, forklift or other device unless under the direction of a Qualified Rigger who meets all requirements described in the Manson Crane Management Procedure.

Qualified Rigger will meet the following requirements:

- Be at least 18 years of age.
- Has a minimum of four years documented experience as a rigger
- Understand spoken and written English.
- Have basic knowledge and understanding of crane-operating characteristics, capabilities and limitations. Understand rigging principles as applied to the job for which they are to be qualified.
- Demonstrate to appropriate management personnel skills in using rigging principles.

Manson or subcontractors Qualified Rigger will monitor all rigging. When the rigging does not fall within the expertise of the designated person, the load will not be lifted until a more qualified person has reviewed the rigging.

Rigging from the tines of a forklift is prohibited unless equipped with specialty crane lifting device.

Hooks will be equipped with safety latches. Moused and/or cargo/shakeout hooks will not be allowed.

WHEN RIGGING A HOOK OF A CRANE, ENSURE ONLY ONE EYE IN THE HOOK. Use a shackle or bridle for multi eye picks.

All rigging equipment and spreader bars shall have a manufacturer's tag or otherwise marked noting its safe working load. Rigging slings, chokers and spreader bars will have the safe lifting capacity displayed by means of a tag or other marking. Rigging equipment not properly tagged or marked will be immediately removed from the project.

A qualified rigger will rig all critical lifts.

All rigging to be used will be inspected daily before each shift by the qualified rigger and documented in writing.

Inspection reports will be made available to Manson EHS Department for inspection.

LOAD HANDLING EQUIPMENT

Refer to Manson EHS System Procedure 9 – Crane Management, Section 8

Mobile Cranes

Cranes will be operated in strict accordance with Manson Crane Management Procedure, OSHA 1926.1400 - 1442 and ANSI B 30.5.

No crane will be used without a current annual inspection. A crane-specific operating manual with the crane serial number on the cover and applicable load charts will be located in the crane at all times. A copy of the current annual inspection will remain in the crane at all times.

All crane operations will be under the direct supervision of a Crane Lift Director.

Crane operators will perform daily and monthly crane safety inspections. Inspections can be documented on the daily and monthly safety inspection checklists or an acceptable equivalent. Crane operators are to turn the Daily Crane Safety Checklist into their supervisor daily.

CRANE OPERATORS ON THIS PROJECT WILL MEET ALL QUALIFICATIONS OF THE MANSON CRANE MANAGEMENT PROCEDURE.

Crane Operators shall possess certification from an accredited crane operator testing organization and be qualified by the Manson Equipment Department to operate the specific crane.

Individuals who are not qualified or do not possess a crane operator certification shall be considered an operator-in-training.

- Operators-in-training shall not operate any equipment without continuous monitoring.
- Operators-in-training must be able to meet the certification requirements within 90 days of assignment as an operator-in-training.
- Operators-in-training will be continuously monitored by a qualified operator.
- Certified crane personnel/trainees will meet the following physical qualifications and requirements:
 - Be at least 18 years of age.
 - Understand spoken and written English.
 - Complete an Operator Medical Physical
 - Have vision of at least 20/30 Snellen in one eye, and 20/50 in the other with or without corrective lenses.
 - Must be able to distinguish colors, regardless of position, if color differentials are required for operation.
 - Have adequate hearing, with or without a hearing aid, for a specific operation.
 - Have physical strength, coordination, and sufficient reaction speed to meet the demands of equipment operation.
 - Show no evidence of physical defects or emotional instability that could be a hazard to themselves or others, or which, in the opinion of the examiner, could interfere with their safe performance; such evidence may be sufficient cause for disqualification. In these cases, medical judgments and tests may be required.
 - Show no evidence of being subject to seizures or loss of physical control; such evidence shall be sufficient reason for disqualification. Medical examinations may be required to determine these conditions.
 - Have normal depth perception, field of vision, manual dexterity, coordination and no tendencies to dizziness or similar potentially hazardous characteristics.
 - Have no detectable or known disease or physical restriction that would render them incapable of safely operating equipment. Where any deficiency of an upper or lower extremity exists, the acceptability of a candidate shall be the decision of the supervisor after consulting with the designated physician.
 - Shall successfully pass, with a negative result, a substance abuse test. The level of testing will be determined by the standard practice for the industry where the crane is employed and, if necessary, this test shall be confirmed by a recognized laboratory service.

- Operator recertification shall be in accordance with accredited crane operator testing organization's policy and requirements. The physical examinations shall be required every two years.

All cranes will be equipped with anti-two block devices on both the load and whip lines. Exemption are cranes involved in duty cycle work such as clamshell or dragline work.

Use of crane baskets is strictly prohibited on this project without prior approval of the Manson EHS Department.

Manson and subcontractor supervision will review the safe operations of the crane with each operator.

Work near any energized overhead power lines, the minimum clearance will be:

- | | | | |
|----------------------|---------|------------------------|------------------------------|
| • Up to 50 kV | 10 foot | • Over 500 to 750 kV | 35 feet |
| • Over 50 to 200 kV | 15 foot | • Over 750 to 1,000 kV | 45 feet |
| • Over 200 to 350 kV | 20 foot | • Over 1,000 kV | Established by utility owner |
| • Over 350 to 500 kV | 25 foot | | |

The crane manufacturer's operating manual, instructions and load charts for a specific crane will be used to determine the safe operation of that crane. Under ideal conditions, the manufacturer develops load charts and the typical field condition does not approach these ideal conditions.

Therefore, the following guidelines should be adhered to:

- The ground where the crane will be setup must be solid and able to support the weight of the loaded crane. Determine if underground utilities exist near where the crane will be set up.
- Ensure the crane is level 360° and maintained during operation.
- Extend outriggers fully or set per the manufacturer's recommendation for a particular lift configuration. Weight must be off the tires.
- Cribbing or mats under outrigger pads should be of sufficient size and properly placed to ensure adequate soil bearing Tonnage of the crane ÷ by 5 = Square feet of cribbing required for the crane.
- Before a lift, determine the load weight and load capacity. Crane capacity charts are the ideal gross capacity of the crane at certain boom lengths, boom angles and load radius from the crane center pin.
 - Deductions to the net capacity should be made per manufacturer's load chart or operating manual for attachments such as jibs (stowed or attached), headache balls, wind, less than ideal setups, etc. to determine the load that can be safely lifted.
 - Additional deductions to the net capacity are the weight of the cranes load block, rigging and amount of load line required to make the lift. Some manufacturers include the load line in their load charts but others like Manitowoc do not.
- A designated, qualified person will determine the load weight. Note: OEM drawings listing the equipment or machinery assemblies are not always accurate. Refer to the shipping weight or have the equipment or machinery assembly weighed. Calculate all structural loads and determine the center of gravity. **Cranes equipped with systems that provide weight of a load as it is lifted will not be used to weigh equipment or machinery assemblies.**
- Determine the radius from the center pin of the crane to the load using a steel ruler. **This is required for capacity- and near-capacity lifts.**
- Determine the boom length, counterweight and crane configuration to determine the correct load chart required.
- Position the hook over the "Center of Gravity" of the load before starting the lift. Only one eye allowed per hook.
- Position the crane so there is a minimum swing and load path clearance of two feet. Distance from overhead electrical lines of 350kV or less will be a minimum of twenty (20") feet. Overhead electrical lines over 350 kV but less than 1,000 kV will be a minimum of fifty (50") feet. When working near electrical sources (overhead lines or lighting), the crane should be grounded and a safety spotter required.

Crane operators are to know the weight of all loads they are lifting.

A written critical lift or rigging plan is required for any lift where:

- The load is greater than 75% of the land base crane or 50% for barge mounted crane capacity as configured for the lift or as defined by the crane manufacturer
- Two cranes are used
- Any non-routine or critical equipment lift as defined in the Manson Crane Management Policy (The Project Manager/Superintendent or Safety Coordinator determines any lift to be non-routine)
- Lifting of personnel
- Lifting submerged loads

- Any load that is out of the operators view
- Lifting any hazardous materials
- Any lift where the center of gravity could change during the lift.

The written critical lift or rigging plan will be submitted to Manson Engineering Department for review and approval.

Floating Crane or Derricks

The floating Service Load Chart will be posted in the cab or operators station.

All walking surfaces shall be a skid resistant surface.

Operator will determine the list and trim at all times.

In addition to the daily and monthly inspections the following will be performed:

- The boom latching equipment for wear, corrosion, loose or missing fasteners, defective welds, and insufficient tension.
- Barge for:
 - Taking on water
 - Deck load for proper securing
 - Chain lockers, storage, fuel compartments and battening of hatches for serviceability as a water-tight appliance.
 - Firefighting and lifesaving equipment
 - Crane access barriers are in place

Operators will monitor the boom tip carefully to ensure that the limits of the load chart are not exceeded.

Bilges should be kept as dry as possible to eliminate the adverse effect of free surface (sloshing liquid).

LOADING AND UNLOADING

When loading and unloading, workers shall use the necessary PPE, tools, equipment, and communication to perform the task safely. A JSA and a plan for executing the work shall be developed and reviewed by all crew members involved. If the loading or unloading cannot be performed safely with the resources on hand, the JSA must be re-evaluated and a new plan must be developed.

Trucks

Here are some basic guidelines for loading and unloading trucks:

- All personnel must wear the required PPE, including any delivery drivers.
- One crew member must be responsible for directing the truck into position.
- All crew members can be spotters while the truck is moving through the construction zone.
- All crew members must be in communication at all times using radios, hand signals, etc.
- Before any loading/unloading, the truck must be stopped with the emergency break applied; wheels shall be chocked if necessary.
- If the truck bed is higher than the working surface, access to the bed shall be secured via a step ladder, stairs, staging, ramp, man-lift, etc. A worker shall not climb up onto a truck bed that is 6ft above the working surface or greater.
- Trucks shall be loaded and lashed in a way that does not require a worker to climb onto loads, and would not require someone unloading to do the same. This eliminates the need for fall protection if the worker remains within 6ft above the working surface.
- Unlashing the load shall only be performed if the load looks secure or if the potential hazard of the load shifting has been identified and a safe procedure developed.
- Unloading the items from the truck shall be performed with a forklift, crane, or any equipment necessary to perform the work safely. Communication between those rigging the loads and the equipment operator shall be maintained at all times.
- All rigging/lifting and forklift policies shall apply.

Barges

Here are some basic guidelines for loading and unloading barges:

- The plan for executing the work must include where material is to be loaded on the barge.
- Safe access to the barge shall be secured via gangways, ramps, etc.
- One crew member must be responsible for rigging the loads and communicating with the equipment operator
- One crew member must be responsible for landing the loads and communicating with the equipment operator.
- All crew members must be in communication at all times using radios, hand signals, etc.
- Barges shall be loaded and lashed in a way that does not require a worker to unnecessarily climb onto loads, become caught between two items, or work out of sight of the operator; as well as not require someone unloading to be exposed to the same risks.
- Unlashing the load shall only be performed if the load looks secure or if the potential hazard of the load shifting has been identified and a safe procedure developed.
- Unloading the items from the barge shall be performed with any equipment necessary to perform the work safely. Communication between those rigging the loads and the equipment operator shall be maintained at all times.
- All rigging/lifting and forklift policies shall apply.

FALL PREVENTION/PROTECTION

Refer to Manson EHS System Procedure 12 – Fall Protection

Manson is committed to the philosophy of 100% continuous fall protection, whenever workers are exposed to fall hazards of six (6') feet or greater. Some client or government regulations may require four (4') foot minimum fall protection requirements.

When a fall hazard is identified, Manson, subcontractors, professional service providers, vendors, or other third party individuals will take all practical measures to eliminate, prevent, and control fall hazards. All work will be planned with the intent to eliminate identified fall hazards and use best practices before selecting personal fall arrest protection.

Workers who are exposed to falls of six (6') feet or greater while working off scaffolding, elevated decks, elevated platforms, stairways, stairwells, reinforced steel, and any other elevated area or equipment will be protected from falls.

When a fall hazard has been identified and cannot be eliminated, then effective means of passive fall protection will be implemented before personal fall arrest systems are used in accordance with Manson Fall Protection Policy.

Acceptable passive fall protection systems include the following:

- Guardrail systems
- Safety Netting
- Covers for Floor, Roof and Wall Openings
- Protection from Falling Objects

Workers exposed to fall hazards that cannot be eliminated or passive fall protection applied will be uniformly equipped, trained and given periodic refresher training in the personal fall protection systems to minimize the adverse effects of accidental falls. Fall protection training records will be maintained on the project and available for review by Manson EHS Department.

WHEN PERSONAL FALL PROTECTION SYSTEMS WILL BE USED, MANSON WILL REQUIRE A WRITTEN FALL PROTECTION PLAN OUTLINING THE SYSTEM TO BE USED THAT WILL PREVENT A FREE FALL OF GREATER THAN SIX FEET, ANCHORAGE SYSTEMS, TRAINING REQUIRED, AND RESCUE PROCEDURE.

Personal Fall Arrest System will consist of an ANSI certified full-body harness, double lanyard with shock absorbing device or retractable lifeline, locking snap hook and properly engineered anchorage points.

PELICAN HOOKS WILL ONLY BE ALLOWED FOR POSITIONING HOOKS ON REBAR. PELICAN HOOKS ARE NOT TO BE USED FOR STANDARD FALL PROTECTION. OTHER USES MAY BE ALLOWED BUT WITH APPROVAL OF THE REGIONAL EHS MANAGER.

100% FALL PROTECTION MEANS PROTECTED FROM FALLS AT ALL TIMES WHEN WORKING AT OR ABOVE SIX FEET. This means it is mandatory for all trades, including but not limited to:

- Structural steel erection (bolt up and connectors)
- Re-bar assembly
- Concrete forming
- Pile Driving
- Carpentry
- Scaffold erection/disassembly

- Pre-cast erection
- Equipment maintenance

When wire rope is used to construct guardrail systems, at least 3/8" diameter cable shall be used with three cable clamps per connection. Workers will not tie off to a perimeter cable or wire rope handrail. These are only designed for 250 lbs. and do not meet the criteria for proper fall protection anchorages or horizontal lifelines.

Manson and subcontractors will submit all engineered documentation on horizontal lifelines to the Manson EHS Department for review and approval. Rope will not be approved as a component of a horizontal lifeline without approval of a qualified PE in fall protection. All horizontal lifelines will be installed under the direct supervision of a qualified person.

Lanyards will not be tied back to themselves unless the lanyard is specifically manufactured to tie back to itself.

Workers should not tie off near their feet as this will exceed the maximum free fall distance of six (6') feet.

There is no designated safe distance from any unprotected open side, leading edge, or shaft that would exempt a worker from fall protection. Being six feet away from an unprotected open side, leading edge or shaft does not exempt someone from being protected from falls.

On properly constructed scaffold, elevated decks and elevated platforms that have perimeter guardrail systems consisting of a top and mid rail, workers are not required to tie off. If the perimeter guardrail system must be removed, workers will wear full body harnesses with double shock-absorbing lanyards.

Floor openings two (2") inches or greater hatches, and all wall openings will be guarded or covered with an appropriate cover/hatch or guardrail. Covers/hatches will be secured to the floor to prevent displacement. The floor or wall cover will be properly marked with a Danger sign stating, "COVER-DO NOT REMOVE".

Any worker that must remove a guardrail, hole-cover, or other fall protection system in the course of their work will be responsible for immediately replacing the protective system.

Workers will be protected from falling objects from above.

In the event any deviation of the Manson fall protection policy is required, the Manson Corporate EHS Director and Business Unit Vice President over the project will be required to approve in writing.

All personal fall arrest systems will be inspected prior to each time of use by the wearer.

Personal fall protection must be inspected monthly by the fall protection competent person and the color coded tape will be applied in a visible location on each piece of the personal fall protection equipment. When any part of a personal fall protection system is not in compliance with the current color, it will be taken out of service immediately.

Month	Color	Month	Color
January	Orange	July	Red
February	Blue	August	Yellow
March	Red	September	Orange
April	Yellow	October	Blue
May	Orange	November	Red
June	Blue	December	Yellow

PORTABLE LADDERS, GANGWAYS, AND STAIRWAYS

Refer to Manson EHS System Procedure 31 – Portable Ladders

Stairways having four or more risers or rising 30 inches or more shall have a stair rail system 36 inches high on each unprotected side.

When there becomes a change in the working surface at or greater than nineteen (19") inches or greater ladders, stairs or ramps will be provided.

Ladders used will meet the requirements established in OSHA 1915.71 and 1926.1050.

WORKERS WILL BE TRAINED ON THE SAFE USE OF LADDERS.

Ladders are required to ascend or descend truck beds and/or trailers.

Ladders will extend past the bearing point no less than thirty-six (36") inches.

Ladder landings shall remain clear of all obstacles and obstructions to allow easy access on and off the ladder.

Fall protection while working from a ladder is addressed in the previous section on fall protection.

Before use each portable ladder will be inspected daily. Ladders with broken or bent rungs, steps or side rails will be immediately destroyed and removed from the project. All ladders will be inspected monthly.

When ladders are used to access upper levels, they must be secured at the base and at the top by tying to prevent displacement.

Portable aluminum ladders are not allowed.

All ladders including job made ladders will conform to OSHA and ANSI standards.

All ladders will be heavy-duty type with a minimum capacity rating of 250 lbs. Use of ladders less than 250 lbs. capacity will not be used on the project without permission from the Project Manager and EHS Department. Ladders with less than 250 lbs. will be task specific and not used for general use.

Stepladders

STEPLADDERS WILL NOT BE USED AS STRAIGHT LADDERS. Stepladders will only be used with the spreaders fully extended and spreader bar locked in place.

Workers will not stand on the top or top step of a stepladder. No worker will work when their knees are above the top of the stepladder.

Straight/Extension Ladders

Ladders will be set up so the horizontal distance at the bottom is not less than ¼ of the vertical distance to the bearing point.

Workers will not stand on the top three rungs of a ladder. No worker will work when their knees are above the top of the ladder.

All straight ladders will have non-skid feet at the base.

Job Made Ladders

Job-made ladders shall be constructed for intended use. If a ladder is to provide the only means of access or exit from a working area for 25 or more employees, or simultaneous two-way traffic is expected, a double cleat ladder shall be installed.

Job-made ladders will be constructed in accordance with OSHA and ANSI standards.

HAND AND POWER TOOLS

Refer to Manson EHS System Procedure 27 – Hand and Power Tools

All hand and power tools will be kept in good condition with regular maintenance. Hand and power tools are to be operated according to manufacturer's instructions and guidelines and the personal protective equipment appropriate for the hand or power tool will be worn. All tools should be tethered to prevent falling to a lower level when there are workers below.

Hand Tools

- Impact tools such as chisels, wedges, etc. are not to have mushroomed heads.
- Wooden handles will not be splintered or cracked.
- Pocketknives will not be used for stripping wire.

Electric Tools

- Never lift or carry a power tool by its cord.
- Guards and safety switches will not be removed or made inoperative.
- Electric tools must have a three-wire cord unless it is double insulated.

Portable Abrasive Wheel Tools

- Guards will not be removed
- Grinding disks and wheels will be checked to verify they are the correct one for the grinder and rpm.
- Material will not be held in an individual's hand while using a grinder.
- Gloves will be worn at all times that portable abrasive wheel tools are being used.

Pneumatic Tools

- Clips, whips or retainers are required at each air hose coupling and to prevent attachments from being ejected from the tool.
- Only the pneumatic nail gun, where the muzzle is pressed against the work surface to fire, is allowed.
- Hose couplings will be secured to prevent displacement.
- Pneumatic nail guns shall be disconnected from the air supply when unattended.

Powder Actuated Tools

- Workers will be trained to operate a powder actuated tool and required to carry their training card at all times.
- Fired cartridges are not to be discarded on the floor but placed in a container or bucket and properly disposed of.
- The powder-actuated tool must not be able to fire until it is placed against the surface with a force of 5 lbs. or greater.
- Misfire cartridges are to be placed in water for five (5) minutes.

EXCAVATION AND TRENCHING

Refer to Manson EHS System Procedure 13 – Excavation and Trenching

Prior to any disruption of ground, excavation or trenching on this project, the following will be performed:

- No ground breaking, excavation or trenching work will be performed without the presence of a competent person.
- Underground utility locating authorities must be given the required advance notices to locate and mark the utility.
- If underground utilities are known or suspected, proper notification will be given to Manson Project Management.
- The competent person will ensure excavation or trench permit is completed and approved by the excavation competent person prior to breaking ground. The competent person will analyze the soil of the work area to determine the condition and type of soil to ascertain proper sloping or shoring requirements.
- When underground utilities are suspected, they will be located first by hand digging.

During excavation or trenching operations on this project, the following requirements will be followed:

- All trenches and excavations six (6') feet or deeper will have as a minimum, solid barricading, signage posted at the work area and appropriate fall protection.
- Trenches or excavations will be sloped or benched in accordance with local rules and regulations, and as determined by the competent person.

- Supporting systems (i.e. shoring, piling, etc.) will be utilized for all trenches and excavations where sloping or benching could not be performed. Trench boxes or shields will be utilized if neither of the above is used.
- Spoil piles and all other material will be placed a minimum of two feet from the edges of all trenches or excavations.
- Adequate access must be maintained at all times during trenching or excavating activities. When ladders are used, they will be placed such that no worker travels more than twenty-five (25') feet lateral in any direction.
- The competent person will inspect excavations and trenches at the beginning of each day and when conditions change.
- Excavations or trenches in Type C soil will not be benched.
- Excavations and trenches four feet or greater in depth will be evaluated for confined space hazards.

TEMPORARY BARRICADES

Whenever the following hazards or processes are encountered on this project, temporary barricades will be erected to protect workers:

- | | |
|-------------------------------|--|
| • Floor or wall openings | • Exposure to vehicular traffic |
| • Working above other workers | • Low light work areas |
| • Open excavations/trenches | • Startup operations and testing of equipment/systems |
| • Unguarded equipment | • Process hazards such as discharges, open systems, etc. |

When barricading is required, the following guidelines should be kept in mind:

- **Yellow “Caution” tape** is used to limit the passage of workers through the barricaded area. This barricading should only be used to protect workers from hazards that are not severe or the potential for severe injury or death is unlikely. CAUTION CAUTION CAUTION
- **Red “Danger” tape** is used to prohibit the passage of unauthorized workers through the barricaded area. This barricading should be used to protect workers from hazards that have the potential to cause serious injury or death. Danger tape is not to be used if the hazards cannot be eliminated or removed during in a single work shift. DANGER DANGER DANGER
- **Rigid barricades** will be used when protection is required beyond a work shift or longer. It will be used to protect workers from unguarded moving machinery/equipment, vehicular or heavy equipment traffic and low light conditions. Rigid barricading will consist of standard guardrail, temporary chain linked fencing, tube and couple scaffold members with construction fencing attached, and concrete barriers.
- **Radiation “Danger” tape** is used to identify x-raying operations and warn of a radiation hazard in the area. CAUTION RADIATION HAZARD

When using “Caution” or “Danger” tape barricading:

- Install the tape on rigid supports every six feet and at a height of 42 inches above the surface
- Install at least six feet from excavations, trenches, holes, leading edges and floor or wall openings. Install barricading at least five feet from all other hazards
- Install a standard “Caution” or “Danger” sign that identifies the hazard at ten-foot intervals around the barricaded area and the name and contact information that erected the barricade
- Do not impede walkways, driveways or aisles if possible. Identify alternative passageways when this is impossible
- Install for temporary protection only and remove the barricading after 48 hours and install rigid barricades

Rigid barricading must be capable of supporting and withstanding a 200 lb. force in any direction. Concrete barriers used along public roads must meet the requirements of the local jurisdiction or the Manual of Uniform Traffic Control Devices.

When using rigid barricading:

- Install it in a way to prevent tipping or sagging. Support construction fencing every eight feet
- Install pins in concrete barriers whenever there is a danger of vehicles or heavy equipment striking them
- Provide sufficient points of access to the work area

When work is complete and the hazard is eliminated, remove the barricading immediately and dispose of or store the barricading properly.

Workers who enter a “Danger” or “Radiation” barricaded work area without authorization will be subject to disciplinary action up to and including termination.

CONFINED SPACE

Refer to Manson EHS System Procedure 8 – Confined Space

A confined space is any space or void with limited access for entry and exit; not intended for human occupancy; and can readily aggravate a hazardous exposure.

Confined spaces include, but are not limited to:

- Storage and cargo tanks or holds
- Excavations and trenches
- Ventilation and exhaust ducts
- Sewers
- Pump or engine rooms
- Pipe, crawl spaces, tunnels, or access ways
- Storage lockers
- Open top spaces more than four feet in depth

No worker will be allowed to enter or work in any space that meets the definition of a confined space without developing a detailed Confined Space Entry Permit and written entry plan. Refer to OSHA1915.12 or 1910.146 for further direction.

A Marine Chemist or Shipyard Competent Person under the direction of a Marine Chemist will issue Confined Space Entry Permits.

Confined or enclosed spaces will be classified as one of the following:

- Class I – Danger No Entry and No Hot Work
- Class II – Safe for Entry with PPE and Not Safe for Hot Work
- Class III – Safe for Entry but Not Safe for Hot Work
- Class IV – Safe for Entry and Safe for Hot Work

Prior to working in any confined space, a Marine Chemist or Shipyard Competent Person will determine what hazards exist. Any operating system or equipment will be locked out and tagged to prevent accidental operation.

First-line supervisors will identify any external hazards and plan adequate protection for all entrants.

Confined spaces will have the atmosphere tested and a permit completed and authorized prior to any worker entering the space. The atmosphere will be tested for oxygen deficiency, toxic gases or vapors, and combustible or flammable gases or vapors.

When multi-employer operations may require workers from another employer to also enter the confine space, first-line supervision will ensure those individuals are briefed on the Manson entry plan, are properly trained, and comply with the Manson Confined Space Entry Plan.

Prior to any worker entering a confined space, they will be trained in:

- Contents of the Confined Space Entry Plan
- Known hazards in the confined space
- Emergency procedures in case of an emergency
- Correct use of personal protective equipment when required
- Hot Work Permit if required
- Atmosphere testing requirements
- Lockout/ Tagout procedures
- Fall protection if required

When a change in work task or if a new hazard was recognized, workers will be retrained.

When a confined space meets the definition of "Confined Space" in accordance with OSHA 1910.146 or 1915.12, Manson will ensure a proper rescue plan has been developed prior to any entry. The plan shall contain duties and responsibilities of all personnel involved in the task as well as identify all rescue services (i.e.: facility or outside fire department).



CONFINED SPACE ENTRY PERMIT

This Confined Space Entry Permit indicates the condition that existed at the time atmosphere tests were conducted.

This Confined Space Entry Permit becomes void if atmospheric or physical conditions change, space is closed, vessel is moved, or a solid cover is put over the opening.

 **CLASS I**
DANGER - NO ENTRY - NO HOT WORK 

CLASS II
SAFE FOR ENTRY WITH PPE - NOT SAFE FOR HOT WORK

CLASS III
SAFE FOR ENTRY - NOT SAFE FOR HOT WORK

CLASS IV
SAFE FOR ENTRY - SAFE FOR HOT WORK

WORK LOCATION/VESSEL: **EXPIRATION DATE & TIME:**

COMPARTMENT OR SPACE: **MARINE CHEMIST OR SHIPYARD COMPETENT PERSON PERFORMING SPACE EVALUATION:**

REQUIREMENTS FOR WORK PERMITTED BY THIS CONFINED SPACE ENTRY PERMIT

Mechanical Ventilation Fire Watch Respiratory Protection Protective Clothing
 Other:

ATMOSPHERIC TESTING: Continuous Monitoring Every 12 Hours Every 24 Hours As stated in Remarks

	Permissible Entry Level	Initial Reading	Time /Reading						
Percent O ₂	19.5% to 22.0%	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
LEL	Under 10%	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Carbon Monoxide	Under 25 PPM	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Hydrogen Sulfide	Under 10 PPM	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Other:	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

EQUIPMENT ID #: **CALIBRATION DATE:**

REMARKS

ISSUED BY: **ENTRY PERMIT ISSUE DATE:**

EXAMPLE FORM

11. ENVIRONMENTAL MANAGEMENT PLAN

Manson is committed to providing high standards of quality in its construction activities and doing so in an environmentally responsible and safe manner. The ultimate goal of this environmental management program is to maintain a project that is compliant with all environmental agency permits and governmental regulations, and free from negative environmental records and financial interest of both our client and Manson.

Manson Project Managers are responsible for administering and enforcing this Environmental Management Plan as well as ensure the day to day oversight and management of environmental issues and enforcements of provisions of the Environmental Management Plan.

Manson will ensure all work that may impact the environment will be coordinated with the client to assure their environmental policies, procedures, and regulations are maintained.

AGENCY PERMITS AND REGULATORY COMPLIANCE

Permits:

The client is responsible for obtaining all environmental permits and registrations necessary for the construction of this project. In addition, if applicable, the client should have obtained approval of its Sediment and Erosion Plan from the approving state jurisdiction. Additional permits that may arise will be coordinated with the client.

Scheduling/Tracking of Environmental Notifications:

Manson will incorporate environmental and regulatory notifications and submittals in the on-site project schedule. Any environmental or regulatory schedule activities are to be available upon request and reviewed during the weekly project schedule reviews as well as during the monthly project review meetings.

Notice of Violation (NOV):

At any time a Notice of Violation is received from a governmental or regulatory agency, Manson will report the NOV to the client immediately. Notices of Violation are written notifications of a regulatory or legal non-compliance or deficiency.

All Notice of Violation's will be reported to Manson senior management, documented, investigated, root causes determined, and a corrective action plan developed and implemented.

ENVIRONMENTAL AWARENESS TRAINING

All Manson and subcontractor personnel will be instructed in the requirements of the Environmental Management Plan (EMP) and the site environmental practices through training and discussions at the daily Task/Job Hazard Analysis meetings.

Topics to be discussed at a minimum are:

- Spill prevention and control
- Emergency response procedures
- Collection and storage of waste material
- Protection of storm water sediment controls
- Petroleum product dispensing best practices
- Handling and disposal of welding rod
- Location of spill kits

Manson, subcontractor, or vendor employee's that may perform environmentally sensitive or potentially damaging activities will be specifically trained in that particular task. Training on such subjects includes, but not limited to:

- Chemical handling and storage
- Spill prevention and control
- Fuel and lube truck operations
- Waste Management
- Storm water controls
- Maintenance operations
- Emergency response

Environmental topics will be routinely part of daily and weekly project safety meetings.

RECORDKEEPING

All records pertaining to environmental issues such as waste management, storm water management, any spills, and other environmental issues will be maintained by Manson as required by the client or by permits and regulations.

Manson will further maintain records of weekly environmental inspections and other non-permit related issues and made available to the client upon request.

PROJECT SPECIFIC SPILL RESPONSE PLAN

The Project will develop a Spill Response Plan in the event of an accidental spill or environmental incident. The plan will detail directions for spill containment, accidental release of a chemical or hazardous material, and emergency evacuation.

The following are the minimum items that will be contained in the project Spill Response Plan:

- The phone contact numbers of key project personnel, client personnel, and emergency response agencies.
 - Fire Department
 - US EPA
 - Law Enforcement Agency (Optional)
 - National Response Center
 - Emergency clean-up contractor
 - State EPA
- An inventory of spill containment material on the project.
 - Booms large enough to contain the volume of the largest quantity of chemical or hazardous material.
 - Pillows
 - Pads
 - Gloves
 - Tyvek coveralls
 - Hazardous material disposal bags
- Identification of areas where spills may likely occur
- Detailed action plan listing the steps to be performed by the first worker discovering a leak or spill. The action plan is to include such items as assessing the hazards, stopping or controlling the release or flow of the chemical or hazardous material, and the reporting of the release or spill.
- Description of controls in place to prevent spills from reaching navigable water
- Inspection program to ensure leaks are detected
- Fueling procedures to ensure reduction of spills

The Spill Response Plan is to be communicated to all workers during the safety orientation and frequently during project safety meetings. The Spill Response Plan will be clearly communicated to each first-line supervisor along with their responsibilities to prevent spills or leaks.

SPILL PREVENTION

No petroleum products in quantities larger than individual five (5) gallons US containers will be stored on the project without approval of the client. Petroleum product quantities will be reported to the client so they can be added to the client Spill Prevention Control Plan (SPCC). If Manson or subcontractor exceeds 1,320 gallons, a separate Spill Prevention Control Plan will be prepared and approved by a licensed engineer.

The project annual goal is no reportable spill or release of a hazardous chemical or substance to include any oil or chemical.

HAZARDOUS AND REGULATED MATERIAL MANAGEMENT

Minimization:

Non-hazardous materials will always be purchased whenever possible. Non-hazardous substitutes will meet all requirements of equipment manufacturers and have properties that assure quality construction is maintained.

Approval:

Any hazardous or regulated material that may be purchased or transported onto the project must have a material SDS on file in the EHS Department prior to the material arriving at the project. If urgency occurs, same day purchases may be authorized but will be handled on a case by case basis.

Inventories:

Manson will maintain current inventories of regulated substances stored on client property. Inventories will be conducted during environmental assessments and reports transmitted monthly to the client.

Hazard Communications (HAZCOM)

Safety Data Sheets (SDS) for all purchased chemical products will be submitted to the client. The storage and handling of any chemical or hazardous material will follow the project Hazard Communication Program contained in this Incident and Injury Prevention Program. All chemicals or hazardous materials on the project will be listed on the Master Chemical and Substance Inventory List.

Inventory Control:

Purchases of regulated substances or chemicals will be limited to quantities required for the use in near future. Excess purchases may result in environmental notifications and unused material which can become hazardous or regulated wastes and result in high cost of disposal and increased hazardous waste generator compliance requirements.

Manson is to notify the client each time regulated substances or chemicals must be replenished including gasoline or diesel fuel.

Material Handling and Storage:

Regulated substances or chemicals will be stored in containers approved by the EPA and compatible with the materials stored. Any regulated substances or chemicals in storage will be properly sealed and secured to prevent damage, spillage, and minimization of vapor release. All containers used to store regulated substances or chemicals will be properly labeled for product identification and appropriate hazard signage when applicable. Any material with temperature or flammable/combustible storage requirements shall be stored as required in approved storage facilities.

Any waste materials, if generated, will be stored in a location that is separate from storage of useable, non-waste materials to prevent mixing and contamination of non-waste material. Regulated substances or chemicals will be temporarily stored so as to prevent contamination of rainwater runoff. All containers will be properly sealed when not in use and inspected daily to ensure no leakage.

ANY SPILL NO MATTER HOW SLIGHT WILL BE CLEANED UP IMMEDIATELY AND REPORTED TO THE CLIENT. Any spill of 25 gallons or less will be stored in proper labeled containers. Waste resulting from the cleanup will be stored temporarily according to the client policies and procedures until it can be properly disposed of.

Flammable materials will be stored according to OSHA, NFPA, and this Incident and Injury Prevention Program requirement. All flammable storage areas will be properly signed and fire protection immediately available. Material requiring controlled temperature or flammable storage requirements shall be stored as required.

EROSION AND SEDIMENTATION

Erosion and Sediment Control Plan Approval, Storm Water Permitting, and excavating permits for the project have been obtained by the client. Manson is to be familiar with the Erosion and Sediment Control Plan developed by the client. Erosion and Sediment Controls Best Management Practices' (BMP) will be inspected twice a week or after any rain of half (½") inch or greater to assure effective erosion and sediment controls are maintained. Special attention to drainage and run-off from temporary roads, parking areas, lay-down areas, de-watering, and final grading activities at the end of construction must also be considered.

Manson will maintain an after hour contact list and provided to the client in case of an emergency. Subcontractors performing any work where land will be disturbed will be familiar with the Erosion and Sediment Control and Excavation Plan requirements and will remain in compliance of the plans during the work activity.

DUST CONTROL

Manson will control dust on and around the project using water trucks or designated fire hydrants.

CONTAMINATED SOIL OR GROUNDWATER

Contaminated soil and groundwater will be quickly identified to prevent environmental problems, as well as potential health and safety problems. Environmentally, once contaminated soil or water is transported and deposited at another location, the new location automatically becomes contaminated.

Evidence that soil or groundwater may be contaminated include: unusual or unnatural soil coloration or consistency, foul or chemical odors, floating oil or chemical residue, buried containers (such as 55 gallon drums), and dead vegetation. Knowledge of the site's history, as well as that of neighboring sites, may also be an indicator. Underground storage tanks, piping systems and drainage systems on the property are possible sources of contamination.

SOLID WASTE DISPOSAL (HAZARDOUS AND REGULATED WASTE MATERIALS)

In the event that an unplanned hazardous waste is incurred, the client will be notified immediately. The client may provide direction or instruction on temporary storage of the hazardous waste.

Any work task that may generate a hazardous waste will require a Waste Minimization Plan, prior to start of work. The Waste Minimization Plan will describe how Manson plans to control the hazardous waste including storage and disposal.

All waste oil will be placed in properly identified storage containers until it can be disposed of.

All hazardous waste will be disposed of as soon as practical. Hazardous waste stored on the project will not exceed 2,200 lbs. in any calendar month.

Containers used to store hazardous or regulated waste will be maintained in good condition at all times. Containers will be inspected weekly and that inspection documented to ensure no leaks have occurred.

Oily rags will be collected and properly stored on a daily basis.

Used oil will be tested for halogens prior to being placed in storage containers for disposal.

SPENT WELDING ROD IS TO BE CONSIDERED A HAZARDOUS OR REGULATED MATERIAL. Spent welding rod is to be collected in scrap metal containers. Spent welding rod is not to be allowed to accumulate in work areas at any time.

Cutting oil used on pipe threading machines will be contained in catch basins.

Any absorbent used will be collected separately and disposed of with construction debris as long as there is no free flowing material visible.

LITTER AND CONSTRUCTION DEBRIS (NON-HAZARDOUS MATERIALS)

General construction debris that is a non-hazardous solid waste material are (examples include lumber, metal, concrete, paper, and plastics). Non-hazardous materials generally do not pose a health problem, in normal use, and do not contaminate soil, water, or the atmosphere in their normal applied state.

Recycling of construction debris will be encouraged by all parties working on the project. Construction debris and waste will be properly separated and placed in the correct designated container. Improper disposal of construction debris or waste will result in disciplinary action.

Litter and construction debris will be contained in adequate containers or roll-off boxes. The containers or boxes will be properly labeled as to the contents. Containers or boxes will be inspected regularly to ensure unsuitable material was not wrongfully deposited. Manson will dispose of litter and construction debris on a regular basis.

The vendor that transports the litter and construction debris from the project shall cover the container or box to prevent possible spillage. Off-site disposal will only be at authorized client facilities.

On-site burning may or may not be legal, depending on the area, and may or may not require a temporary air permit.

Manson prohibits open burning on all projects.

MAINTENANCE AND FUELING OF EQUIPMENT

Storage of fluids used for equipment maintenance will be in designated areas approved by the client.

On-site maintenance is only allowed on large equipment that remains on the project for a specific period of time.

No vehicle will have any service performed on the project with the exception of a vehicle breakdown.

Used oil will be placed in containers and stored in a location approved by the client. Accumulated oil is to be removed from the project by an approved vendor. All used oil will be tested for halogens, when conditions suggest that halogens are present in accumulated used oil.

Maintenance of equipment on the project will be limited to routine fluid and filter servicing. Minor change out or repairs that are not considered major may be allowed to get the equipment back into operation.

Oil from equipment will be drained into catch basins. When fluids are changed on equipment, plastic sheeting or visqueen shall be placed on the ground prior to start of maintenance to ensure fluids do not migrate to surrounding soil.

Any spilled fluid on the ground will be immediately cleaned up, collected, properly stored in approved containers, and disposed of in accordance of the Manson Environmental Management Plan (EMP) and client procedures.

All equipment used on this project will be inspected daily for leaks and drips. Any drip observed on a piece of equipment will be repaired immediately. Absorbent will be placed on the ground to ensure fluids do not contaminate the ground.

Equipment that has a leak will be removed from the project immediately or parked in a designated lined area if repairs cannot be made immediately.

Subcontractor or vendor equipment will be inspected at time of delivery and any equipment that is in poor condition or have signs of leaks will be removed from the project immediately until repairs have been made.

There will be no stationary fuel storage tanks allowed on the project without prior approval of the client.

When fueling of equipment is being performed, catch pans and spill kits will be required on each truck or fueling location.

Fueling operations will not be left unattended.

No fueling of equipment will occur near any storm drain or catch basin.

Portable fuel containers will meet OSHA and NFPA standards. Portable fuel containers will only be stored at approved flammable storage locations.

Equipment will be properly grounded when fueling. No equipment will be allowed to be running while fueling.

When transferring fuel from marine vessels, a Declaration of Inspection will be completed.