



ACCIDENT PREVENTION PLAN

August 16, 2016

STATEMENT OF SAFETY AND HEALTH POLICY

Black Horse Group is guided by our safety and health policy. This policy is based upon the necessity to eliminate injuries, occupational illnesses and property damage, as well as to protect the public whenever and wherever the public comes into contact with the company's work.

All management and supervisory personnel are charged with the responsibility for planning safety into each work task and for preventing the occurrence of incidents and/or controlling conditions/actions that could lead to occupational injuries or illnesses.

The ultimate success of a safety and health program depends upon the full cooperation of each individual employee. Management at Black Horse Group assumes the responsibility and is prepared to take the necessary actions to see that safety and health rules and practices are enforced, and to ensure that effective training programs are employed to the best advantage.

This Safety and Health Program, which establishes safety and health requirements for this project, is based on the US Army Corps of Engineers Safety and Health Requirements Manual (EM 385-1-1) and OSHA Part 1926 regulations.

All work practices on this project will conform to this Safety Program, EM 385-1-1, and Amendments dated: Amendment 1, 4/5/10, Amendment 2, 11/1/10, Amendment 3, 6/1/10, Amendment 4, 3/9/11, Amendment 5, 4/1/11, Amendment 6, 7/5/11, and Amendment 7 dated 7/13/2012. OSHA Part 1926 and Specification Section 00 73 00. *Where the requirements differ between these documents the most stringent requirement will apply.*

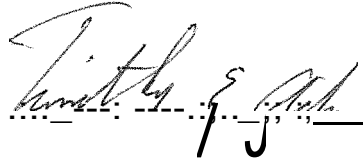
Safety will never be sacrificed for production. Safety is an integral part of quality control, cost reduction and job efficiency. All supervisors will be held accountable for the safety performance of the employees under their supervision. Our goal is the total elimination of accidents from our operations, allowing each employee to return home safely to his or her family.

Goal and Objectives for this project are zero accidents.

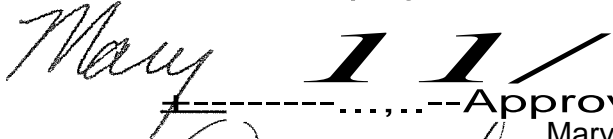
Mary Warren, PE
President

SECTION 1 SIGNATURE SHEET FOR THIS PROJECT SAFETY PLAN

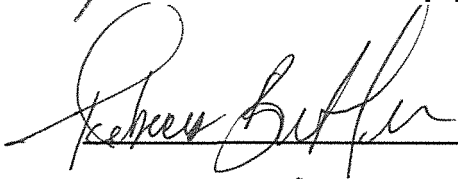
This plan has been prepared, reviewed and will be fully executed to ensure all workers on this project working towards a healthful and safe work workplace:



Plan Preparer:
Tim Aiken, Safety Officer/QC



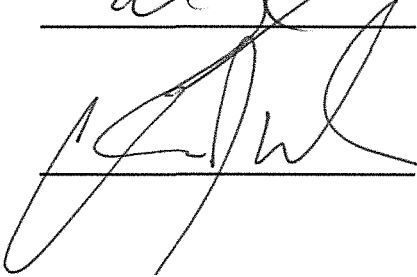
Approved by,
Mary Warren, P.E., President, Black Horse Group



Plan Concurrence:
Becky Butler, General Manager



Plan Concurrence:
Mike Ramos, Project Manager



Plan Concurrence,
Chris Widrick, Project Safety Officer

TABLE OF CONTENTS

SECTION 1 – SIGNATURE SHEET

SECTION 2 – PROJECT INFORMATION

SECTION 3 – RESPONSIBILITIES AND LINES OF AUTHORITIES

SECTION 4 –SAFETY AND HEALTH POLICY

- A. Governing Requirements and Responsibilities of Management & Employees
- B. Qualifications Of Site Safety Officer
- C. Disciplinary Program
- D. Safety Violation Form
- E. New Employee Orientation
- F. Safety Orientation Checklist
- G. Safety Meetings
- H. Posting Requirements
- I. OSHA Recordkeeping Requirements
- J. Accident Investigation
- K. Jobsite Accident Report
- L. ENG Form 3394
- M. Underground Utility Damage Report Form
- N. Jobsite Safety Inspections
- O. Daily Jobsite Inspection Checklist
- P. Handling OSHA Inspections
- Q. OSHA Inspection Report Form

SECTION 5 – PROJECT SAFETY PLAN

- 5.1 Project Information
- 5.2 Subcontractors, Suppliers, Deliveries, Visitors
- 5.3 Training
- 5.4 Disciplinary Procedures
- 5.5 Accident Reporting Procedures
- 5.6 Project Layout Plan
- 5.7 Medical Support
- 5.8 Personal Protective Equipment (PPE)
- 5.9 Jobsite Safety Rules
- 5.10 Excavations and Trenching
- 5.11 Hot Work
- 5.12 Regulated Materials
- 5.13 Sanitation
- 5.14 Signs and Signals
- 5.15 Hearing Conservation
- 5.16 Assured Equipment Grounding Conductor Program
- 5.17 Job Specific Plans

SECTION 2 - BACKGROUND INFORMATION

Project name: FCA Repairs, Folsom PA (US MARINE RESERVE CENTER WHOLE CENTER REPAIR- PROJECT)

Contract number: W912HP-15-C-0010

Project description: Us Marine Corps Training Ctr: 6th And Kedron Avenue Folsom, PA 19033 - This is a repair project consisting of the following definable features of work. There are five buildings at the facility scheduled for work as well as items in the site. The buildings are as follows; Boat Maintenance Facility; Boat Storage; Reserve Training; Vehicle Maintenance Facility; and Fire Protection Pump house.

DEFINABLE FEATURES OF WORK:

- caulking
- cleaning
- concrete
- doors and hardware
- electrical
- fencing
- flooring
- general conditions
- masonry
- mechanical
- millwork
- mobilize
- painting
- punchlist
- roofing
- Sitework
- HVAC
- Plumbing
- Finishes

Scope Features:

Building 1 (B1 - Boat Maintenance Facility) is a steel structured building. In all there are (6) work items identified as architectural in nature, (0) items are related to HVAC systems, (4) items relate to electrical, and (1) item relates to plumbing. Major work is painting

Building 2 (B2- Boat Storage) scope consists of (2) architectural items and (4) items electrical in nature.

Building 3 (B3- Reserve Training Building) has (24) architectural items (12) electrical items, (8) HVAC items, (3) flashing items, and (4) major plumbing items. The major work is the replacement of the entire potable water piping system.

Building 4: (B4 - Reserve Training Building Storage) has (4) electrical items. All maintenance items.

Building 5 (B5- Reserve Training Building Armory) has (1) architectural item (1) HVAC item and (1) electrical item.

Building 6 (B6- Vehicle Maintenance Facility) has (1) large plumbing item, (7) architectural items, (13) electrical items, (2) HVAC items, and (1) fire protection item.

Building 7 (B7- Pump House) has (1) HVAC item and (2) electrical items.

Site 1 (51 -Fence) has (10) items including fence repair and vegetation removal.

Site 2 (52- Load/Unload Ramp) has (2) items including crack repair.

Site 4 (54- Roads) has (2) items including asphalt repair and lighting

Site 5 (55- Parking Area) has (5) items including new concrete pads and bollard installation.

Site 7 (57- Sidewalk) has (2) items including joint sealing and lighting.

Site 8 (58 - Storm Sewer) has (2) items including grate replacement.

Site 9 (59- Parking Area) has (2) items including asphalt placement and lighting Site 10 (510- Flagpole/Billboard/Marker) has (3) items including flagpole repair

Site 14 (514- Open Storage Area 1) has (1) item that includes sealing joints

SECTION 3 - RESPONSIBILITIES AND LINES OF AUTHORITIES

3a. Statement of Responsibility

The Company Owner will:

- Accept responsibility and accountability for the safety program
- Provide leadership and guidance to supervisory personnel for the acceptance, maintenance, and enforcement of the safety program
- Provide the necessary resources to maintain a safe and healthful project site.
- Conduct or attend monthly supervisory safety meetings

Company owner name and phone number:

Mary Warren 315-755-1213

FCA Repairs at Folsom, PA

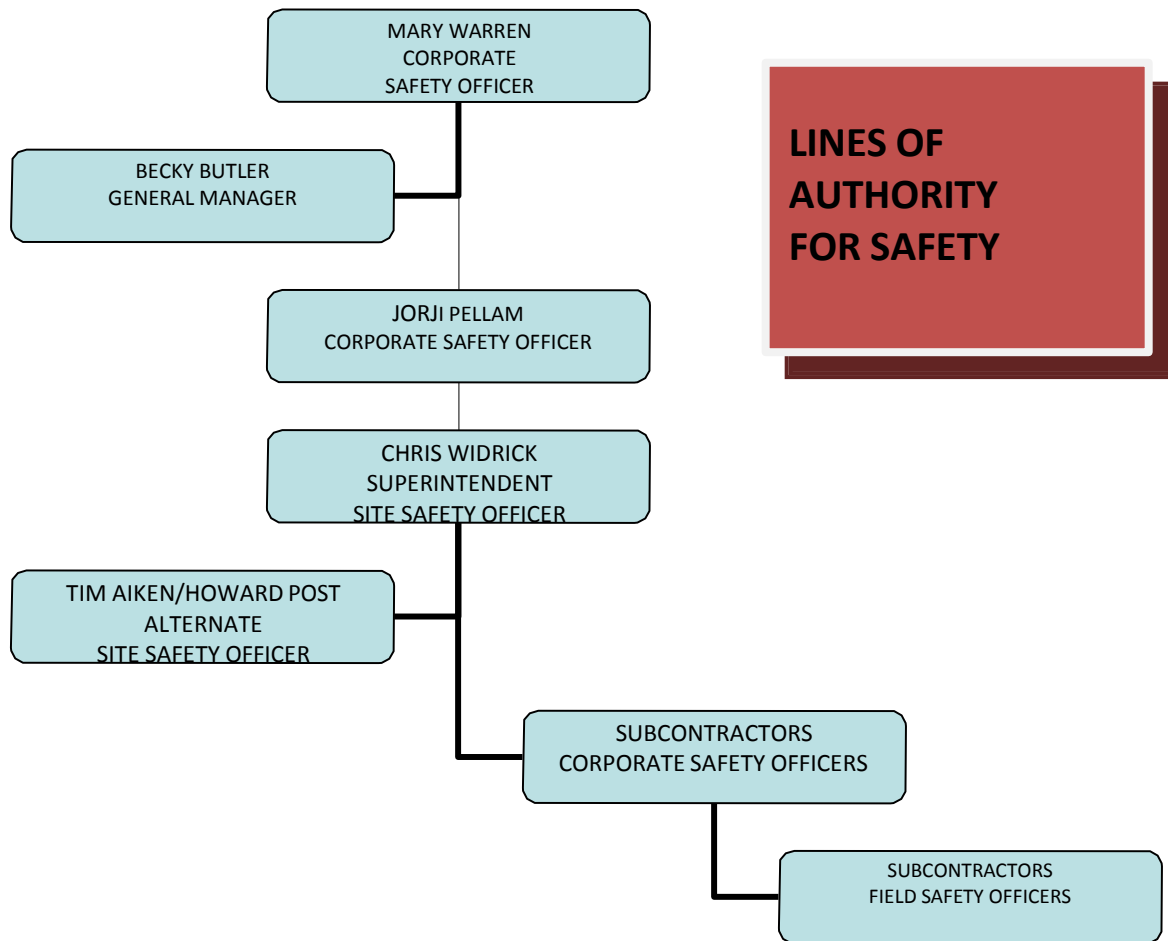
PROJECT SAFETY OBJECTIVE

THE SAFETY OBJECTIVE FOR THIS PROJECT IS TO PROVIDE A SAFE AND HEALTHY ENVIRONMENT IN WHICH TO WORK AND THE ELIMINATION OF ACCIDENTS FROM OUR PROJECT.

BLACK HORSE GROUP IS COMMITTED TO MEET THIS OBJECTIVE.

SUCCESS CAN BE ASSURED BY EACH PERSON ENTERING THIS JOB SITE FOLLOWING THESE GUIDELINES:

- ◆ PLAN WORK TASKS IN A SAFE MANNER.**
- ◆ IF YOU ARE NOT SURE, ASK!!**
- ◆ DO NOT SACRIFICE SAFETY FOR PRODUCTION.**
- ◆ ACCOUNTABILITY FOR SAFE WORK PRACTICES AT ALL LEVELS.**
- ◆ FOR ALL WORK ACTIVITIES ASSURE THAT A COMPETENT PERSON IS PHYSICALLY PRESENT**



SITE SAFETY OFFICER(s) ASSIGNED:

Mr. Chris Widrick will act as the Project Safety Officer. Mr. Widrick will have full control to issue safety violations or stop work if there is danger to life, health or equipment. In the event of his absence, a competent person will be assigned to act in his stead by Mr. Widrick.

In case of Mr. Widrick's absence, the following alternates safety Officers are assigned to the project:

Mr. Howard Post or
Mr. Tim Aiken

Competent Persons are assigned to this project for the following areas. Resumes and training for these people are included in these documents. Subcontractors who are performing work will be required to provide the resume and training as required to meet OSHA Competent Person requirements prior to start of work and in accordance with

applicable specification sections. Such documents -if not included in this plan now, will be supplemented prior to beginning work.

Work shall not commence in these the following areas unless the competent person is on site:

COMPETENT PERSONS ASSIGNED TO THIS PROJECT

Competent person will be submitted at the preparatory meeting prior to starting the scope of work

AREA	COMPETENT PERSON
EXCAVATION AND TRENCHING	Chris Widrick for BHG
FALL PROTECTION	Chris Widrick for BHG
LADDERS AND SCAFFOLDING	Chris Widrick for BHG

RESUME INFORMATION RELEVANT TO SITE SAFETY OFFICER

NAME: **CHRIS WIDRICK: PRIMARY SITE SAFETY OFFICER**

Number of Years in Construction: 15

Number of Years with Black Horse Group: 6

Number of Years in this position or role: **5+ as a Site Safety Officer**

Project Site Safety Officer Experience:

2009 – Present; **Black Horse Group, LLC**, Watertown NY. Duties include Project Site Safety Officer and Safety officer duties include the implementation of Black Horse Group's Corporate and Project Safety Plan (see Safety plan for specific details on duties): Duties include but not limited to: Performing daily project safety inspections, notifying subcontractors of safety violations, ensuring corrective measures are taken, documenting safety violations, removing unsafe equipment and persons from site, reporting illness and injuries to corporate office and Government, ensuring tool box talks are conducted on weekly bases by in- house personnel and subcontractors.

Relevant Projects as Site Safety Officer:

2014-2015 \$6.3 Million NAVFAC NOCS Whole Center Repair, Fort Drum, NY - Project Safety Officer

2012-2014 \$4.9 Million Ammunition Supply Project, Ft Drum, NY: Project Safety Officer

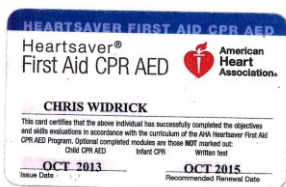
2011-2012 \$12.4 Million Training Aid Support Center –Safety Officer

2009-2011 \$6.3 Million Child Development Center- Safety Officer

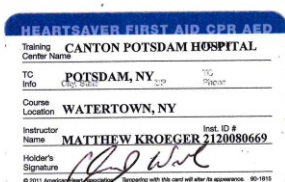
EDUCATION

AAS Construction Engineering, 1999 SUNY CANTON

- ICC Building Inspector
- 30 hour OSHA Accreditation – **REFRESHER PENDING (SEE ATTACHED RECEIPT)**
- CPR and First Aid Training **REFRESHER PENDING (SEE ATTACHED)**
- NYS Erosion and Sediment Control- 16 December 2009
- USACE QCS/RMS
- Confined Space
- Excavation and Trenching Safety
- Fall Protection & Scaffold User Safety



RE-CERTIFICATION OF CPR/ FIRST AID IS IN PROGRESS



IN PROGRESS



CERTIFICATE OF COMPLETION

This acknowledges that

CHRISTOPHER WIDRICK

Has successfully completed

OSHA 30 Hour Construction

The course was developed by ClickSafety.
Official OSHA completion card to follow within 6 weeks

Serial Number: 4902094

Completed: 3/29/2011



Congratulations!

Your purchase has been successful! If you ordered courses for yourself, they are now available in your course library. You can use the LOGIN button at the top of any page with the information to start your courses.

Username: CWidrick

Passcode: ****

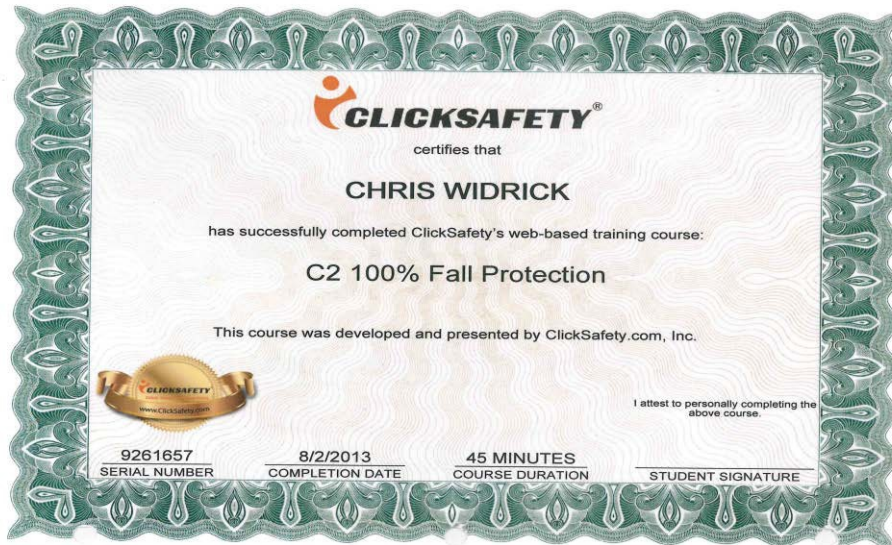
If you are using a Mobile, iPad or Tablet Device, [Click Here Now!](#)

A Summary of your order is below (#99815)

Quantity	Product	This course is for:	Price	Subtotal
1	OSHA 30-Hour Construction (OSHA30) SKU: OOPS-OU30	Me	\$189.00	\$189.00
Billing address: Chris Widrick Black Horse Group LLC 800 Starbuck Ave Watertown, NY 13601 US 3157551213				
Payment method: Visa (XXXX XXXX XXXX XXX4)				
Subtotal:				\$189.00
(CELEBRATE2015) Happy New Year 30% Off (discount):				-\$56.70
Total Before Tax:				\$132.30
Tax:				\$0.00
Total:				\$132.30

**30 HOUR OSHA RE-
CERTIFICATION IN
PROGRESS**







THIS CERTIFIES THAT

Chris Widrick

successfully completed the Confined Space Entry Safety Course and is therefore awarded this

CERTIFICATE OF COMPLETION

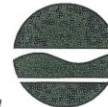
Given this 15th day of February 2011

Lisa C. Brownson asp

Lisa Brownson, Instructor



New York State Department of Environmental Conservation
Certificate of Completion



CHRIS WIDRICK

Is hereby awarded this Certificate signifying completion of the course:

**"Protecting New York's Natural Resources with
Better Construction Site Management"**

Attested Day of Training: 10/22/2012

This Course is Four-Hour Erosion and Sediment Control Training Endorsed by the NYS DEC Division of Water's Bureau of Water Permits to Satisfy Training Requirements Associated with Construction Activity under State Pollution Discharge Elimination System (SPDES) General Permit (#GP-0-08-001) for "Trained Individuals" (Contractors) and "Qualified Inspectors" needing such training. These Inspectors Work under the Direct Supervision of either a Licensed Professional Engineer or a Licensed Landscape Architect of the State of New York.

Certified Training Sponsored by: New York State Builders Association

Instructed by: John E. Folchetti, P.E. (NYSDEC SWT #0045-T)

Located at: 31 SODOM ROAD, BREWSTER, NEW YORK 10509

<http://www.dec.ny.gov/chemical/8699.html#DEC> ~ 625 Broadway, 4th Floor, Albany NY 12233-3505 ~ (518) 402-8111 ~ DWSWtrng@gw.dec.state.ny.us



CERTIFICATE OF WEB BASED TRAINING

This is to certify that

CHRIS WIDRICK

Has successfully completed

Asbestos in Construction

The course was developed and presented by ClickSafety

Serial Number: 5419484

Completed: 9/7/2011



RESUME INFORMATION RELEVANT TO SITE SAFETY OFFICER

NAME: **HOWARD POST: ALTERNATE SAFETY OFFICER**

Number of Years in this position or role: **5+ as a Site Safety Officer**

-Project Site Safety Officer Experience:

10/12 – Present: Black Horse Group, LLC, Watertown NY. Duties include Project Site Safety Officer responsible for implementation of Black Horse Group's Corporate and Project Safety Plan (see Safety plan for specific details on duties): Duties include but not limited to: Performing daily project safety inspections, notifying subcontractors of safety violations, ensuring corrective measures are taken, documenting safety violations, removing unsafe equipment and persons from site, reporting illness and injuries, overseeing that all tool box talks are conducted on weekly bases by in house personnel and subcontractors.

Relevant Projects as Site Safety Officer:

10/12-11/13: \$3.5 Million Air National Guard Reaper Drone Hangar Project, Fort Drum, NY
11/13-11-/14 \$15.5 Million USACE Fort Drum, In flight Inceptor Detection Project, Fort Drum, NY

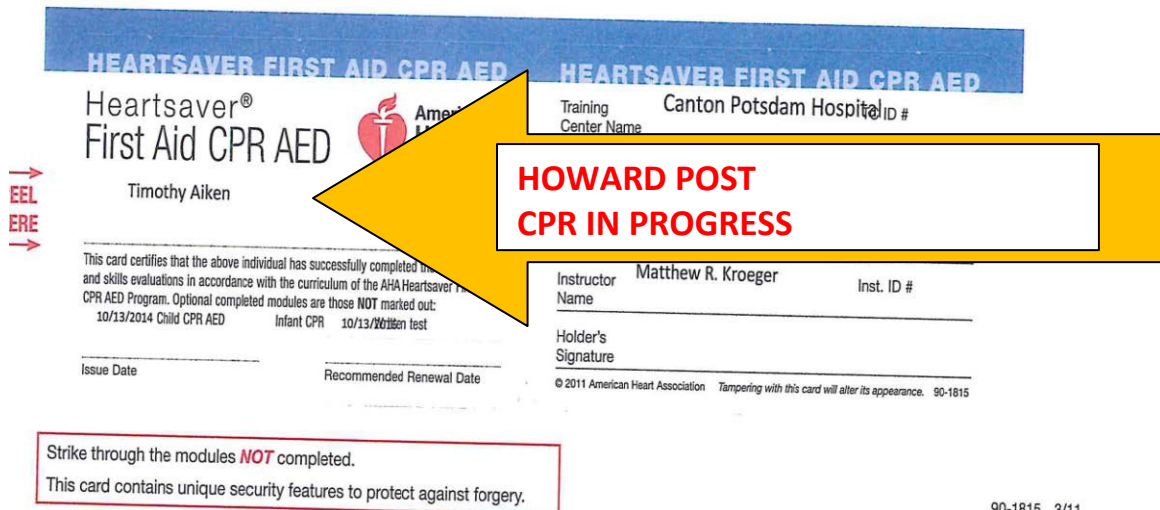
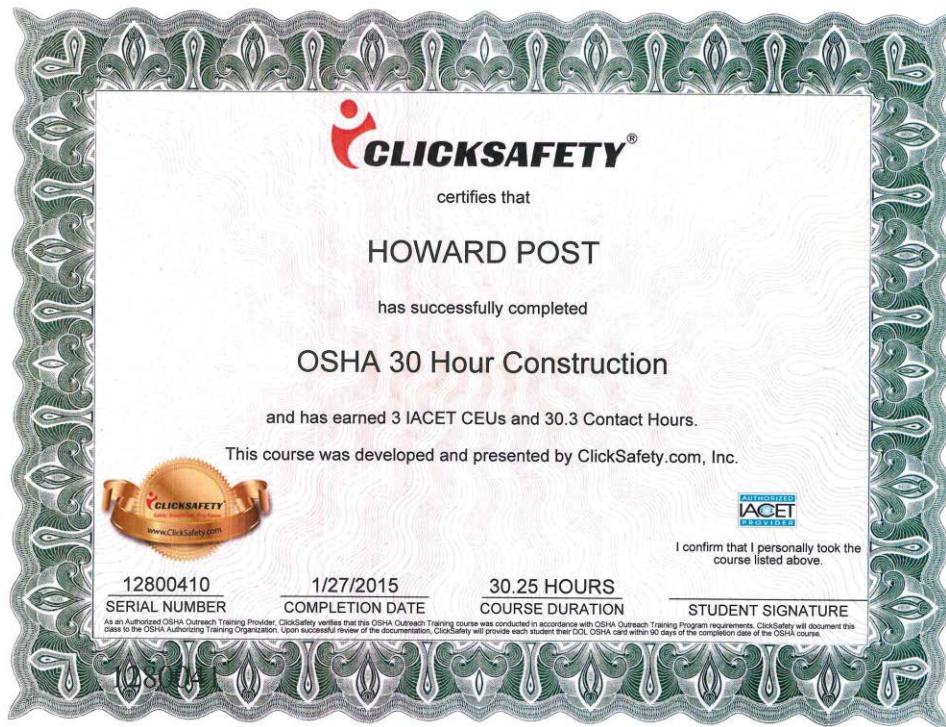
2/13-11/13 \$3.5 Million Air National Guard, 152 AOG Renovation Project, Syracuse, NY
11/14-11/15 \$760K Whole Center Repair Project, Wilmington, DE

7/09-11/12 The Bell Company - Rochester, NY. Duties included Project Safety Officer responsible for implementation of project safety plan for Bell Co. . Duties included but not limited to: Performing daily project safety inspections, notifying subcontractors of safety violations, ensuring corrective measures are taken, documenting safety violations, removing unsafe equipment and persons from site, reporting illness and injuries, overseeing that all tool box talks are conducted on weekly bases by in house personnel and subcontractor.

Relevant Project: 7/09-7/12 \$248M federal prison BELL/HEERY Joint Venture.

Education:

- AGC Superintendent Training Program
- **OSHA 30 Hour –completion date: 1/27/15**
- Construction Safety Program - State University of New York at Delhi
- ACI Certified Flatwork Technician-
- NYSDEC Erosion Control and Sediment Training 11/11/2012



RESUME INFORMATION RELEVANT TO SITE SAFETY OFFICER

NAME: TIM AIKEN: ALTERNATE SAFETY OFFICER

Number of Years in this position or role: **5+ as a Site Safety Officer**

-Project Site Safety Officer Experience:

2009-Present: Black Horse Group, LLC, Watertown NY. Duties include Project Site Safety Officer responsible for implementation of Black Horse Group's Corporate and Project Safety Plan (see Safety plan for specific details on duties): Duties include but not limited to: Performing daily project safety inspections, notifying subcontractors of safety violations, ensuring corrective measures are taken, documenting safety violations, removing unsafe equipment and persons from site, reporting illness and injuries, overseeing that all tool box talks are conducted on weekly bases by in house personnel and subcontractors.

Relevant Projects as Site Safety Officer:

7/09-7/11: \$6.5 million Fire Station, Fort Drum, NY: Safety Officer

8/11-6-/13 \$15.5 Million USACE Fort Drum, Training Support Center, Fort Drum, NY:
Alternate Safety Officer

6/13-Present \$22.5 Million Hangar Addition Project, Fort Drum, NY: Alternate Safety Officer

11/14-11/15 \$760K Whole Center Repair Project, Wilmington, DE: Alternate Safety Officer

5/15-11/15: UMCS Upgrade of Steam System: Watervliet, NY: Safety Officer

7/06-4/09 Empire NE - Gouverneur, NY. Duties included as Safety Officer responsible for implementation of project safety plan for Empire NE. Duties included but not limited to: Performing daily project safety inspections, notifying subcontractors of safety violations, ensuring corrective measures are taken, documenting safety violations, removing unsafe equipment and persons from site, reporting illness and injuries, overseeing that all tool box talks are conducted on weekly bases by in house personnel and subcontractor.

Education:

- **30 hour OSHA Accreditation**
- **CPR and First Aid Training**
- **NYS Erosion and Sediment Control- 16 December 2009**
- **USACE QCS/RMS-23-24 November 2014**
- **IBC Certified Building Inspector- 23 December 2009**
- **Certified ASME Section IX Pipe Welder and Inspector**
- **Trenching and Excavation Safety Training- 5 March 2010**
- **Construction Fall Protection Safety Training- 5 March 2010**
- **Certified LEED Green Associate**
- **ICC Commercial Mechanical Inspector**



IN PROGRESS

ClickSafety Online Safety Training Registration Confirmation

registrar@clicksafety.com <registrar@clicksafety.com>

Wed, Dec 23, 2015 at 3:09 PM

To: tim@blackhorsegroup.us

Dear ClickSafety User,

This email IS NOT a purchase confirmation or receipt.

If you are taking an online safety course, this email confirms your registration for ClickSafety Online Safety Training.

Please keep this email nearby. After you have completed your purchase, you will need this registration information

to log into your ClickSafety course library and take or review your online safety courses.

If you are a Company Administrator who purchases courses for others (i.e. your employees or co-workers) but

RECEIVED APR 21 2010

March 14, 2010

Mr. Timothy Aiken

Dear Mr. Timothy Aiken

On March 5, 2010 the employees listed below attended a seminar on Trenching and Excavation Safety. The training was done in accordance with the 29CFR subpart P of the 1926 Standard. The program utilized lecture, videotape and a power point presentation to relay the information to the attendees. Items covered were:

- Roll of Competent Person
- Soil classifications
- Soil Testing
- Site Inspection
- Sloping and Benching
- Other Protective Systems
- Air testing Requirements
- Heavy Equipment Issues
- Power lines
- Emergency Procedures

Employees attending:

Sincerely,

John MacVittie
Safety and Health Consultant

EEL
ERE

Heartsaver® First Aid CPR AED

American
Heart
Association

Timothy Aiken

This card certifies that the above has successfully completed the objective skills and skills evaluations in accordance with the curriculum of the AHA Heartsaver First Aid CPR AED Program. Optional completed modules are: 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. 17. 18. 19. 20. 21. 22. 23. 24. 25. 26. 27. 28. 29. 30. 31. 32. 33. 34. 35. 36. 37. 38. 39. 40. 41. 42. 43. 44. 45. 46. 47. 48. 49. 50. 51. 52. 53. 54. 55. 56. 57. 58. 59. 60. 61. 62. 63. 64. 65. 66. 67. 68. 69. 70. 71. 72. 73. 74. 75. 76. 77. 78. 79. 80. 81. 82. 83. 84. 85. 86. 87. 88. 89. 90. 91. 92. 93. 94. 95. 96. 97. 98. 99. 100. 101. 102. 103. 104. 105. 106. 107. 108. 109. 110. 111. 112. 113. 114. 115. 116. 117. 118. 119. 120. 121. 122. 123. 124. 125. 126. 127. 128. 129. 130. 131. 132. 133. 134. 135. 136. 137. 138. 139. 140. 141. 142. 143. 144. 145. 146. 147. 148. 149. 150. 151. 152. 153. 154. 155. 156. 157. 158. 159. 160. 161. 162. 163. 164. 165. 166. 167. 168. 169. 170. 171. 172. 173. 174. 175. 176. 177. 178. 179. 180. 181. 182. 183. 184. 185. 186. 187. 188. 189. 190. 191. 192. 193. 194. 195. 196. 197. 198. 199. 200. 201. 202. 203. 204. 205. 206. 207. 208. 209. 210. 211. 212. 213. 214. 215. 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SECTION 4 – SAFETY AND HEALTH POLICY

- A. Governing Requirements and Responsibilities of Management & Employees
- B. Qualifications Of Site Safety Officer
- C. Disciplinary Program
- D. Safety Violation Form
- E. New Employee Orientation
- F. Safety Orientation Checklist
- G. Safety Meetings
- H. Posting Requirements
- I. OSHA Recordkeeping Requirements
- J. Accident Investigation
- K. Jobsite Accident Report
- L. ENG Form 3394
- M. Underground Utility Damage Report Form
- N. Jobsite Safety Inspections
- O. Jobsite Inspection Checklist
- P. Handling OSHA Inspections
- Q. OSHA Inspection Report Form

A. Governing Requirements

This Safety and Health Program, which establishes safety and health requirements for this project, is based on the US Army Corps of Engineers Safety and Health Requirements Manual (EM 385-1-1) and OSHA Part 1926 regulations.

All work practices on this project will conform to this Safety Program, EM 385-1-1, and Amendments dated: Amendment 1, 4/5/10, Amendment 2, 11/1/10, Amendment 3, 6/1/10, Amendment 4, 3/9/11, Amendment 5, 4/1/11, Amendment 6, 7/5/11, and Amendment 7 dated 7/13/2012. OSHA Part 1926 and Specification Section 00 73 00. *Where the requirements differ between these documents the most stringent requirement will apply.*

Other sections of the contract documents may also require separate specially qualified individuals in such areas as chemical data acquisition, sampling and analysis, medical monitoring, industrial hygiene, quality control etc.

Responsibilities Assignments

All employees of Black Horse Group are expected to do their part to ensure a safe workplace. To accomplish this all employees must:

1. Abide by all federal, state, and local regulations.
2. Adhere to the safety policies and procedures of Black Horse Group and where appropriate those of the owners and contractors for whom Black Horse Group has contracted to perform work. In cases where jobsite safety requirements exceed all Federal, State and local regulations, employees are required to follow the jobsite safety requirements.
3. Exercise good judgment in the application of Black Horse Group's Corporate Safety Program.
4. Protect the public from potential hazards created by our activities.

Responsibilities of Management

1. Conduct daily safety and health inspections and maintain a written log which includes area/operation inspected, date of inspection, identified hazards, recommended corrective actions, estimated and actual dates of corrections. Attach safety inspection logs to the Contractors' daily quality control report.
2. Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub-contractors.
3. Maintain applicable safety reference material on the job site.
4. Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
5. Implement and enforce accepted APPS and AHAs.
6. Maintain a safety and health deficiency tracking system that monitors outstanding deficiencies until resolution. Post a list of unresolved safety and health deficiencies on the safety bulletin board.
7. Ensure sub-contractor compliance with safety and health requirements.

8. Maintain a list of hazardous chemicals on site and their material safety data sheets.

Responsibilities of Jobsite Superintendents/SSHO (includes management responsibility)

1. Ensure that all work performed is done in accordance with established safety regulations through methods such as pre-planning, training and use of the company disciplinary policy. Perform daily inspections of the jobsite and the work in progress to ensure compliance with EM 385-1-1.
2. Superintendents will follow-up on inspections performed to ensure proper corrective and disciplinary actions are taken.
3. Make safety devices and equipment available to all employees and ensure the equipment is used in the way and for the purpose for which it was designed.
4. Inform foremen of Black Horse Groups commitment to safety and of the need for them to manage their crews in a safe manner. Nothing less will be tolerated.
5. Review accidents, oversee the correction of unsafe conditions, and complete accident reports.
6. Conduct jobsite safety meetings and provide employees with proper instruction on the safety requirements of their activities.
7. Require Black Horse Groups' subcontractors to perform all work in accordance with established safety regulations. In cases where jobsite safety requirements exceed all Federal, State and local regulations, employees are required to follow the jobsite safety requirements.
8. Notify Black Horse Groups' corporate office of any safety violations and complete all associated documentation for safety infractions.
9. Protect the public from potential hazards related to company operations. Work with other contractors on site to ensure Black Horse Group employees are not endangered by the operations of others.
10. Ensure a pre-task safety and health analysis is conducted at the preparatory meeting for each DFOW.

Responsibilities of Jobsite Foreman

1. Execute the safety program at the work level.
2. Be knowledgeable of all safety requirements and safe work practices.
3. Conduct pre-task planning sessions to coordinate activities for the day and to anticipate unsafe conditions which may occur in the performance of those activities
4. Ensure new employees receive new hire orientation training covering the hazards associated with their duties.
5. Provide safety training to existing employees performing new tasks.
6. Make sure an adequate supply of protective equipment is available and used by employees when required.

7. Make sure work is performed in a safe manner and no unsafe conditions or equipment are present.
8. Correct all hazards, including unsafe acts or conditions. Ensure no unsafe equipment is present on the jobsite that could be used by an employee.
9. Report all near accidents so an investigation can be conducted to prevent a reoccurrence.
10. Secure prompt medical attention for any injured employees.
11. Report all injuries and safety violations.

Workers' Responsibilities

1. Follow company safety rules and work in a safe manner to ensure the safety of yourself, co-workers, and others.
2. When uncertain about how to perform any task, request assistance.
3. Correct any unsafe act or condition within the scope of your immediate work. Any hazard which cannot be readily corrected should be immediately reported to your supervisor.
4. Any unsafe condition corrected by an employee should be reported to the appropriate supervisor by the employee(s) who corrected the hazard.
5. Report for work in good mental and physical condition so that assigned duties can be carried out in a safe manner.
6. Avail yourself of company and industry-sponsored programs.
7. Inspect, maintain, and use safety devices provided for your protection.
8. Properly use and maintain all tools under your control.
9. Look out for other employees and assist them with safety requirements if an unsafe practice or condition is observed.

Responsibilities of All Personnel

1. Strive to make all operations safe to achieve an accident-free workplace.
2. Maintain mental and physical health conducive to working safely.
3. Keep all work areas clean and free of debris.
4. Do not perform work in a manner which may be harmful to others. Assess the results of your actions on the entire workplace.
5. Do not let unsafe conditions imperil others. Prior to leaving work, replace or repair safety precaution signs removed or altered during the course of your work.
6. Abide by the safety rules and regulations of every construction site, to include the use of task specific required personal protective equipment.
7. Work in strict conformance with federal, state and local regulations. In cases where jobsite safety requirements exceed all Federal, State and local regulations, employees are required to follow the jobsite safety requirements.

Subcontractors and Suppliers

1. Abide by all Federal, State, and local regulations. In cases where jobsite safety requirements exceed all Federal, State and local regulations, all personnel are required to follow the jobsite safety requirements.
2. If the activities of another contractor affect the health or safety of your employees, notify the appropriate foreman or superintendent of the hazardous condition.
3. Before entering the jobsite, inform a foreman or superintendent of your arrival.
4. Immediately inform the controlling contractor of all injuries to workers.
5. Any unsafe condition or action observed shall be reported to the controlling contractor so the hazard can be addressed.
6. Participate fully in the project Disciplinary Program.

Architects, Engineers, Owners and Visitors

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

B. Qualifications Site Safety Officer

Qualifications

The site safety officer shall have the following qualifications;

- 1) A minimum of 5 years safety construction experience in implementing safety programs at construction work sites for projects of comparable scope and complexity.
- 2) Documented experience in construction techniques and construction safety procedures.
- 3) Working knowledge of Federal and state occupational health and safety regulations.
- 4) Specific training in excavation safety, fall protection and confined space.
- 5) CPR/first Aid certification (current).
- 6) Familiarity with and ability to use and implement the Corps of Engineers Safety Manual EM 385-1-1.
- 7) OSHA 30 Hour safety course.

Authority

The site safety officer shall have the authority to suspend operational activities if the health and safety of personnel are endangered and to suspend and individual from operational activities for infractions of the Accident Prevention Plan.

C. Disciplinary Policy

Purpose

Safety on a jobsite requires constant attention and awareness from everyone involved. The success of a safety program is related to the efforts put forth by all employees involved in the project. It is for this reason that employees of Black Horse Group and its subcontractors are required to adhere to the safety rules and regulations of state, federal and local agencies, and the owner for whom work is being performed. In cases where jobsite safety requirements exceed all Federal, State and local regulations, all personnel are required to follow the jobsite safety requirements. In order to ensure active participation from each employee, we have developed a Disciplinary Policy to enforce these safety rules and regulations.

Responsibilities

The Site Safety Officer and Project Superintendent are responsible for implementation of the Disciplinary Policy. This does not exclude these parties from following safety policies/practices or from disciplinary action resulting from safety violations. Site Safety and Project Superintendents will be held to the same disciplinary procedures as follows if this safety plan is not followed out:

Procedure

1. BHG Employees are subject to one of the following disciplinary actions resulting from safety violations. Each violation (excluding the first verbal which will be documented in the supervisor's daily log) will be documented on the attached Safety Violation Form. This form will include the date of the violation and disciplinary action taken.
 - a) First Violation: Verbal warning, to be documented in supervisor's daily log.
 - b) Second Violation: Mandatory two-day work suspension without pay, documented on Safety Violation Form.
 - c) Third Violation: Termination, documented on Safety Violation Form.
 - d) The BHG employee has the option, upon receiving the second violation, of reducing the penalty by giving the tool box talk for the next three weeks. This option will still result in a 2 day suspension, but the employee will avoid immediate dismissal should he/she commit a third safety violation.
 - e) Subcontractor employees who initially violates a safety rule will be subjected to item a.

- i) A second violation will result in implementation of BHG subcontract Safety requirements. The employee's supervisor will be notified of the employee's persistent violation in writing via BHG PM. BHG PM will deduct \$500.00 for every continued violation. The employee will be corrected and removed from the project if a third violation occurs.
- 2. Violations are to be documented and up to date. A copy of the safety violation will be issued to the employee to whom it applies and a second copy will be filed in the employee's personal file.
- 3. When a safety violation is issued, the supervisor of the employee who is in violation will meet with that employee to discuss the safety infraction. The employee will be informed of the rule or procedure that was violated and the corrective measures that shall be taken to eliminate the hazard. The employee in violation shall fully understand the reason for and the associated risks pertaining to their violation prior to returning to work.
- 4. Nothing in this policy prohibits the immediate dismissal or removal from the jobsite of any employee whose conduct constitutes a serious violation of the safety requirements which could cause serious danger to himself/ herself, other employees, property or equipment.

D. Safety Violation Form

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

Employee Name:		Position:		Date:	
Description of Violation:					
Corrective Action Implemented to Prevent Reoccurrence:					
Disciplinary Action Taken (per disciplinary program):					

Employees with three violations of Black Horse Groups' corporate safety program are subject to termination. It is Black Horse Groups' policy to maintain a safe jobsite. Nothing in this policy prohibits the immediate dismissal or removal from the jobsite of any employee whose conduct constitutes a serious danger to himself/herself, his/her co-workers, property, equipment, or the environment. As an employee of Black Horse Group, I understand the nature of my safety violation and the proper corrective actions necessary to eliminate the hazard.

Employee Signature: _____

Date: _____

E. New Employee Orientation

All new employees are required to go through a safety orientation covering safety prevention, procedures and response measures. Safety orientation sets the tone for safety awareness and is an important element of Black Horse Groups' Safety Program.

New Hire Safety Orientations will be held at the project site.

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

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

F. Safety Orientation Checklist

The Safety Orientation Checklist is used to document safety training provided to all new and reassigned employees of Black Horse Group. Safety Orientation is intended to familiarize you with Black Horse Group's Corporate Safety Program and to provide you with the information to help you recognize and avoid unsafe conditions in your workplace.

This checklist includes all safety items to be covered during safety orientation. Employees are to check off each topic as it is covered. When training is finished, employees are to complete the statement at the end of the checklist confirming attendance at a safety orientation training session. Safety orientation checklists will be maintained at the main office and in some cases in the jobsite trailer.

Employee Name: _____

Date of Training: _____

Position: _____

Date of Hire: _____

General	Check	Welding and Cutting	Check
1. No horse play or running		1. Use of fuel gas	
2. Report unsafe conditions to supervisor		2. Arc welding and cutting	
3. Report all injuries and accidents		3. Storage of fuel gas cylinders	
4. Housekeeping			
5. Location of first aid kit		Electric	
6. Location of posted materials		1. Extension cords and tool cords	
7. Location of Haz-Com and MSDS		2. Ground fault circuit interrupters (GFCI)	
8. Corporate disciplinary program		3. Overhead power lines	
9. Emergency procedures			
10. Reporting of suspect materials		Scaffolding	
		1. Erection	
Personal Protective Equipment		2. Access	
1. Hard hats		3. Guardrails	
2. Safety glasses			
3. Ear protection		Motor Vehicles and Heavy Equipment	
4. Work clothing		1. Seats	
5. Protective clothing		2. Working around	
6. Shoes			
7. Respirators		Fall Protection	
		1. Nature of fall hazards	
Fire Protection		2. Erection of F.P. equip. (competent person)	
1. Location and care of extinguishers		3. Use of fall protection equipment	
2. Use of fire extinguishers		4. Man lifts/scissors lifts	
3. Location of emergency phone numbers			
4. Propane storage		Excavations	
5. Inside/outside (quantity and traffic)		1. Protection	
6. Flammable storage, approved gas cans		2. Inspection / Competent person	
		3. Access	
Tools		4. Underground installations	
1. Guarding		5. Traffic	
2. Proper tool for job			
3. Power-actuated tools (Hilti, Ramset)		Ladders	
4. Woodworking tools		1. Hazards	
5. Hand tools (handles, chisel heads)		2. Installation	
		3. Use	

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

Signature of Employee: _____

Date: _____

Signature of Trainer: _____

Date: _____

G. Safety Meetings

Purpose

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

Responsibilities

The job superintendent is responsible for conducting safety meetings with the supervisors. This can be accomplished as a part of established production meetings. Monthly safety meetings shall be held among all supervisors. Supervisors or foreman are responsible for weekly safety meetings with all of their employees. It is the responsibility of the job superintendent to see that weekly safety meetings are conducted in an orderly and productive manner. (Superintendent should ensure subcontractors are also performing safety meetings.)

Procedure

1. During the job superintendent's weekly meeting with supervisors, the subject of the next meeting with employees must be decided and any information or materials shall be provided to the supervisors.
2. All supervisors must schedule weekly meetings with all employees.
 - a) All of the employees must attend each safety meeting and sign in on a Black Horse Group Tool Box Talk Attendance sheet.
 - b) Attendance sheets must be kept on file at the jobsite and a copy should be forwarded to the main office.
3. Guidelines for safety meetings are as follows:
 - a) Safety is the sole purpose of the meeting and other matters shall not be covered.
 - b) Safety meetings should be held at least once a week and cover a topic pertinent to the work being performed. The suggested duration of the meeting is ten to fifteen minutes but can exceed that time frame if safety issues need to be addressed.
 - c) Supervisors shall pass on the information discussed with the job superintendent to their employees. The supervisor shall discuss these issues and ask for comments and suggestions from the employees.

- d) Comments and suggestions should be recorded for discussion at the next meeting with the job superintendent.
 - e) Administrative matters not contributing to safety are not appropriate topics to be discussed at safety meetings.
 - f) A record should be maintained containing the subjects presented or discussed as well as other items required by EM 385-1-1.
 - g) Documentation shall be submitted to the Government monthly.
4. Subjects for the safety meetings may come from:
- a) The insurance carrier
 - b) Local safety council
 - c) General Building Contractors of New York State
 - d) OSHA regulations
 - e) Fire department
 - f) Supervisors / Employees
 - g) Recent incidents
 - h) The customer
 - i) Consultant
 - j) Safety Videos

H. Posting Requirements

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

1. OSHA

- a) A poster illustrating industry standard crane hand signals must be posted if any crane or hoisting activities are being performed.
- b) OSHA requires the OSHA 300 form to be posted from February 1 through February 28 each calendar year. Only columns 1-13 need to be posted.
- c) OSHA Document 2203, The OSHA Poster.

2. STATE OF PA

- a) Employment of Minors, including Schedule of Permitted Hours.
- b) Fair Employment and Discrimination laws.
- c) Minimum Wage information.
- d) Notice of Compliance of Workers' Compensation Benefits.
- e) Notice of Unemployment Insurance

3. Federal

- a. Occupational Safety & Health Act
- b. Federal Minimum Wage Notice
- c. Employee Polygraph Protection Notice.
- d. Equal Employment Opportunity Commission Discrimination.
- e. Family and Medical Leave Act.

4. EM 385-1-1 ADDITIONAL REQUIREMENTS:

- a. A map denoting the route to the nearest emergency care facility;
- b. Emergency phone numbers;
- c. A copy of the most current Accident Prevention Plan (APP) or Project Safety and Occupational Health (SOH) Plan, mounted on/adjacent to

the bulletin board, or a notice on the bulletin board stating the location of the Plan. The location of the Plan shall be accessible on the site by all workers

- d. A copy of the Safety deficiency tracking log mounted on/adjacent to the bulletin board or a notice on the bulletin board shall state the location where it may be accessed by all workers upon request
- e. Safety and Occupational Health promotional posters
- f. Date of last lost workday injury and date of last OSHA recordable injury;
- g. OSHA Safety and Health Poster;
- h. A copy of the hazardous material inventory, identification of use, approximate quantities and site map detailing locations.

I. OSHA Recordkeeping Requirements

MR. BERT BURNHAM, is responsible for tracking the exposure data for the project. He will ensure that an accurate OSHA 300 log is kept both here in the main office and in the field office.

First Aid Treatment

Due to the potential difficulty understanding OSHA's requirements for documenting workplace injuries and illnesses, many contractors frequently include first aid cases on their OSHA 300 log. In doing so, contractors will increase their incidence ratios – ratios which are frequently used by private owners to pre-qualify contractors wishing to do work in their facility – thus damaging their ability to work for more safety-conscious owners. To remain competitive, it is important to accurately complete your OSHA 300 Form. OSHA does not require that first aid cases be recorded on your OSHA 300 log. This outline has been prepared to assist you in meeting OSHA's recordkeeping requirements and to help you understand what a first aid case is. NOTE: OSHA can and will issue fines for underreporting injuries, and severity of injuries, on your OSHA 300 log.

First aid cases include one-time treatment and subsequent observation of minor cuts, burns, splinters, and so forth, which do not ordinarily require medical care even though it may be provided by a physician or registered professional individual. Administration of a single dose of prescription medication on the first visit for a minor injury is first aid. Repeated use of a non-prescription medication, other than antiseptic, is a first aid case. First aid cases do not include injuries which result in a loss of consciousness, restriction of work or motion, or transfer to another job. If the case is such that medical treatment was provided, or should have been provided, the case is recordable.

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

Daily records of First Aid treatments, not otherwise recordable, will be documented on Black Horse Groups' Accident Investigation Report Form. A copy of this report will be provided to the USACE Project Engineer within 24 hours of occurrence.

Examples of First Aid Treatments

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

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

Burns, Thermal and Chemical (Resulting in destruction of tissue by direct contact): Limited to cleaning or flushing the surface, soaking, applying cold compresses, antiseptic, medication, and bandaging on first visit. Follow-up visits are restricted to observation, changing bandages, and non-prescription medication other than antiseptic. Cutting away dead skin (surgical debridement) is considered medical treatment and is recordable.

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

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

Inhalation of Toxic or Corrosive Gases: Limited to removing employee to fresh air and one-time administration of oxygen for several minutes.

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

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

Examples Of Diagnostic Procedures Considered First Aid

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

Examples of Preventive Procedures Considered First Aid

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

J. Accident Investigation

Purpose

An accident investigation is necessary in order to determine the cause or causes of an accident. The investigation will enable Black Horse Group to take the appropriate measures to prevent similar situations from reoccurring and to protect our interests in case of litigation. All accidents will be investigated including “near miss” incidents. The difference between an accident and a near miss is often a matter of chance.

When Is An Accident Investigation Conducted?

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

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

Accident Investigations

An Accident Investigation Report should be used to document the investigation. Consideration must be given to the types of equipment that may be needed to conduct an accident investigation. It is important that this equipment is available so if an accident occurs the tools needed to do a thorough investigation are in place.

The Contractor shall provide an initial written report of the accident to the COR within 24 hours.

Investigation Procedures

1. First aid or medical care: The first priority in an accident is to provide first aid or medical care for the individual(s) injured. The next of kin should then be notified that an accident has occurred.
2. Reporting accidents: Report any accidents or property damage, excluding first aid rendered on site, by telephone immediately to the Government Representative for this project.
3. Documenting the scene: It is important to record the scene of the accident as it exists after the accident. The area should be isolated and restricted to authorized persons. Photographs should be taken and sketches drawn. When photographing the accident scene, make sure the camera is equipped with a flash, if needed, and that proper film speed is being used. A description of the photograph should be put on the back of the picture taken as well as the name of the person who took the picture.
4. Evidence preservation: Conditions change rapidly due to factors such as weather conditions or the necessity to make the area suitable for work to resume. The area must be blocked off from unauthorized personnel until the accident investigation is completed.
5. Notes on physical conditions: Notes should be taken on physical conditions that may have contributed to the accident. Information such as poor housekeeping, surface conditions of roadways/walkways, poor visibility, traffic, weather, defective scaffolding, etc., should be recorded.
6. Vehicles: If the accident involved vehicles, measure distances and plot locations of the vehicles, skid marks, equipment, barricades, etc.
7. Injury type: Note the location and type of injury that occurred. The location of the injury would be left forearm, right thumb, lower back, etc.
8. Other notes: Notes should be taken as to where on the project the accident happened and at what time it occurred. Additional notes should be taken on any other related factors.
9. Notification of agencies: As required by regulation, local and federal agencies should be notified. In the event of a fatality or casualty (an incident resulting in the hospitalization of three or more employees) OSHA must be notified within eight hours. The Government Representative for this project will be included in all phases of the accident investigation.
10. Interviewing employees/public: Employees or public who witnessed or were involved in the accident should be interviewed. Interviews should be

held in the presence of others for verification purposes. Get all sides and interview as many witnesses as possible. Questions such as what activities were being done, method used, position of equipment and personnel, and any other unsafe acts observed should be asked. Ask witnesses to provide a detailed written statement to document what he/she observed. Obtain the names, social security numbers, license numbers, addresses, phone numbers, and insurance carriers of all witnesses.

11. Investigate employee training: Investigate if hazards and the appropriate safe work practices related to the accident were covered with the employee(s) involved in the incident through orientation, tool box talks, or by other means. Be sure to document any training that was provided that was applicable to work being performed when the accident occurred.
12. Physical and mental condition: Consider physical and mental conditions that may have contributed to the accident. Conditions such as blacking out, drugs or alcohol, medication, and other conditions should be addressed.
13. Maintain contact: Maintain contact with the injured party and their family.
14. Request copies of reports: If the police, emergency rescue squad, or the fire department is on site as a result of the accident, request a copy of their reports. They usually conduct an investigation and information they obtained may be helpful.
15. Information pertaining to the accident: Information pertaining to the investigation should not be provided to anyone (except OSHA, with prior approval from main office). All other interested parties who request information concerning the accident should be informed that an investigation is being conducted and that no information will be available until the findings have been made. Note: The main office must authorize the release of any information pertaining to an accident that occurred at a Black Horse Group jobsite.
16. Litigation: If an accident occurs that is of a serious nature, the accident may end up in litigation. It is important that the investigation be done correctly and documented. If technical matters are involved in the accident in which you do not have sufficient expertise, you should seek the assistance of a specialist.

Interviewing

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

Interviews may be the primary source of information in an accident investigation. The interview must be conducted in a thorough and efficient manner. Guidelines for accomplishing a high quality investigation are as follows:

1. Know where the interview is going to lead. If possible, prepare in advance.
2. Make sure you have an understanding of the equipment or process involved in the accident. This demonstrates knowledge and enables you to ask suitable questions.
3. Schedule interviews to allow for enough time at each interview to ask all questions.
4. Interviews should be held in private so there are no distractions. This allows you to focus your attention on what the interviewee has to say concerning the accident.
5. Be careful not to be overbearing in the tone of your voice or your mannerisms. When speaking to the interviewee use language that the employee can understand.
6. Remember that the purpose of the interview is to obtain information. If possible, avoid asking questions that suggest an expected answer or can only produce an answer of yes or no.
7. Keep control of the interview and let the person being interviewed talk. Keep the conversation from getting away from the subject at hand.
8. If you are interviewing witnesses, let the person describe what they observed before you ask your questions. After they have given their description, ask your questions and record both versions. Do not ask leading questions. Allow the individual(s) to tell their own story.
9. Avoid using generalizations. Be specific

10. Evaluate the evidence. Check what witnesses say with the conditions you observed at the accident scene. Investigate all clues and do not overlook any aspect of the accident.
11. Stress that you are not looking to place blame on someone but are seeking the cause to prevent a reoccurrence.
12. Close the interview in a courteous manner. Make sure what was Black Horse Group during the interview was recorded and have the statement signed by the person being interviewed. Encourage the person to contact you if any other information concerning the accident comes to mind.

Analyzing the Testimony

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

Documentation

1. If the owner of the property where the accident occurred is against the taking of photographs/video, conduct the investigation without their use and document the owner's request.
2. Prior to taking any pictures/video, determine if the accident scene has been altered for rescue purposes or for any other reason. If the area has been changed since the accident, note what alterations were done and the individual's name and social security number referencing the change.
3. When taking pictures it is beneficial to incorporate a scale for the picture to indicate vertical or horizontal dimension. Obviously this is not always an option, but should be done if possible. A ruler or tape measure will suffice.
4. After developing the photographs, the following information should be attached to or written on the back of each picture:
 - a) Employer's name and address
 - b) Location on the jobsite in which the accident occurred
 - c) Month, day, and year
 - d) Time of day the picture was taken
 - e) Brief description of what the photograph is identifying
 - f) Signature and social security number of the person who took the picture.

5. The Contractor shall complete and submit ENG Form 3394 for all accidents involving lost work time, medical treatment, and/or property damage in excess of \$2,000.00 within 48 hours of the accident. The report shall accurately represent the circumstances of the accident, cause of the accident, extent of medical treatment, extent of injuries and steps taken to prevent the occurrence of similar accidents. The hazard analysis covering the work activity being undertaken during the accident shall be attached to the report.
6. Daily records of all first aid treatment not otherwise reportable shall be maintained at the job site and furnished to the designated authority upon request. Records shall also be maintained of all exposure and accident experience incidental to the work (OSHA form 300 or equivalent as prescribed by 29 CFR 1904.)
7. Monthly exposure reports shall be submitted to the COR no later than the first day of each month. A compilation of man hours worked each month by the prime contractor and each subcontractor shall be included in the report. In addition the contractor shall report the number of accidents, severity, class of accidents and lost time work days for each month. Exposure hours will be submitted as required in Specification 01 45 00.10 10 paragraph 1.6.3.5.

Correction Procedures

Determining the cause or causes of an accident or incident is important to prevent similar occurrences from taking place in the future. Once root causes of an accident are identified, a training session will be held to implement new procedures and/or to provide awareness training to all appropriate field, yard, and management staff.

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

K. Jobsite Accident Report

Accident Reporting and Treatment (ART) Form Instructions

Travelers Claim # _____

Important Instructions

Emergencies

In the event of a medical emergency, you should:

Examples:

Heart attack
Amputation
Loss of consciousness
Serious fracture
Profuse bleeding
Multiple employees
hospitalized
Choking

1. Call an ambulance.
2. Take care of employee(s).
3. Secure the accident scene.
4. Injury Coordinator reports the injury to Travelers 1 (800) 832-7839.
5. A company representative should meet the employee(s) at the emergency room.
6. Supervisor completes the Section E-Accident Investigation Form.
7. The Injury Coordinator maintains communication with employees who are losing time.

Non-Emergencies Requiring Medical Treatment

In the event of an injury that does require medical treatment and is not an emergency:

Examples:

Slip and fall injury
Back injury
Sprain/strain
Cut
Burn
Wrist/elbow pain

1. Respond to the injured employee.
2. Complete Section A (Accident Data) of the ART form.
3. Ask the employee to read and sign Section B (Information Release).
4. Arrange for the employee to be escorted to the medical provider.*
5. Ask the medical provider to complete Section C and retain a copy of the form.
6. Return to the job site with the employee.
7. Complete Section D (Work Status).
8. Complete Sections E and F (based on the type of injury) on the back of the ART form. Have the employee complete the Employee Statement and immediately give the form to the Workers' Compensation Coordinator.

***Designees for Escort**

1. Superintendent
2. Foreman
3. Safety Manager
4. Workers' Compensation Coordinator

Accident Reporting and Treatment (ART) Form

Part 1: Supervisor's Report of Injury

SECTION A – ACCIDENT DATA

Employee's Name _____ Marital Status _____ Date of Birth _____
Home Address _____ Home Phone _____
Emergency Contact # _____ Job Title _____
Work Location _____ Reporting Supervisor _____
Injury Date _____ Time _____ AM/PM Date Reported _____ Last Day Worked _____
Describe what employee was doing when injured and how the injury occurred (be specific about body part injured): _____
When and to whom did the employee first report the incident: _____
Witnesses: _____

Supervisor Signature: _____ Date: _____

INFORMATION RELEASE

SECTION B – INFORMATION RELEASE

Any information related to this injury will be used for the purpose of evaluating and handling my claim for injury as a result of an incident occurring on or about the above noted date of injury and for no other purpose now or in the future.

I hereby authorize (Employer) or any of its representatives to be furnished any information and facts regarding this injury, including reports and records, results of diagnosis, treatment prognosis, estimates of disability and recommendations for further treatment.

Employee's Signature: _____ Date: _____

SECTION C – MEDICAL PROVIDER

Name of Medical Provider _____ Arrival Time: _____
Nature of Injury New Injury ☐ No injury/illness found Recurrence/aggravation of existing condition
☐ Work-related ☐ Non work-related ☐ Not known

Type of injury/illness: _____ Body part injured: _____

RECOMMENDATION	LIFTING	PUSHING/PULLING	POSITION LIMITATION:
FOR WORK:	<input type="checkbox"/> 1 – 5 lbs.	LIMITED TO:	<input type="checkbox"/> No repetitive motion
<input type="checkbox"/> Regular Work	<input type="checkbox"/> 6 – 15 lbs.	<input type="checkbox"/> 1 – 5 lbs.	Body Part _____
<input type="checkbox"/> Restricted Duty	<input type="checkbox"/> 16 – 25 lbs.	<input type="checkbox"/> 6 – 15 lbs.	<input type="checkbox"/> No reaching above shoulders
	<input type="checkbox"/> 26 – 40 lbs.	<input type="checkbox"/> 16 – 25 lbs.	<input type="checkbox"/> No reaching below waist
	<input type="checkbox"/> 41 – 50 lbs.	<input type="checkbox"/> 26 – 40 lbs.	<input type="checkbox"/> No repetitive stooping, twisting or bending
	<input type="checkbox"/> Over 50 lbs.	<input type="checkbox"/> 41 – 50 lbs.	<input type="checkbox"/> No pinching or forceful gripping
	<input type="checkbox"/> No Lifting	<input type="checkbox"/> Over 50 lbs.	<input type="checkbox"/> Standing limited to ____ hrs.
		<input type="checkbox"/> No Pushing/Pulling	<input type="checkbox"/> Sitting limited to ____ hrs.

Treatment:

Treatment Plan

Follow-up appointment on _____ with _____.

Comments:

Patient

☐ Return to supervisor; no restrictions

☐ Return to supervisor; send home

Disposition: ☐ Return to supervisor; with restrictions for days.

Employee can return to work on _____ (date).

Medical Provider Signatur

Print Name:

RETURN-TO-WORK

SECTION D – WORK STATUS

The above mentioned restrictions (if applicable) have been reviewed and the employee:

☐ Returned to full duty, no restrictions

☐ Has been placed in an appropriate restricted duty position

☐ Was sent home per medical instructions

☐ Other

Supervisor
Signature:

Date:

Employee Signatur

Date:

Note: To facilitate the best care for your employee, it is the Supervisor's responsibility to adhere to the above modifications.

Accident Reporting and Treatment (ART) Form

Part 2: Accident Investigation

(To be completed within 24 hours)

(To be completed by the Supervisor/General Manager) Describe in detail the task the employee was doing at the time of injury (include vehicle, equipment or tools used):

SECTION E – ACCIDENT INVESTIGATION

Was this the employee's regular work assignment? ☐ Yes ☐ No

Attach sheet for additional Info/comments.
If no, was person trained for assignment? ☐ Yes ☐ No

CAUSAL FACTORS		YES	NO	COMMENTS	CORRECTIVE ACTION
<u>Environment</u>					
1.1	Did the work area design contribute to the injury?	<input type="checkbox"/>	<input type="checkbox"/>		
1.2	Was the area cluttered?	<input type="checkbox"/>	<input type="checkbox"/>		
1.3	Did the employee have to be in this area to complete the job?	<input type="checkbox"/>	<input type="checkbox"/>		
1.4	Were other conditions (noise, air contaminants, extreme temperatures, etc.) a contributing factor?	<input type="checkbox"/>	<input type="checkbox"/>		
1.5	Other	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Equipment/Tools</u>					
2.1	Was the correct equipment being used?	<input type="checkbox"/>	<input type="checkbox"/>		
2.2	Was the correct equipment readily available?	<input type="checkbox"/>	<input type="checkbox"/>		
2.3	Did any defects or change in equipment/material contribute to hazardous conditions?	<input type="checkbox"/>	<input type="checkbox"/>		
2.4	Is regular maintenance done on machinery/equipment?	<input type="checkbox"/>	<input type="checkbox"/>		
2.5	Are there any maintenance logs?	<input type="checkbox"/>	<input type="checkbox"/>		
2.6	Was the employee using PPE (shoes, apron, goggles)?	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Method</u>					
3.1	Was the employee performing according to standard operating procedures?	<input type="checkbox"/>	<input type="checkbox"/>		
3.2	Was there a better method to perform task?	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Employee</u>					
4.1	Was safety equipment specified for this job? (List all)	<input type="checkbox"/>	<input type="checkbox"/>		
4.2	Was this equipment being used?	<input type="checkbox"/>	<input type="checkbox"/>		
4.3	Have safety procedures been established for this task?	<input type="checkbox"/>	<input type="checkbox"/>		
4.4	Were safety procedures being followed? If no, why?	<input type="checkbox"/>	<input type="checkbox"/>		
4.5	Was the employee trained on necessary equipment?	<input type="checkbox"/>	<input type="checkbox"/>		
4.6	Was the employee authorized to operate the equipment?	<input type="checkbox"/>	<input type="checkbox"/>		
<u>Management</u>					
5.1	Were the behaviors that caused the injury/illness observed before?	<input type="checkbox"/>	<input type="checkbox"/>		
5.2	If so, what was done?				
5.3	Does management require safe work practices related to this task? If yes, explain. How?	<input type="checkbox"/>	<input type="checkbox"/>		
5.4	Does management follow/support safety procedures?	<input type="checkbox"/>	<input type="checkbox"/>		
5.5	Have safety related changes been made/suggested in this area?	<input type="checkbox"/>	<input type="checkbox"/>		

SECTION F – FOLLOW UP

To Correct Unsafe Acts	To Correct Unsafe Conditions	CORRECTIVE ACTIONS		
<input type="checkbox"/> Review/change procedures <input type="checkbox"/> Instruct injured person <input type="checkbox"/> Instruct others <input type="checkbox"/> Process improvement Explain: _____ <input type="checkbox"/> Other _____ <input type="checkbox"/> Discipline injured person <input type="checkbox"/> Oral <input type="checkbox"/> Written	<input type="checkbox"/> Eliminate condition <input type="checkbox"/> Install safety guard <input type="checkbox"/> Warn others of hazards <input type="checkbox"/> Implement inspections <input type="checkbox"/> Request repairs Vendor: _____ <input type="checkbox"/> Initiate Ergonomic Review <input type="checkbox"/> Other _____	Action 1. _____ 2. _____ 3. _____ 4. _____ 5. _____	Assigned To _____	Date _____
		Corrective Actions completed <input type="checkbox"/> Yes <input type="checkbox"/> No		

Employee:		Date:	
Supervisor:		Date:	
General		Date:	
Manager:			

Accident Reporting and Treatment (ART) Form

Part 3: Employee Statement

My name is: _____

Date of injury: _____ Time of injury: _____

This is what happened (include what, when, where, how and why):

Do you recall anything unusual or unexpected that happened?

Are there work conditions that contributed to this injury?

How would you explain why you were injured?

Did the supervisor ask you to perform an unsafe act? _____

How would you prevent this injury from occurring again? _____

When did you first notice the injury or illness? _____

When did you tell your supervisor? _____

When did you first notice the pain? _____

Did pain develop suddenly or gradually? _____

Have you ever had this pain before? _____ If yes, when & how often? _____

Employee Signature _____ Date _____

Disclaimer

The information provided in this document is intended for use as a guideline and is not intended as, nor does it constitute, legal or professional advice. Travelers Indemnity Company does not warrant that adherence to, or compliance with, any recommendations, best practices, checklists, or guidelines will result in a particular outcome. In no event will Travelers Indemnity Company or any of its subsidiaries or affiliates be liable in tort or in contract to anyone who has access to or uses this information. Travelers Indemnity Company does not warrant that the information in this document constitutes a complete and finite list of each and every item or procedure related to the topics or issues referenced herein. Furthermore, federal, state or local laws, regulations, standards or codes may change from time to time and the reader should always refer to the most current requirements.

L. ENG FORM 3394

(For safety staff only)	REPORT NO.	ERO CODE	UNITED STATES ARMY CORPS OF ENGINEERS ACCIDENT INVESTIGATION REPORT FOC use of this form, see Help Menu and USACE document to AR 385- CO The proponent agency is CESO		REQUIREMENT CONTROL SYMBOL: CEEC-5-8 (R2)
1. ACCIDENT CLASSIFICATION					
PERSONNEL CLASSIFICATION	INJURY ILLNESS/FATAL	PROPERTY DAMAGE	MOTOR VEHICLE INVOLVED	DIVING	
GOVERNMENT OCMUAN O MIUTARY	O	O FIRE INVOLVED O OTHER	O	O	
O CONTRACTOR	O	O FIRE INVOLVED O OTHER	O	O	
O PUBLIC	O FATAL O OTHER	O	O	O	
2. PERSONAL DATA					
a. NAME (Last, First MI.)		b. AGE	c. SEX O MALE O FEMALE		d. SOCIAL SECURITY NUMBER e. GRADE
f. JOB SERIES/TITLE		g. DUTY STATUS AT TIME OF ACCIDENT DON DUTY O TDY DOFF DUTY	h. EMPLOYMENT STATUS AT TIME OF ACCIDENT O ARMY ACTIVE O ARMY RESERVE O VOLUNTEER O PERMANENT O FOREIGN NATIONAL O SEASONAL O TEMPORARY O STUDENT O VIHI: H()		
3. GENERAL INFORMATION					
a. DATE OF ACCIDENT (YYYYMMDD)	b. TIME OF ACCIDENT (Military Time) hr\$.	c. EXACT LOCATION OF ACCIDENT		d. CONTRACTOR'S NAME (1) PRIME	
e. CONTRACT NUMBER O CIVILWORKS O MILITARY O OTHER (Specify)		f. TYPE OF CONTRACT O CONSTRUCTION O SERVICE O AIE O DREDGE O OTHER (Specify)	g. HAZARDOUS/TOXIC WASTE ACTIVITY O SUPERFUND O DERP O IRP O OTHER (Specify)	(2) SUBCONTRACTOR	
4. CONSTRUCTION ACTIVITIES ONLY (Fill in first and last code number in box - see help menu)					
a. CONSTRUCTION ACTIVITY (CODE)		b. TYPE OF CONSTRUCTION EQUIPMENT (CODE)			
5. INJURY ILLNESS INFORMATION (Include name on line 1 in corresponding code box for items e, f & g - see help menu)					
a. SEVERITY OF ILLNESS/INJURY (CODE)		b. ESTIMATED DAYS LOST	c. ESTIMATED DAYS HOSPITALIZED	d. ESTIMATED DAYS RESTRICTED DUTY	
e. BODY PART AFFECTED PRIMARY (CODE) SECONDARY (CODE)		f. TYPE AND SOURCE OF INJURY ILLNESS TYPE (CODE) SOURCE (CODE)			
g. NATURE OF ILLNESS/INJURY (CODE)		h. PERSONAL FLOTATION DEVICE USED? O YES O NO QNIA			
6. PUBLIC FATALITY (Fill in first and last code number in box - see help menu)					
a. ACTIVITY AT TIME OF ACCIDENT (CODE)		b. PERSONAL FLOTATION DEVICE USED? O YES O NO QNIA			

7. MOTOR VEHICLE ACCIDENT						
a. TYPE OF VEHICLE	b. TYPE OF COLLISION	c. SEAT BELTS	USED	NOT USED	NOT APPLICABLE	
<input type="checkbox"/> DDPICKUP AND <input type="checkbox"/> DDAUTOMOBILE <input type="checkbox"/> DDTRUCK <input type="checkbox"/> DDOTHER(S) _____	<input type="checkbox"/> D SIDESWIPE <input type="checkbox"/> D HEAD ON <input type="checkbox"/> D REAR END <input type="checkbox"/> D BROADSIDE <input type="checkbox"/> D ROLL OVER <input type="checkbox"/> D BACKING <input type="checkbox"/> D OTHER (Specify) _____	(1) FRONT SEAT	<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	
		(2) REAR SEAT	<input type="checkbox"/> D	<input type="checkbox"/> D	<input type="checkbox"/> D	
8. PROPERTY MATERIAL INVOLVED						
a. NAME OF ITEM	b. OWNERSHIP	c. AMOUNT OF DAMAGE				
(1)						
(2)						
(3)						
9. VESSEL FLOATING PLANT ACCIDENT (Fill in item and check 5 ponds, ___ number in box from list • see help menu)						
a. ACTIVITY AT TIME OF ACCIDENT	(CODE)	a. ACTIVITY AT TIME OF ACCIDENT	(CODE)			
_____	_____	_____	_____			
10. ACCIDENT DESCRIPTION (Use additional paper, if necessary, SHI (attached page 4.)						
11. CAUSAL FACTOR(S) (Read Instructions before filling out page)						
a. (Explain YES answers in item 13)			YES	NO		
DESIGN: Was <input type="checkbox"/> Ignorance of facility, work place <input type="checkbox"/> or <input type="checkbox"/> lack of knowledge?			<input type="checkbox"/> D	<input type="checkbox"/> D		
INSPECTION/MAINTENANCE: Were inspection & maintenance procedures a factor?			<input type="checkbox"/> D	<input type="checkbox"/> D		
PERSON'S PHYSICAL CONDITION: In your opinion, was the physical condition of the person a factor?			<input type="checkbox"/> D	<input type="checkbox"/> D		
OPERATING PROCEDURES: Were operating procedures a factor?			<input type="checkbox"/> D	<input type="checkbox"/> D		
JOB PRACTICES: Were any job safety health practices not followed when the accident occurred?			<input type="checkbox"/> D	<input type="checkbox"/> D		
HUMAN FACTORS: Did any human factors such as size, age, etc., contribute to accident?			<input type="checkbox"/> D	<input type="checkbox"/> D		
ENVIRONMENTAL FACTORS: Did heat, cold, dust, sun, glare, etc., contribute to the accident?			<input type="checkbox"/> D	<input type="checkbox"/> D		
CHEMICAL AND PHYSICAL AGENT FACTORS: Did exposure to chemical agents, such as dust, fumes, mists, vapors or physical agents, such as noise, radiation, etc., contribute to accident?			<input type="checkbox"/> D	<input type="checkbox"/> D		
OFFICE FACTORS: Did office setting such as lighting, office furniture, carrying, stooping, etc., contribute to the accident?			<input type="checkbox"/> D	<input type="checkbox"/> D		
SUPPORT FACTORS: Were inadequate tools/resources provided to properly perform the activity?			<input type="checkbox"/> D	<input type="checkbox"/> D		
PERSONAL PROTECTIVE EQUIPMENT: Did the inadequate selection, use or maintenance of personal protective equipment contribute to the accident?			<input type="checkbox"/> D	<input type="checkbox"/> D		
DRUGS/ALCOHOL: In your opinion, were drugs or alcohol a factor to the accident?			<input type="checkbox"/> D	<input type="checkbox"/> D		
b. WAS A WRITTEN JOB ACTIVITY HAZARD ANALYSIS COMPLETED FOR TASK BEING PERFORMED AT TIME OF ACCIDENT? (If yes, attach a copy.)			<input type="checkbox"/> D	<input type="checkbox"/> D		
12. TRAINING						
a. WAS PERSON TRAINED TO PERFORM ACTIVITY TASK?	b. TYPE OF TRAINING	c. DATE OF MOST RECENT FORMAL TRAINING (YYYYMMDD)				
<input type="checkbox"/> D YES <input type="checkbox"/> D NO	<input type="checkbox"/> D CLASSROOM <input type="checkbox"/> D ON JOB	_____				
13. FULLY EXPLAIN WHAT ALLOWED OR CAUSED THE ACCIDENT: INCLUDED DIRECT AND INDIRECT CAUSES (See instruction for description of direct and indirect causes.) (Use additional paper, if necessary)						
a. DIRECT CAUSE(S) (Attach additional sheets if necessary, See page 4)						
b. INDIRECT CAUSE(S) (Attach additional sheets if necessary, See page 5)						

14. ACTION(S) TAKEN, ANTICIPATED OR RECOMMENDED TO ELIMINATE CAUSE(S)		
DESCRIBE FULLY (All 8ch addilioMiwets iiS ne<:e\$81), SH p119e 5)		
15. DATES FOR ACTIONS IDENTIFIED IN BLOCK 14.		
1. BEGINNING (YYYYMMDD)		2. ANTICIPATED COMPLETION (YYYYMMDD)
c. DATE SIGNED (YYYYMMDD)	d. NAME OF SUPERVISOR COMPLETING REPORT	e. CORPS SIGNATURE, SUPERVISOR COMPLETING REPORT
c. DATE SIGNED (YYYYMMDD)	d. TITLE OF SUPERVISOR COMPLETING REPORT	e. CONTRACTOR SIGNATURE, SUPERVISOR COMPLETING REPORT
f. ORGANIZATION IDENTIFIER (Division, Branch, Section, etc.)		g. OFFICE SYMBOL
16. MANAGEMENT REVIEW (1st)		
a. <input type="radio"/> CONCUR b. <input type="radio"/> NONCONCUR c. COMMENTS		
DATE (YYYYMMDD)	TITLE	SIGNATURE
17. MANAGEMENT REVIEW (2nd-Chief of Operations, Construction, Engineering, etc.)		
a. <input type="radio"/> CONCUR b. <input type="radio"/> NONCONCUR c. COMMENTS		
DATE (YYYYMMDD)	TITLE	SIGNATURE
18. SAFETY AND OCCUPATIONAL HEALTH OFFICE REVIEW		
a. <input type="radio"/> CONCUR b. <input type="radio"/> NONCONCUR c. ADDITIONAL ACTIONS/COMMENTS		
DATE (YYYYMMDD)	TITLE	SIGNATURE
19. COMMAND APPROVAL		
COMMENTS		
DATE (YYYYMMDD)	COMMANDER SIGNATURE	

10.

ACCIDENT DESCRIPTION *(Continuation)*

134.

DIRECT CAUSE(s) *(Continuation)*

13b.

INDIRECT CAUSE(s) *(Continuation)*

14.

ACTION(s) TAKEN, ANTICIPATED, OR RECOMMENDED TO ELIMINATE CAUSE(s) *(COO/klustlon)*

GENERAL: Complete a separate report for each person who was injured, caused or contributed to the accident (excluding uninjured persons and witnesses). Use of this form for reporting USACE employee first-aid type injuries not submitted to the Office of Workers' Compensation Programs (OWCP) shall be at the discretion of the FOA CCI/Mandef. Please type or print legibly. Applicable items shall be marked with a checkmark (✓), an "X" in the box(es). If additional space is needed, provide the information on a separate sheet and attach to the completed form. Ensure that these instructions are forwarded with the completed report to the designated management reviewers indicated in sections 16 and 17.

INSTRUCTIONS FOR SECTION 1- ACCIDENT CLASSIFICATION

(Mark boxes That Are Applicable)

a. GOVERNMENT. Mark "CIVILIAN" box if accident involved government civilian employee; mark "MILITARY" box if accident involved U.S. military personnel.

(1) INJURY/ILLNESS/FATALITY • Mark if accident resulted in any government civilian employee injury, illness, or fatality that requires the submission of OWCP Forms CA-1 (injury), CA-2 (Illness) or CA-6 (fatality) to OWCP; mark if accident resulted in military personnel's time off due to fatality, injury or illness.

(2) PROPERTY DAMAGE Mark the appropriate box if accident resulted in damage of \$1000 or more to government property (including motor vehicles).

(3) VEHICLE INVOLVED- Mark if accident involved a motor vehicle, regardless of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.

(4) DIVING ACTIVITY Mark if the accident involved an in-house USACE diving activity.

b. CONTRACTOR.

(1) INJURY/ILLNESS/FATALITY - Mark if accident resulted in any contractor lost-time injury, illness or fatality.

(2) PROPERTY DAMAGE - Mark the appropriate box if accident resulted in damage of \$1000 or more to contractor property (including motor vehicles).

(3) VEHICLE INVOLVED Mark if accident involved a motor vehicle, regardless of whether "INJURY/ILLNESS/FATALITY" or "PROPERTY DAMAGE" are marked.

(4) DIVING ACTIVITY • Mark if the accident involved a USACE Contractor diving activity.

c. PUBLIC.

(1) INJURY/ILLNESS/FATALITY • Mark if accident resulted in public fatality or permanent total disability. (The "OTHER" box will be marked when triggered by 1st FOA to report an unusual non-fatal public accident that could result in a lawsuit against the government or otherwise directed by the FOA Commander).

(2) VOID SPACE - Make no entry.

(3) VEHICLE INVOLVED- Mark if accident resulted in a fatality to a member of the public and involved a motor vehicle, regardless of whether "INJURY/ILLNESS/FATALITY" is marked.

(4) VOID SPACE • Make no entry.

INSTRUCTIONS FOR SECTION 2. PERSONAL DATA

a. NAME (MANDATORY FOR GOVERNMENT ACCIDENTS. OPTIONAL AT THE DISCRETION OF THE FOA COMMANDER FOR CONTRACTOR AND PUBLIC ACCIDENTS). Enter last name, first name, middle initial of person involved.

b. AGE • Enter age.

c. SEX - Mark appropriate box.

d. SOCIAL SECURITY NUMBER- (FOR GOVERNMENT PERSONNEL ONLY) Enter the social security number (or help identify number issued).

e. GRADE • (FOR GOVERNMENT PERSONNEL ONLY) Enter pay grade. Example: 0-6; E-7; WG-8; WS-12; GS-11; etc.

f. JOBSERIES/TITLE - For government civilian employees enter the pay plan, full series number and job title, e.g., GS-0810/Civil Engineer. For military personnel enter the primary military occupational specialty (PMOS), e.g., 15AJO or 11G50. For contractor employees enter the job title assigned to the injured person, e.g., carpenter, laborer, surveyor, etc.

g. DUTY STATUS • Mark the appropriate box.

(1) ON DUTY - Person was at duty station during duty hours or person was away from duty station during duty hours but on official business at time of the accident.

(2) TOY - Person was on official business away from the duty station and with travel orders at time of accident. Line 1-3 duty investigation required.

(3) OFF DUTY Person was not on official business at time of accident.

h. EMPLOYMENT STATUS- (FOR GOVERNMENT PERSONNEL ONLY) Mark the most appropriate box. If "OTHER" is marked, specify the employment status of the person.

INSTRUCTION FOR SECTION 3- GENERAL INFORMATION

- a. DATE OF ACCIDENT - Enter the month, day, and year of accident.
- b. TIME OF ACCIDENT - Enter the local time of accident in military time. **EX: 1430 (not 2:30p.m.).**
- c. EXACT LOCATION OF ACCIDENT - Enter facts needed to locate the accident scene. (Illustration/project name, building number, street, direction and distance from closest landmark, etc.).
- d. CONTRACTOR NAME
- (1) PRIME - Enter the exact name (of firm) of the prime contractor.
- (2) SUBCONTRACTOR - Enter the name of any subcontractor involved in accident.
- e. CONTRACT NUMBER - Mark the appropriate box to identify if contract is Military, or other: If "OTHER" is marked, specify city or contract appropriation on line provided. Enter complete contract number of prime contractor. **e.g. DAON 09-aS.C-0100.**
- f. TYPE OF CONTRACT - Mark appropriate box. A/E means architect/engineer. If "OTHER" is marked, specify type of contract on line provided.
- g. HAZARDOUS/TOXIC WASTE ACTIVITY (HWT) - Mark the box to identify if HWT activity being performed at the time of the accident. For surface and underground OERP, and Installation Restoration Program (IRP) HWT activities include accidents that occurred during inventory, predesign, design, and construction. For the purpose of accident reporting, DERP Forney Used DoD Site (FUDS) activities and IRP activities will be treated separately. For CMW or O&M HWT activities mark the "OTHER" box.

INSTRUCTIONS FOR SECTION 4- CONSTRUCTION ACTIVITIES

- a. CONSTRUCTION ACTIVITY - Select the most appropriate construction activity being performed at time of accident from the list below. Enter the activity name and place the corresponding code number identified in the box.

CONSTRUCTION ACTIVITY LIST

- | | |
|-------------------------|----------------------------|
| 1. MOBILIZATION | 13. CARPENTRY |
| 2. SITE PREPARATION | 14. ELECTRICAL |
| 3. EXCAVATION/TRENCHING | 15. SCAFFOLDING/ACCESS |
| 4. GRADING (EARTHWORK) | 16. MECHANICAL |
| 5. PIPING/UTILITIES | 17. PAINTING |
| 6. FOUNDATION | 18. EQUIPMENT/MAINTENANCE |
| 7. FORMING | 19. TUNNELING |
| 8. CONCRETE PLACEMENT | 20. WAREHOUSING/STORAGE |
| 9. STEEL ERECTION | 21. PAVING |
| 10. ROOFING | 22. FENCING |
| 11. FRAMING | 23. SIGNING |
| 12. MASONRY | 24. LANDSCAPING/IRRIGATION |
| | 25. INSULATION |
| | 26. DEMOLITION |

- b. TYPE OF CONSTRUCTION EQUIPMENT - Select the equipment involved in the accident from list below. Enter the name and place the corresponding code number identified in the box. If equipment is not included below, use code 24, "OTHER", and write in specific type of equipment.

CONSTRUCTION EQUIPMENT

- | | |
|------------------------------------|------------------------------|
| 1. GRADER | 12. DUMP TRUCK (HIGHWAY) |
| 2. DAAGLINE | 13. DUMP TRUCK (OFF-HIGHWAY) |
| 3. CRANE (ON VESSEL/SARGE) | 14. TRUCK (OTHER) |
| 4. CRANE (TRACKED) | 15. FORKLIFT |
| 5. CRANE (RUBBER TIRE) | 16. BACKHOE |
| 6. CRANE (VEHICLE MOUNTED) | 17. FRONT-END LOADER |
| 7. CRANE (TOWER) | 18. PILE DRIVER |
| 8. SHOVEL | 19. TRACTOR (UTILITY) |
| 9. SCRAPER | 20. MANLIFT |
| 10. PUMP TRUCK (CONCRETE) | 21. DOZER |
| 11. TRUCK (CONCRETE/TRANSIT MIXER) | 22. DRILL RIG |
| | 23. COMPACTOR/ROTARY ROLLER |
| | 24. OTHER |

INSTRUCTIONS FOR SECTIONS 5- INJURY/ILLNESS INFORMATION

- a. SEVERITY OF INJURY/ILLNESS - Reference paragraph 2-10 of USACE & Wtment 1 to AR 385.40 and enter code and description from list below.

- | | |
|-----|---|
| NOI | NO INJURY |
| FAT | FATALITY |
| PTL | PERMANENT TOTAL DISABILITY |
| PPR | PERMANENT PARTIAL DISABILITY |
| LWO | LOST WORKDAY CASE INVOLVING DAYS AWAY FROM WORK |
| RLW | RECORDABLE CASE WITHOUT LOST WORKDAYS |
| RFA | RECORDABLE FIRST AID CASE |
| NR | NON-RECORDABLE INJURY |

- b. ESTIMATED DAYS LOST - Enter the estimated number of workdays the person will lose from work.

c. ESTIMATED DAYS HOSPITALIZED - Enter the estimated number of work days the person will be hospitalized.

d. ESTIMATED DAYS RESTRICTED DUTY - Enter the estimated number of work days the person as a result of the accident, will not be able to perform all of their regular duties.

e. BODY PART AFFECTED - Select the most appropriate primary and when applicable, secondary body part affected from the list below. Enter body part name on line and place the corresponding code letters identifying that body part in the box.

GENERAL BODY AREA	CODE	BODY PART NAME	HEAD, EXTERNAL	HI	EYE EXTERNAL
FOURTH FINGER	AB	ARM AND WRIST		H2	BOTH EYES EXTERNAL
	AS	ARM - 1ST		H3	EAR EXTERNAL
TRUNK, EXTERNAL MUSCULATURE	B1	SINGLE BREAST		H4	BOTH EARS EXTERNAL
	B2	BOTH BREASTS		HC	CHIN
	B3	SINGLE TESTICLE		HF	FACE
	B4	BOTH TESTICLES		HK	NECK/THROAT
	BA	ABDOMEN		HM	MOUTH/LIPS
	BC	CHEST		HN	NOSE
	BL	LOWER BACK	KNEE	HS	SCALP
	BP	PENIS		KB	BOTH KNEES
	BS	SIDE	LEG, HIP, ANKLE, BUTTOCKS	KS	KNEE
	BU	UPPER BACK		LB	BOTH LEGS/HIPS/ ANKLES/ BUTTOCK
	BW	Wrist		LS	SINGLE LEG/HIP/ ANKLE/BUTTOCK
	BZ	TRUNK OTHER			
HEAD/INTERNAL	C1	SINGLE EAR INTERNAL	HAND	MB	BOTH HANDS
	C2	BOTH EARS INTERNAL		MS	SINGLE HAND
	C3	SINGLE EYE INTERNAL	FOOT	PB	BOTH FEET
	C4	BOTH EYES INTERNAL		PS	SINGLE FOOT
	CB	BRAIN			
	CC	CRANIAL BONES	TRUNK, BONES	R1	SINGLE COLLAR BONE
	CO	TEETH		R2	BOTH COLLAR BONES
	CJ	JAW		R3	SHOULDER BLADE
	CL	THROAT/LARYNX		R4	BOTH SHOULDER BLADES
	CM	MOUTH		RB	RIB
	CN	NOSE		RS	STERNUM (BREAST BONE)
	CR	THROAT, OTHER		RV	VERTEBRAE (SPINE; DISC)
	CT	TONGUE		R2	TRUNK BONES OTHER
	CZ	HEAD OTHER INTERNAL			
ELBOW	EB	BOTH ELBOWS	SHOULDER	SB	BOTH SHOULDERS
	ES	SINGLE ELBOW		SS	SINGLE SHOULDER
FINGER	F1	FIRST FINGER	THUMB	TB	BOTH THUMBS
	F2	BOTH FIRST FINGERS		TS	SINGLE THUMB
	F3	SECOND FINGER			
	F4	BOTH SECOND FINGERS	TRUNK, INTERNAL ORGANS	V1	LUNG, SINGLE
	F5	THIRD FINGER		V2	LUNGS, BOTH
	F6	BOTH THIRD FINGERS		V3	KIDNEY, SINGLE
	F7	FOURTH FINGER		V4	KIDNEYS, BOTH
	F8	BOTH FOURTH FINGERS		VH	HEART
TOE	G1	GREAT TOE		VL	LIVER
	G2	BOTH GREAT TOES		VR	REPRODUCTIVE ORGANS
	G3	TOE OTHER		VS	STOMACH
	G4	TOES OTHER		W	INTESTINES
				VZ	TRUNK, INTERNAL; OTHER

f. NATURE OF INJURY/ILLNESS - Select the most appropriate nature of injury/illness from the list below. This nature of injury/illness shall correspond to the primary body part selected in 5e. above. Enter the nature of injury/illness name on the line and place the corresponding CODE letters in the box provided. The injury or condition selected below must be caused by a specific incident or event which occurred during a single work day or shift.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME	TU	BURN, SCALD, SUNBURN
TRAUMATIC INJURY OR DISABILITY	TA	AMPUTATION	T1	TRAUMATIC SKIN DISEASES/ CONDITIONS INCLUDING DERMATITIS
	TB	CONTUSION/BRUISE/ABRASION	TR	TRAUMATIC RESPIRATORY DISEASE
	TC	DISLOCATION	TO	TRAUMATIC FOOD POISONING
	TD	FRACTURE	TW	TRAUMATIC TUBERCULOSIS
	TE		TX	TRAUMATIC VIROLOGICAL/INFECTIOUS
	TF			
	TH	HERNIA		
GENERAL NATURE CATEGORY	CO	NATURE OF INJURY NAME	T1	TRAUMATIC CEREBRAL VASCULAR
			T2	TRAUMATIC HEARING LOSS
			T3	TRAUMATIC HEART CONDITION
	TK	CONCUSSION	T4	TRAUMATIC MENTAL DISORDER, STRESS; NERVOUS CONDITION
	TL	LACERATION/CUT		
	TP	PUNCTURE	TS	TRAUMATIC INJURY OTHER (EXCEPT DISEASE, ILLNESS)
	TS	STRAIN/MULTIPLE		

-- A nontraumatic physiological loss of capacity produced by systemic infection continued repeated exposure to toxins poisons fumes etc.; other continued and repeated exposures to conditions of the work environment over a long period of time. For practical purposes, an occupational disease is any reported condition which does not meet the definition of traumatic injury or disability as described above.

GENERAL NATURE CATEGORY	CODE	NATURE OF INJURY NAME		
NON-TRAUMATIC ILLNESS/DISEASE OR DISABILITY				
RESPIRATORY DISEASE	RA	ASBESTOSIS	DO	ENDEMIC DISEASE (OTHER THAN CODE TYPES R&S)
	RB	BRONCHITIS	DE	EFFECT OF ENVIRONMENTAL
	RE	EMPHYSEMA		
	RP	PNEUMOCONIOSIS		
	RS	SILICOSIS	DH	HEARING LOSS
	R9	RESPIRATORY DISEASE, OTHER	OK	HEART CONDITION
VIROLOGICAL, INFECTIVE & PARASITIC DISEASES			OM	MENTAL DISORDER, EMOTIONAL STRESS, NERVOUS CONDITION
	VB	BRUCELLOSIS	OR	RADIATION
	VC	COCCIDIOIDIOSIS	OS	STRAIN, MULTIPLE
	VF	FOOD POISONING	OU	ULCER
	VH	HEPATITIS	OV	OTHER VASCULAR CONDITIONS
	VM	MALARIA	09	DISABILITY, OTHER
	VS	STAPHYLOCOCCUS		
	VT	TUBERCULOSIS		
	V9	VIROLOGICAL/INFECTIVE/ PARASITIC - OTHER		
DISABILITY, OCCUPATIONAL	OA	ARTHRITIS, BURSITIS	SB	BIOLOGICAL
	OB	BACK STRAIN, BACK SPRAIN	SC	CHEMICAL
	DC	CEREBRAL VASCULAR CONDITION; STROKE	S9	DERMATITIS, UNCLASSIFIED

g. TYPE AND SOURCE OF INJURY/ILLNESS (CAUSE) - Type and Source Codes are used to describe what caused the incident. The Type Code stands for an ACTION and the Source Code for an OBJECT or SUBSTANCE. Together, they form a brief description of how the incident occurred. Where there are two different sources, code the initiating source of the incident (see example 1 below). Examples:

1) An employee tripped on carpet and struck his head on a desk. TYPE: 210 (fell on same level) SOURCE: 0110 (work surface).

NOTE: This would NOT be coded 120 (slipped again) and 0140 (furniture).

2) A Park Ranger contracted dermatitis from contact with poison ivy/oak.

TYPE: 510 (contact) SOURCE: 0920 (plant)

3) A lock and dam mechanic punctured his finger with a metal sliver while grinding a turbine blade.

TYPE: 410 (punctured by) SOURCE: 0830 (metal)

4) An employee was driving a government vehicle when it was struck by another vehicle.

TYPE: 800 (traveling in) SOURCE: 0421 (government vehicle, driver)

NOTE: The Type Code 800, "Traveling In" is different from the other type codes in that its function is not to identify factors contributing to the injury or fatality, but rather to identify the vehicle the employee was operating or traveling in at the time of the incident.

Select the most appropriate TYPE and SOURCE identifier from the list below and enter the name on the line and the corresponding code in the appropriate box.

CODE	TYPE OF INJURY NAME	CODE	SOURCE OF INJURY NAME
	STRUCK	0610	EXERTED
	STRUCK BY	0620	LIFTED, STRAINED BY (SINGLE ACTION)
0110	STRUCK BY FAILING OBJECT		STRESSED BY (REPEATED ACTION)
0111	STRUCK AGAINST	0710	EXPOSED
0120	FELL, SLIPPED, TRIPPED	0720	INHALED
0210	FELL ON SAME LEVEL	0730	INGESTED
0220	FELL ON DIFFERENT LEVEL	0740	ABSORBED
0230	SLIPPED, TRIPPED (NO FALL)	0800	EXPOSED TO
	CAUGHT		TRAVELING IN
0310	CAUGHT ON		
0320	CAUGHT IN	0100	BUILDING OR WORKING AREA
0330	CAUGHT BETWEEN	0110	WALKING/WORKING SURFACE (FLOOR, STREET, SIDEWALKS, ETC.)
0410	PUNCTURED, LACERATED	0120	STAIRS, STEPS
0420	PUNCTURED BY	0130	LADDER
0430	CUT BY	0140	FURNITURE, FURNISHINGS, OFFICE EQUIPMENT
0440	STUNG BY	0150	BOILER, PRESSURE VESSEL
	BITTEN BY	0160	EQUIPMENT LAYOUT (ERGONOMIC)
0510	CONTACTED	0170	WINDOWS, DOORS
0520	CONTACTED WITH (INJURED PERSON MOVING)	0180	ELECTRICITY
	CONTACTED BY (OBJECT WAS MOVING)		

0200	ENVIRONMENTAL CONDITION	0631	CARBON MONOXIDE
0210	TEMPERATURE EXTREME (INDOOR)	0640	MIST/STEAM/VAPOR/FUME
0220	WEATHER (ICE, RAIN, HEAT, ETC.)	0641	WELDING FUMES
0230	FIRE, FLAME, SMOKE (NOT TOBACCO)	0650	PARTICLES (UNIDENTIFIED)
0240	NOISE	0700	CHEMICAL, PLASTIC, ETC.
0250	RADIATION LIGHT	0711	DRY CHEMICAL - CORROSIVE
0260	VENTILATION	0712	DRY CHEMICAL TOXIC
0270	TOBACCO SMOKE	0713	DRY CHEMICAL EXPLOSIVE
0271	STRESS (EMOTIONAL)	0714	DRY CHEMICAL FLAMMABLE
0280	CONFINED SPACE	0721	LIQUID CHEMICAL CORROSIVE
0290	MACHINE OR	0722	LIQUID CHEMICAL TOXIC
0300	TOOL	0723	LIQUID CHEMICAL EXPLOSIVE
0310	HAND TOOL (POWERED; SAW, GRINDER, ETC.)	0724	LIQUID CHEMICAL FLAMMABLE
0320	HAND TOOL (NONPOWERED)	0130	PLASTIC
0330	MECHANICAL POWER TRANSMISSION APPARATUS	0740	WATER
0340	GUARD, SHIELD (FIXED, MOVEABLE, INTERLOCK)	0750	MEDICINE
0350	VIDEO DISPLAY TERMINAL	0600	INAMINATE
0360	PUMP, COMPRESSOR, AIR PRESSURE TOOL	0610	OBJECT BOX,
0370	HEATING EQUIPMENT	0820	BARREL ETC.
0380	WELDING EQUIPMENT	0630	PAPER
0400	VEHICLE	0831	METAL ITEM MINERAL
0411	AS OWNER OF PRIVATELY OWNED/RENTAL VEHICLE	0840	NEEDLE
0412	AS PASSENGER OF PRIVATELY OWNED/RENTAL VEHICLE	0850	GLASS
0421	DRIVER OF GOVERNMENT VEHICLE	0860	SCRAP TRASH
0422	PASSENGER OF GOVERNMENT VEHICLE	0870	WOOD
0430	COMMON CARRIER (AIRLINE, BUS, ETC.)	0680	FOOD
0440	AIRCRAFT (NOT COMMERCIAL)	0900	CLOTHING, APPAREL, SHOES
0450	BOAT, SHIP, BARGE	0911	ANIMATE OBJECT
0500	MATERIAL HANDLING EQUIPMENT	0912	DOG
0510	EARTHMOVER (TRACTOR, BACKHOE, ETC.)	0920	OTHER ANIMAL
0520	CONVEYOR (FOR MATERIAL AND EQUIPMENT)	0930	PLANT INSECT
0530	ELEVATOR, ESCALATOR, PERSONNEL HOIST	0940	HUMAN (VIOLENCE)
0540	HOIST, SUNG CHAIN, JACK	0950	HUMAN (COMMUNICABLE DISEASE)
0550	CRANE	0960	BACTERIA, VIRUS (NOT HUMAN CONTACT)
0551	FORKLIFT	1000	PERSONAL PROTECTIVE EQUIPMENT
0580	HAND TRUCK, DOLLY	1010	PROTECTIVE CLOTHING, SHOES, GLASSES,
0600	DUST, VAPOR, ETC.		GOGGLES
0610	FOSSIL (SILICA, COAL, ETC.)	1020	RESPIRATOR MASK
0620	FIBERS	1021	DIVING EQUIPMENT
0621	ASBESTOS	1030	SAFETY BELT HARNESS
0630	GASES	1040	PARACHUTE

INSTRUCTIONS FOR SECTION 6-PUBLIC FATALITY

1. ACTIVITY AT TIME OF ACCIDENTS select the activity being performed at the time of the accident from the list below. Enter the activity name on the line and the corresponding number in the box. The activity performed is nondescript on the list, select from the most appropriate primary activity area (water related, non-water related or other activity), the code number for "Other", and write in the activity being performed at the time of the accident

WATER RELATED RECREATION

1. Sailing	19. Camping/ picnicking unauthorized area
2. Boating (motor)	20. Guided tours
3. Hunting	21. Hunting
4. Playground equipment	22. Playground equipment
5. Spots/..... (b&w/..... - 1 1 . etc.)	23. Spots/..... (b&w/..... - 1 1 . etc.)
6. Spots/winler (sking, sledding, snowmobiling etc.)	24. Spots/winler (sking, sledding, snowmobiling etc.)
7. Cyc:itll (SCOO/efl)	25. Cyc:itll (SCOO/efl)
8. Gii00g	26. Gii00g
9. Paradiullng	27. Paradiullng
10. Other non-water related	28. Other non-water related

OTHER ACTIVITIES

29. Unlawful acts (fights, riots, vandalism, etc.)	29. Unlawful acts (fights, riots, vandalism, etc.)
30. Food preparation/serving	30. Food preparation/serving
31. Food consumption	31. Food consumption
32. Housekeeping	32. Housekeeping
33. Sleeping	33. Sleeping
34. Pedestrian struck by vehicle	34. Pedestrian struck by vehicle
35. Pedestrian Other adS	35. Pedestrian Other adS
36. 5-Jicirle	36. 5-Jicirle
37. "the" activities	37. "the" activities

NON-WATER RELATED RECREATION

8. Hl-ling and walling	8. Hl-ling and walling
7. Clirrtng (general)	7. Clirrtng (general)
8. Ca Cl-ling aUthotized area	8. Ca Cl-ling aUthotized area

6. PERSONAL FLOTATION DEVICE USED • If fatality was water-related was the victim wearing a person flotation device? Mark the appropriate box.

INSTRUCTIONS FOR SECTION 7- MOTOR VEHICLE ACCIDENT

a. TYPE OF VEHICLE. Mark appropriate box for each vehicle involved. If more than one vehicle of the same type is involved, mark both halves of the appropriate box. USACE vehicle(s) involved shall be marked in left half of appropriate box.

b. TYPE OF COLLISION • Mark appropriate box.

c. SEAT BELT • Mark appropriate box.

INSTRUCTIONS FOR SECTION 8- PROPERTY/MATERIAL INVOLVED

a. NAME OF ITEM - Describe the property involved in the accident. If the property is damaged, use the code contributed to the accident. Include the name, type, model; also include the National Stock Number (NSN) if applicable.

b. OWNERSHIP - Enter ownership for each item listed. (Enter one of the following: USACE; OTHER GOVERNMENT; CONTRACTOR; PRIVATE)

c. \$ AMOUNT OF DAMAGE • Enter the dollar estimated dollar amount of damage (parts and labor) if any.

INSTRUCTIONS FOR SECTION 9 - VESSEL/FLOATING PLANT ACCIDENT

a. TYPE OF VESSEL/FLOATING PLANT - Select the most appropriate vessel/floating plant from list below. Enter name and place corresponding number in box. If item is not listed below, enter item number for "OTHER" and write in space type of vessel/floating plant.

VESSEL/FLOATING PLANTS

1. ROWBOAT
2. SAILBOAT
3. MOTOR BOAT
4. BARGE
5. DREDGE HOPPER
6. DREDGE/SIEVE CASTING
7. DREDGE HOPPER
8. DREDGE/CATCHER/BUCKET
9. DREDGE PIPELINE
10. DREDGE/HOIST PAN
11. TUGBOAT
12. OTHER

b. COLLISION/MISHAP • Select from the list below the object(s) that contributed to the accident or were damaged in the accident.

COLLISION/MISHAP

1. COLLISION WITH OTHER VESSEL
2. UPPER GUIDE WALL
3. UPPER LOCK GATES
4. LOCK WALL
5. LOWER LOCK GATES
6. LOWER GUIDE WALL
7. HAULAGE UNIT
8. BREAKING TOW
9. TOW BREAKING UP
10. SWEEP DOWN ON DAM
11. BUOY/POLE/PIECE
12. WHARF/DOCK
13. OTHER

INSTRUCTIONS FOR SECTION 10- ACCIDENT DESCRIPTION

DESCRIBE ACCIDENT - Fully describe the accident. Give the sequence of events that describe what happened leading up to and including the accident. Fully identify personnel and equipment involved and their role(s) in the accident. Ensure that relationships between personnel and equipment are clearly specified. Continue on blank sheets if necessary and attach to this report.

INSTRUCTIONS FOR SECTION 11 - CAUSAL FACTORS

a. Review thoroughly. Answer each question by marking the appropriate block. If any answer is yes, explain in item 13 below. Consider as a priority, the following:

- 1) DESIGN • Old inadequacies associated with the building or work site play a role? Would an improved design or layout of the equipment or facilities reduce the likelihood of similar accidents? Were the tools or other equipment designed and intended for the task at hand?
- 2) INSPECTION/MAINTENANCE • Old inadequately or improperly maintained equipment, tools, workplace, etc. create or contribute in any hazards that contributed to the accident? Maintenance equipment, facility, work site or work activity inspections have helped avoid the accident?
- 3) PERSON'S PHYSICAL CONDITION • Do you feel that the accident could have occurred if the employee was in "good" physical condition? If the person involved in the accident had been in better physical condition, would the accident have been less severe or avoided altogether? Was overexertion a factor?
- 4) OPERATING PROCEDURES • Old lack of or inadequacy within established operating procedures contribute to the accident? Did any aspect of the procedures introduce any hazard to or increase the risk associated with the work process? Would establishment or improvement of operating procedures reduce the likelihood of similar accidents?
- 5) JOB PRACTICES - Were any of the provisions of the Safety and Health Requirements Manual (EM 385-1-1) violated? Was the task being performed in a manner which will cause an established job hazard analysis or safety hazard analysis? Did any established job practice (including EM 385-1-1) fail to adequately address the task or work process? Would better job practices improve the safety of the task?
- 6) HUMAN FACTORS - Was the person under undue stress (either internal or external to the job)? Did the task tend toward overloading the capabilities of the person; i.e., did the job require tracking and reacting to many external inputs such as displays, alarms, signals? Did the arrangement of the workplace tend to interfere with efficient task performance? Did the task require reach, strength, endurance, agility, etc., at or beyond the capabilities of the employee? Was the work environment ill-adapted to the person? Did the person need more training, experience, or practice in doing the task? Was the person inadequately rested to perform safely?
- 7) ENVIRONMENTAL FACTORS - Did any factors such as moisture, humidity, rain, snow, steel, ice, fog, cold, heat, temperature change, wind, waves, floods, currents, dust, mud, glare, pressure changes, lightning, etc., play a part in the accident?

(8) **CHEMICAL AND PHYSICAL AGENT FACTORS** Did exposure to chemical agents (*either single-halt exposure or long-term exposure*) such as dusts, fibers (*asbestos, etc.*), silicagases (*carbon monoxide, chlorine, etc.*), mists, steam, vapors, fumes, smoke, other particulates, liquid or dry chemicals that are corrosive, toxic, explosive or flammable, by products of combustion or physical agents such as noise, ionizing radiation, ionizing radiation (UV radiation emitted during etc.) contribute to the accident/incident?

(9) **OFFICE FACTORS** Did the fact that the accident occurred in an office setting or to an office worker have a bearing on cause? For example, office workers tend to have less experience and training in performing tasks such as lifting office furniture. Did physical hazards within the office environment contribute to the hazard?

(10) **SUPPORT FACTORS** Was the person using an improper tool for the job? Was inadequate time available or utilized to safely **finish** the task? Were less than adequate personnel resources (in terms of skill, number of workers, and adequate supervision) available to get the job done properly? Was latching available and adequate to provide proper equipment and personnel. Site preparation, etc.?

(11) **PERSONAL PROTECTIVE EQUIPMENT** - Did the person fail to use appropriate personal protective equipment (gloves, eye protection, hearing protection, etc.) in the task or environment? Did protective equipment provided or worn fail to provide adequate protection from the hazard(s)? Old lack of or inadequate maintenance of protective gear contribute to the accident?

(12) **DRUGS/ALCOHOL** - Is there any reason to believe the person's mental or physical capabilities, judgment, etc., were impaired or altered by the use of drugs or alcohol? Consider the effects of prescription medication and over-the-counter medications as well as drug use. Consider the effect of drug or alcohol induced "hangovers".

b. **WRITTEN JOB/ACTIVITY HAZARD ANALYSIS** - was a written Job/Activity Hazard Analysis completed for the task being performed at the time of the accident? Mark the appropriate box. If one was performed, attach a copy or the analysis to the report.

INSTRUCTIONS FOR SECTION 12 - TRAINING

a. **WAS PERSON TRAINED TO PERFORM ACTIVITY/TASK?** - For the purpose of this section "trained" means the person has been provided the necessary information (either formal or informal on-the-job, job (OJT) training) to competently perform the activity/task in a safe and healthful manner.

b. **TYPE OF TRAINING** Mark the appropriate box that best indicates the type or training; (*classroom or on-the-job*) that the injured person received, before the accident happened.

c. **DATE OF MOST RECENT TRAINING** - Enter YYYYMMDD of the last on-the-job training completed that covered the activity/task being performed at the time of the accident.

INSTRUCTIONS FOR SECTION 13 - CAUSES

a. **DIRECT CAUSES** - The direct cause is that single factor, which most directly lead to the accident. See examples below.

b. **INDIRECT CAUSES** - Indirect causes are those factors which contributed to but did not directly initiate the occurrence of the accident.

Examples for - 13:

a. Employee was climbing scaffold and fell 12 feet from unguarded opening.

Direct cause: failure to provide fall protection at elevation. Indirect causes: failure to enforce USACE safety requirements; improper training/motivation of employee (possibly that employee was not knowledgeable of USACE fall protection requirements or was lax in his attitude towards safety); failure to ensure provision or positive fall protection. Whenever elevated, failure to address fall protection during scaffold dismantling in Phase hazard analysis.

b. Private citizen had stopped his vehicle at intersection for red light when vehicle was struck in rear by USACE vehicle. (Note: USACE vehicle was in proper safe working condition).

Direct cause: failure of USACE driver to maintain control of and stop USACE vehicle within safe distance.

Indirect cause: failure of employee to pay attention to driving (defensive driving).

INSTRUCTIONS FOR SECTION 14 - ACTION TO ELIMINATE CAUSE(S)

DESCRIPTION - Fully describe all the actions taken, anticipated, and recommended to eliminate the cause(s) and prevent recurrence of similar accident/incidents. Continue on blank sheets of paper if necessary to fully explain and attach to the completed report form.

INSTRUCTIONS FOR SECTION 15 - DATES FOR ACTION

a. **BEGIN DATE** - Enter the date YYYYMMDD when the corrective action(s) identified in section 14 will begin.

b. **COMPLETE DATE** - Enter the date YYYYMMDD when the corrective action(s) identified in section 14 will be completed.

c. **DATE SIGNED** - Enter YYYYMMDD that the report was signed by the responsible supervisor.

d. **TITLE AND SIGNATURE** - Enter the title and signature of supervisor completing the accident report. For a GOVERNMENT employee accident/incident, the immediate supervisor will complete and sign the report. For PUBUC accidents the USACE Project Manager/Area Engineer responsible for the USACE property where the accident happened shall sign the report. For CONTRACTOR accidents the Contractor's project manager shall complete and sign the report and provide to the USACE supervisor responsible for oversight of that contract activity. This USACE supervisor shall also sign the report. Upon entering the information required in 15c, 15d, 15e, 15f, and 15g, below, the responsible USACE supervisor shall forward the report for management review as indicated in section 16.

f. ORGANIZATION NAME - For GOVERNMENT employee accidents enter the USACE organization name (*Division, Branch, &c/lon, etc.*) of the injured employee. For PUBLIC accidents enter the USACE organization name for the person identified in block 15d. For CONTRACTOR accidents enter the USACE organization name for the USACE office responsible for providing contract administration oversight.

g. OFFICE SYMBOL - Enter the latest complete USACE Office Symbol for the USACE organization identified in block

15f. INSTRUCTIONS FOR SECTION 16- MANAGEMENT REVIEW (1st)

1ST REVIEW - Each USACE FOA shall determine who shall provide 1st management review. The responsible USACE supervisor in section 15d. shall forward the completed report to the USACE office designated as the 1st Reviewer by the FOA. Upon receipt the Chief of the Office shall review the completed report, mark the appropriate box, provide substantive comments, sign, date, and forward to the FOA Staff Chief (2nd review and CONTINUE).

INSTRUCTIONS FOR SECTION 17 - MANAGEMENT REVIEW (2nd)

2ND REVIEW - The FOA Staff Chief (i.e., FOA Chief of Construction, Operations, Engineering, Planning, etc.) shall mark the appropriate box, review the completed report, provide substantive comments, sign, date, and return to the FOA Safety and Occupational Health Office.

INSTRUCTIONS FOR SECTION 18- SAFETY AND OCCUPATIONAL HEALTH REVIEW

3RD REVIEW - The FOA Safety and Occupational Health Office shall review the completed report, mark the appropriate box, ensure that any inadequacies, discrepancies, etc. are rectified by the responsible supervisor and management reviewers, provide substantive comments, sign, date, and forward to the FOA Commander for review, comment, and signature.

INSTRUCTION FOR SECTION 19- COMMAND APPROVAL

4TH REVIEW - The FOA Commander shall (to include the person designated Acting Commander in his absence) review the completed report, comment if required, sign, date, and forward the report to the FOA Safety and Occupational Health Office. Signature authority shall not be delegated.

M. Underground Utility Damage Report Form

ACCIDENT INFORMATION

SUPERVISORS PHONE NO. / EXTENSION ()		SUPERVISOR'S NAME		SUPERVISOR'S SIGNATURE		PROJECT	
DATE OF UTILITY HIT		TIME OF UTILITY HIT		EXACT LOCATION OR ADDRESS OF UTILITY HIT			
UTILITY OWNER (CHECK AS MANY AS APPROPRIATE) <input type="checkbox"/> GAS <input type="checkbox"/> TELEPHONE <input type="checkbox"/> WATER <input type="checkbox"/> ELECTRIC <input type="checkbox"/> OTHER (DESCRIBE)							
UTILITY'S NAME				UTILITY'S TELEPHONE NUMBER			
EQUIPMENT / MACHINE RESPONSIBLE				OPERATOR OF EQUIPMENT / MACHINE			
WAS THE OPERATOR UNDER THE DIRECT SUPERVISION OF ANOTHER CONTRACTOR? <input type="checkbox"/> YES <input type="checkbox"/> NO (IF YES, DESCRIBE THE CIRCUMSTANCE AND LIST THE OTHER CONTRACTOR)							
EXPLAIN HOW SERVICE WAS DISRUPTED							
WAS ANOTHER CONTRACTOR INVOLVED <input type="checkbox"/> YES <input type="checkbox"/> NO		NAME, ADDRESS AND TELEPHONE NUMBER OF THE OTHER CONTRACTOR					
UFPO CALL IN NUMBER		DATE UFPO WAS CALLED		WAS UTILITY LOCATION STAKED <input type="checkbox"/> YES <input type="checkbox"/> NO		DATE THE UTILITY WAS STAKED	
DISTANCE OF STAKE FROM DAMAGED LINE		DATE UTILITY WAS NOTIFIED OF SERVICE DISRUPTION			TIME UTILITY WAS NOTIFIED OF SERVICE DISRUPTION		
DATE AND TIME UTILITY ARRIVED TO REPAIR LINE				NUMBER OF UTILITY EMPLOYEES REQUIRED TO REPAIR LINE			
DESCRIBE THE WORK PERFORMED BY THE UTILITY TO REPAIR THE LINE INCLUDING ANY EQUIPMENT OR MACHINERY USED.							
SCOPE OF OUR WORK THE DAY OF THE ACCIDENT (INCLUDE THE EXACT LOCATION WHERE WE WERE WORKING, THE TYPE OF WORK BEING PERFORMED & EQUIPMENT USED, HOW WAS THE LINE EXPOSED AND PROTECTED.)							

Complete and Submit This Form to the office within 24 Hours of the incident

PICTURE NO: _____	DESCRIPTION: _____
PICTURE NO: _____	DESCRIPTION: _____
PICTURE NO: _____	DESCRIPTION: _____
PICTURE NO: _____	DESCRIPTION: _____

Use the photographs to show the location of the line in relation to the stakes or utility marks. Use a tape measure to verify distances. Use immobile objects such as trees, the curb, sidewalks, etc. to show the relative distances.

N. Jobsite Safety Inspections

Frequent and regular jobsite safety inspections are an important part of an effective safety program. In addition to the inspection responsibilities of jobsite superintendents outlined below, Black Horse Groups' Safety Director, representatives of Black Horse Groups' insurance carrier, and professional safety consultants may perform jobsite inspections.

Site Safety Officer Inspection Responsibilities

The Site Safety Officer shall perform daily and weekly inspections on his/her jobsite. If the Site Safety Officer is unavailable, a competent person as listed in the previous paragraph, who is familiar with the inspection process, may be designated to conduct the inspection.

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

Frequency

All jobsites must be inspected daily and weekly by the Site Safety Officer. The frequency of inspections may be increased as the job progresses, for specific areas of a job, or for special critical work.

Documentation

Site Safety Officer will complete the Jobsite Inspection Checklist at the conclusion of each daily and/or weekly inspection. The jobsite inspection checklist shall be used to document inspections noting safety and health deficiencies, deficiencies in the effectiveness of the accident prevention plan and corrective actions to be taken including timetable and responsibilities. The daily and/or weekly inspection logs shall be attached to and submitted with the Daily Quality Control Reports. Each entry shall include the date, work area checked, employees present in the work area, protective equipment and work equipment in use, special safety and health issues and notes and signature of the preparer. A copy of this form, which must include any disciplinary action taken against employees, should be forwarded to the main office. Letters sent to subcontractors due to violations observed during a jobsite inspection must include a copy of the safety inspection form describing the violation.

Corrective Actions

If any concerns are observed during the inspection they must be immediately addressed and corrected. Safety violations must be corrected so the operation is performed in a safe manner. The employee(s) should be informed of what the violation is and made aware of acceptable methods. The consequences for repeat or serious safety violations also need to be addressed with the employee(s). If there is a person or party responsible for any observed concern(s), that information must be documented on the inspection report form.

O. Daily Jobsite Inspection Checklist

Site:	Safety Officer:
Work Area:	Date:

This checklist is to be used during daily jobsite safety inspections. Check off the items below where employees' activities and jobsite conditions are in compliance with EM 385-1-1, OSHA and Black Horse Groups' jobsite safety standards. Items which are not in compliance should be explained on the bottom of this page along with a description of abatement measures taken to correct any problems. Also indicate if any disciplinary action was taken as a result of safety infractions.

1. General	Check	Welding and Cutting	Check
2. Housekeeping		1. Use of fuel gas	
3. General procedures, unnecessary risk avoided		2. Arc welding, screening in place if practicable	
4. Posted materials are in place		3. Storage of fuel gas cylinders, upright & secure	
5. Haz-Com program is on site		4. Oxygen separated from other fuel gases	
6. MSDS book and list are up to date			
7. All employees have gone through orientation		Electric	
8. Emergency phone numbers are posted		1. Extension cords and tool cords maintained	
9. No suspect materials have been encountered		2. GFCIs in use and working	
10. All subs have submitted their safety programs		3. Overhead power lines addressed	
Personal Protective Equipment		Scaffolding	
1. Hard hats		1. Erection	
2. Safety glasses		2. Access	
3. Ear protection		3. Guardrails	
4. Work clothing		4. Proper bases	
5. Protective clothing		5. Platforms fully and properly planked	
6. Shoes		6. Mobile scaffolds, general use	
7. Respirators			
		Fall Protection	
Fire Protection		1. Guardrails in place	
1. Proper number of extinguishers on site		2. Floor holes covered and labeled	
2. Extinguishers are not blocked		3. Fall arrest systems properly implemented	
3. Propane Storage: Inside/Outside (quantity and traffic)		4. Upcoming fall hazards planned for	
4. Flammable storage, approved gas cans			
5. Burn permits up to date where necessary		Excavations	
Tools		1. Protection from cave-ins	
		2. Daily inspections by a competent person	
Guarding		3. Access provided	
1. Proper tool use		4. Underground installations accounted for	
2. Power-actuated tools, licensed employees		5. Traffic	
3. Hand tools (handles, chisel heads)			

P. Handling OSHA Inspections

Purpose

To outline a procedure for the management of OSHA inspections on Black Horse Group projects. Additionally, this program will provide the superintendent with the information needed to handle an OSHA jobsite inspection in the event that a representative from Black Horse Groups' main office is unable to accompany the Compliance Safety and Health Officer (CSHO) during the inspection process.

Reasons for an OSHA Inspection

There are a number of reasons why a worksite may be selected for an OSHA inspection, including the following:

1. **Fatality or Catastrophe:** OSHA received a report of a fatality or catastrophe (an accident involving the hospitalization of three or more employees), both of which are required to be reported by the employer to OSHA, or an imminent danger situation is reported.
2. **Formal Complaint:** OSHA receives a formal (written) complaint filed by an employee or employee representative that addresses unsafe workplace conditions.
3. **Informal Complaint:** OSHA sent the company a letter asking it to respond to allegations of a hazard made in an informal (unwritten) employee complaint and the company failed to respond.
4. **Referral:** A referral has been made by another government agency concerning unsafe conditions at the jobsite. Referrals can be generated from government personnel, such as building inspectors, district attorneys, and emergency response personnel. Publicized accidents or accidents that result in contact with public emergency agencies may be considered as referrals and lead to an OSHA inspection.
5. **Programmed:** Your jobsite has been selected at random by OSHA from information obtained from Dodge reports for an inspection.
6. **Follow-Up Inspection:** OSHA conducts a follow-up inspection to confirm that violations noted in previous inspections or items to be corrected as a result of a settlement agreement with OSHA have been abated.
7. ***Special-Emphasis Inspection:*** OSHA conducts an inspection due to an OSHA special emphasis program.

Procedure

When OSHA arrives on site, the compliance officer will locate the designated point of contact (superintendent) and present his/her credentials. The OSHA compliance officer should be invited into the job trailer. The superintendent should inform the compliance officer that a GDA must be contacted to provide him/her an opportunity to accompany OSHA during the walkthrough. The inspection will not be delayed due to non-availability of the GDA. Be polite with your requests and make sure the compliance officer understands that you are following a company policy requiring a request that a GDA be present during inspections and that the request is not a delay tactic.

In the event no one from the main office is able to accompany the compliance officer during the walkthrough, the superintendent will be required to handle the inspection. The procedures for handling an inspection should be fully understood by the superintendent. The superintendent shall provide the GDA a copy of any citations or reports issued by the inspector and any corrective action responses to the citation(s) or report(s).

Opening Conference

An inspection begins with an opening conference. During this conference the appropriate information shall be documented on the OSHA Inspection Management Form. The objective of the opening conference is to provide affected employers and employees with an explanation of the scope and purpose of the inspection and how the inspection will be conducted. The compliance officer is required to inform the employer of what type of inspection will be conducted. Inspection types include:

- General scheduled inspection;
- Fatality/catastrophe investigation;
- Complaint investigation;
- Referral inspection;
- Special emphasis inspection; and
- Abatement (follow-up) inspection.

The compliance officer will request background information to fill out their inspection report, which includes:

- Jobsite name and address;
- Corporate office address and telephone number;
- Number of employees;
- Accident and illness information (form 300); and
- Names of employees and employee representatives.

If an inspection results from a formal employee complaint, the employer will receive a copy of the complaint from the OSHA compliance officer at the opening conference. Copies of the complaint should be furnished as follows:

- Copy of every complaint to the general contractor;
- Copy of every complaint against the general contractor to all subcontractors whose employees are exposed to the alleged hazards; and
- Copy of every complaint against a subcontractor to that subcontractor and to others whose employees are exposed.

If the compliance officer does not offer a copy of the complaint, the superintendent should request it. If none is provided, inform OSHA that company policy requires a copy of the complaint be provided before granting an inspection. Inform the compliance officer that you will be happy to grant an inspection upon receiving a copy of the formal complaint.

The Inspection

It is very important that during the opening conference you find out why the inspection is being conducted and what the scope of the inspection will cover. For a focused inspection, please refer to the attached document.

Inspections conducted due to alleged imminent danger and complaint inspections should be limited to the area of the alleged violative condition and fatality/accident investigations should be limited to the area of the accident. An expanded inspection may be done if the inspection record of the employer indicates a history of significant violations or other legitimate reasons. An expanded inspection in this case requires authorization by the OSHA Area Director.

Referral inspections are generally limited to the specific items addressed in the original inspection.

Special emphasis inspections are generally limited to the areas covered by the program.

NOTE: In the event that the compliance officer expands the inspection to areas other than those discussed during the opening conference, the superintendent should request another opening conference to explain any inspection activities that reach beyond the scope of the original inspection.

The Walkaround

A representative from the main office or the superintendent will accompany the compliance officer during the walkaround. As discussed, it should be clearly understood from the beginning which areas the compliance officer intends to inspect. Tactfully direct the compliance officer to the inspection areas he/she has requested to inspect. Path selection to the inspection site should be by the company representative. If work is not being performed in certain areas, inform the compliance officer that these areas are inactive. Do not leave a compliance officer unattended and do not volunteer any extra information or expand the scope of the inspection. Anything that is Black Horse during the walkthrough could help the compliance officer prove a violation exists.

The compliance officer is required to follow all safety rules as detailed in Black Horse Group's Safety Program. This includes requiring proper personal protective equipment. If the compliance officer cannot comply with Black Horse Group's rules and regulations, you should insist compliance to further prove the company's commitment to safety and health.

Do not allow the compliance officer to interfere with production activities unless those activities are endangering the employee(s).

If the compliance officer indicates a violation during the walkaround, and an abatement method is not freely offered, diplomatically request a means or method of abatement. It is the compliance officer's responsibility to know how to abate the alleged violation. If there are any violations pointed out during the walkaround there should be a work stoppage, if personnel are in danger, until the violation is corrected. This shows good faith and may help in future negotiations with OSHA. Do not admit any fault when taking corrective actions.

If a compliance officer feels a violation exists, which in our opinion can be disputed, do not argue but politely disagree with the interpretation and try to convince the compliance officer to understand and accept your point of view. Once a citation is issued, it is difficult to get it withdrawn.

During the inspection, the compliance officer is authorized to talk to employees about working conditions. You cannot forbid your employees from talking to the compliance officer but you are within your rights to inform employees that it is not mandatory for them to offer any information to the compliance officer.

The compliance officer may use a video camera or a camera to document violations. A camera should be used to take the same photographs the compliance officer takes from the same angle at the same time. After the inspection, additional photos may be taken from different vantage points which may offer some insight into OSHA's case if citations are issued.

Closing Conference

At the conclusion of the inspection, the compliance officer will hold a closing conference to inform all contractors of alleged violations. The violations should be described and the appropriate section of the standard violated should be indicated. The compliance officer should inform you if there will be a referral to another compliance officer to check on potential violations outside his/her expertise. Ask for a copy of the compliance officer's notes from the inspection. The compliance officer is not required to provide these notes but your request may be honored.

Immediately after the compliance officer leaves the jobsite, document your point of view about the alleged violations. Take additional pictures from different vantage points and obtain written statements from employees. If any employee(s) were interviewed by OSHA during the inspection, re-interview those employees and document what was discussed.

Q. OSHA Inspection Report Form

Project: _____ Superintendent: _____

Address: _____

Compliance Officer (CSHO) Information:

Name: _____ CSHO#: _____

Office: _____ Phone Number: _____

Area Office: _____ Supervisor: _____

Address: _____

Arrival Time: _____ Date: _____

First Person Contacted: _____

Was the compliance officer asked to wait for the arrival of a company representative from the main office? Yes___ No___

If Yes, did the CSHO wait for the arrival of a company representative?
Yes___ No___

Explain: _____

Was an opening conference held? Yes___ No___

List those present at the opening conference:

Name:

Company:

Reason for Inspection

Complaint:____ **Fatality:**____ **Accident:**____ **Referral:**____

Program:____ **Follow-up:**____ **Other:**____

Walkaround Attendees:

Name:

Company:

Was a camera or video used by the CSHO officer to document the walkthrough?

Yes____ **No**____

If Yes, were any pictures taken of the jobsite by a Black Horse Group representative?

Yes____ **No**____

Explain:_____

List Employees Interviewed:

Name:

Company:

Describe what was discussed at the closing conference:_____

Report completed by:_____ **Date:**_____

SECTION 5 – PROJECT SAFETY PLAN

5.1 Project Information

- Project Safety Objective
- Home Office contacts
- Field Office contacts
- Project Description
- Project Location Map
- Emergency Phone Numbers

5.2 Subcontractors, Suppliers, Deliveries, Visitors

5.3 Training

- New Employee Indoctrination
- Project Specific Safety Training Requirements
- Safety Meeting Format

5.4 Disciplinary Procedures

5.5 Accident Reporting Procedures

5.6 Project Layout Plan

5.7 Medical Support

- On Site
- Off Site

5.8 Personal Protective Equipment (PPE)

- Hazard Assessment Procedures
- Anticipated PPE Requirements

5.9 Jobsite Safety Rules

- General Safety Rules
- Personal Protective Equipment
- Housekeeping
- Tools
- Electrical Safety
- Lockout Tagout
- Material Handling, Storage and Disposal
- LPG Liquefied Petroleum Gas
- Welding and Cutting
- Stairways and Ladders
- Scaffolding
- Hazard Communications

- **Spill Control**
- **Fire Protection and Prevention Program**
- **Motor Vehicles**
- **Cranes**
- **Concrete and Masonry Construction**
- **Equipment Inspection**
- **Elevated Work Platforms**
- **Fall Protection**
- **Severe Weather**

5.10 Excavations and Trenching

5.11 Hot Work

5.12 Regulated Materials

5.13 Sanitation

5.14 Signs and Signals

5.15 Hearing Conservation

5.16 Assured Equipment Grounding Conductor Program

5.17 Job Specific Plans

- **Hazardous Communication Program**
- **Emergency Response Plan**
- **Respiratory Protection Plan**
- **Health Hazard Control Plan (Hazard Analysis) *Draft Copy – Final copy to be submitted upon completion of specification sections.***
- **Confined Space Entry Plan**
- **Critical Lift Procedures**
- **Prevention of Alcohol and Drug Abuse**
- **Blasting Plan**
- **Energized Line Work Plan**
- **Traffic Control Plan**
- **Hazardous Energy Control Plan (Lockout/Tagout)**
- **Access/Haul Road Plan**
- **Temporary Electric and Lighting Plan**
- **Rigging**

(PLEASE POST IN A CONSPICUOUS LOCATION)

5.1 Project Information / Responsible Personnel

- **Home Office Contacts**
- **Mary Warren- President (315)755-1213**

**Mike Ramos – Project Manager
315-755-1213 – Watertown
315-681-6599- Fax
315-955-3582 - Cell**

- **Field Office Contact**

**Chris Widrick – Project Superintendent/ SAFETY OFFICER
Cell: 315-777-7148**

**Tim Aiken/Howard Post - CQC Manager / CORPORATE SAFETY
Cell: 315-466-3018**

FCA Repairs at Folsom, PA

PROJECT SAFETY OBJECTIVE

THE SAFETY OBJECTIVE FOR THIS PROJECT IS TO PROVIDE A SAFE AND HEALTHY ENVIRONMENT IN WHICH TO WORK AND THE ELIMINATION OF ACCIDENTS FROM OUR PROJECT.

BLACK HORSE GROUP IS COMMITTED TO MEET THIS OBJECTIVE.

SUCCESS CAN BE ASSURED BY EACH PERSON ENTERING THIS JOB SITE FOLLOWING THESE GUIDELINES:

- ◆ PLAN WORK TASKS IN A SAFE MANNER.**
- ◆ IF YOU ARE NOT SURE, ASK!!**
- ◆ DO NOT SACRIFICE SAFETY FOR PRODUCTION.**
- ◆ ACCOUNTABILITY FOR SAFE WORK PRACTICES AT ALL LEVELS.**

FOR ALL WORK ACTIVITIES ASSURE THAT A COMPETENT PERSON IS PHYSICALLY PRESENT

- PROJECT LOCATION

AMBULANCE: 911

FIRE: 911

POLICE: 911

BLACK HORSE GROUP

After Hours Contact Phone Number:

****Mary Warren- President
(315) 286-2665**

****Becky Butler – General Manager
Mobile #315-286-2604**

****Mike Ramos – Project Manager
Mobile # 315-955-3582**

****Chris Widrick – Safety Officer
Mobile # 315-777-7148**

****Howard Post – Alternate Safety Officer
Mobile # 315-804-4454**

**Tim Aiken – Alternate Safety Officer
Mobile # 315-755-1213**

**When reporting an accident of fire, give the following
information:**

Your name:

Your phone number:

**Project Location: Folsom FCA Repairs
601 Kedron Ave.
Folsom, PA 19033**

**(PLEASE ADD NUMBERS AND POST IN PROJECT TRAILER AND BHG
PROJECT VEHICLES)**

5.2 Subcontractors, Suppliers, Deliveries, Visitors

- Following is a listing of subcontractors and suppliers that will be performing work or supplying material to this project.

SUBCONTRACTORS

[illegible]

SUPPLIERS

<i>Supplier</i>	Scope of Work
Beaton Industrial	Wire Mesh Partitions, Shelving
United Rentals	Equipment & Tools
McQuade & Bannigan	Small Tools
Hanes Supply	Misc. Materials
TBD	Concrete Supplier
TBD	Reinforcement
TBD	Doors, Frames & Hardware

COORDINATING SAFETY OF SUPPLIERS AND SUBCONTRACTORS:

1. All subcontractors performing work on the project site will be required to comply with all applicable regulations.
2. Each subcontractor's supervisor will be required to coordinate with Black Horse and the other contractors on the site specific safety concerns that affect their employees or the employees of the other contractors.
3. Every subcontractor will be required to participate in an initial site specific safety meeting with Black Horse Group prior to starting their work.
4. Each Subcontractor will be required to perform weekly "tool Box Talks" and documentation of such weekly meetings will be provided to Black Horse Group.
5. Subcontractor's will be subjected to the same disciplinary actions as BHG workers and managers will be held to. Additionally, each individual subcontractor will be held to the terms of their subcontractor paragraph for safety and safety violations.
6. Any injuries to subcontractor employees shall be immediately reported to BHG. Subcontractors will provide an accident report to BHG within 24 hours of the accident or injury. This includes property or equipment damage. concerns that may affect their employees or the employees of the other contractors. All subcontractors will be required to have an initial safety briefing prior to starting work at the jobsite. Subcontractor's will be subjected to the same disciplinary actions that our workers will be held to. In addition, it is clearly outlined in each subcontractor's contract, the punitive results of repeated safety violations. Black Horse will hold subcontractor's contractual responsible to these contract terms. Such issues will be brought to the attention of the Project Manager, so that the appropriate monetary discipline is taken.

5.3 - Training

- New Employee Indoctrination

Each new employee as a part of the hiring procedure, whether or not they have worked for Black Horse Group before, will be required to participate in a project specific, general safety orientation. Topics reviewed will include safety prevention and procedures, emergency response measures, personal protection and the safety violation disciplinary policy. If any task specific safety training is required for the new hire due to proposed job assignment this will be done prior to the start of that job assignment.

The attached safety orientation checklist is included in the employee hiring packet and it is to be completed and sent to the main office with the other new employee documents.

- Project Specific Safety Awareness Training Requirements

Based on our further review of the contract documents, we have determined that the following safety awareness training will be required as appropriate for a particular individual's job assignment.

- Forklift training
- Fall protection
- Respirator usage
- Confined space
- Hearing protection
- First Aid (minimum 2 trained)
- Lockout/Tagout
- LEAD Awareness
- Asbestos Awareness

Awareness training will be provided as part of the new employee indoctrination, routine training prior to the start of a particular operation or as a topic for a "tool box talk".

Persons designated to administer safety awareness training relative to these areas:

Chris Widrick
Howard Post
Tim Aiken

- **Safety Meeting Format**

Safety meetings will be held weekly at a minimum. More frequent meetings may be held due to changes in project conditions or a recognized need to bolster safety awareness on the project.

Topics for the meetings should be based on current or upcoming work operations. Material is available from the corporate Safety Director in printed form or through video tapes that are available to all project sites. Each office trailer is equipped with a video player and monitor for use during the safety meetings. The meeting topic should relate to current work activities, if possible.

Attendance and brief outline of the topic discussed is to be included on the attached "Tool Box Talk" attendance sheet. A copy is to be maintained at the project site submitted to the Government monthly and also sent to the main office with the daily superintendent's report.

5.4 Disciplinary Procedures

The detailed disciplinary policy as it relates to safety violations on the part of Black Horse Group employees is outlined in Section 2.4 of this manual. The disciplinary procedure is reviewed with each new employee as part of the new employee indoctrination.

Violations on the part of subcontractor, supplier and owner personnel will be brought to the attention of the respective employee's supervisor and confirmed in writing. Repeated violations will be treated in the same manner as Black Horse Group personnel with removal from the job site following the third violation.

5.5 - Accident Reporting Procedures

Injury, illness or accidents and mishaps shall be reported immediately to the Project Safety Officer / Project Superintendent Chris Widrick 315-777-7148. If for some reason, he is not available please contact the main office (315) 755-1213.

THE FOLLOWING REQUIRE IMMEDIATE ACCIDENT NOTIFICATION TO OSHA:

- All work-related fatalities – WITHIN 8 HOURS
- All work-related inpatient hospitalizations of one or more employees- 24 HOURS
- All work-related amputations- 24 HOURS
- All work-related losses of an eye- 24 HOURS

OSHA Contact Info:

Philadelphia, PA OSHA Area Office: (215) 597-4955.

By telephone to the 24-hour OSHA hotline at 1-800-321-OSHA (6742).

IMMEDIATE NOTIFICATION TO USACE:

Any accident that has, or appears to have, any of the consequences listed below shall also be immediately reported to the USACE. These accidents shall be investigated in depth to identify all causes and to recommend hazard control measures. The Safety Officer will subsequently follow-up with official accident reports as prescribed by regulation.

- a. Fatal injury/illness;
- b. Permanent totally disabling injury/illness;
- c. Permanent partial disabling injury/illness;
- d. One (1) or more persons hospitalized as inpatients as a result of a single occurrence;
- e. \$500,000 or greater accidental property damage;
- f. Three (3) or more individuals become ill or have a medical condition which is suspected to be related to a site condition, or a hazardous or toxic agent on the site;
- g. USACE aircraft destroyed or missing;

REPORTING REQUIREMENTS FOR RECORDABLE MISHAPS

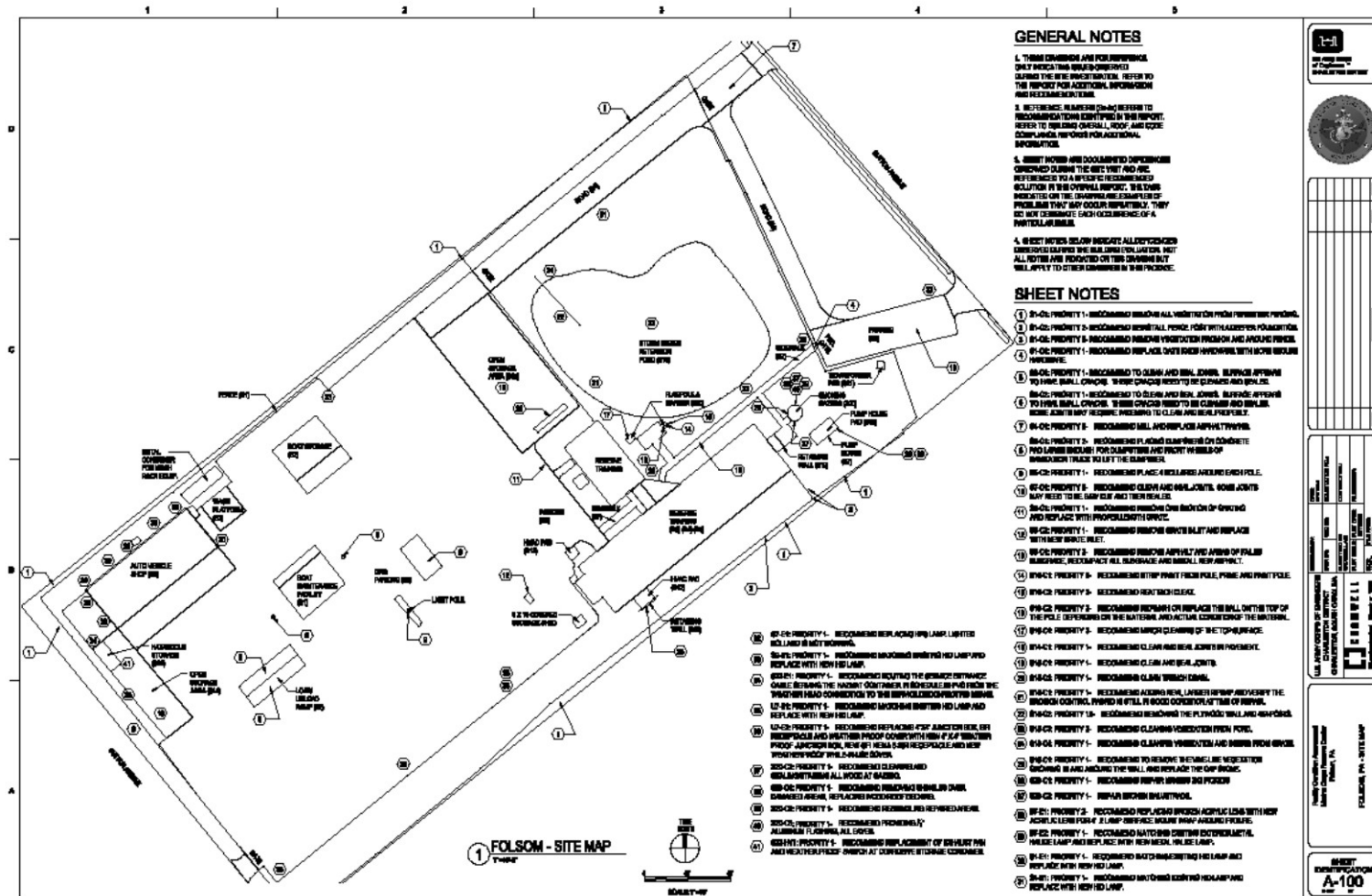
Employers and supervisors are responsible for reporting all recordable mishaps to the USACE within 24-hours after notification from the affected employee.

- No supervisor may decline to accept a report of a mishap from a subordinate.

In addition to the reporting requirements identified above, the employer is required to report:

- a. Property damage (exceeding \$5,000 is recordable);
- b. Days Away Injuries;
- c. Days Away Illnesses;
- d. Restricted/Transfer Injuries.

5.6 – Project Layout Plan



5.7 - Medical Support

- **On – Site Medical Support**

Emergency phone numbers and project coordinates will be posted at the job site trailer and will be posted in all company vehicles equipped with mobile phones. All employees will be instructed under the emergency response training about emergency contacts. Employees with non life threatening injuries are to report to the Urgent Care Facility.

Ambulance Service is located within 5 minutes of the jobsite. BHG will have one employee that is qualified to administer CPR and First Aid. A 16 unit first aid kit will be located at the job site trailer.

- **Off – Site Support**

Emergency medical attention will be rendered by calling for ambulance service at the emergency number posted in the job site trailer.

**URGENT CARE FACILITY:
CRESTAT URGENT CARE
213 MORTON AVE
FOLSOM, PA 19033
(610) 566-3218**

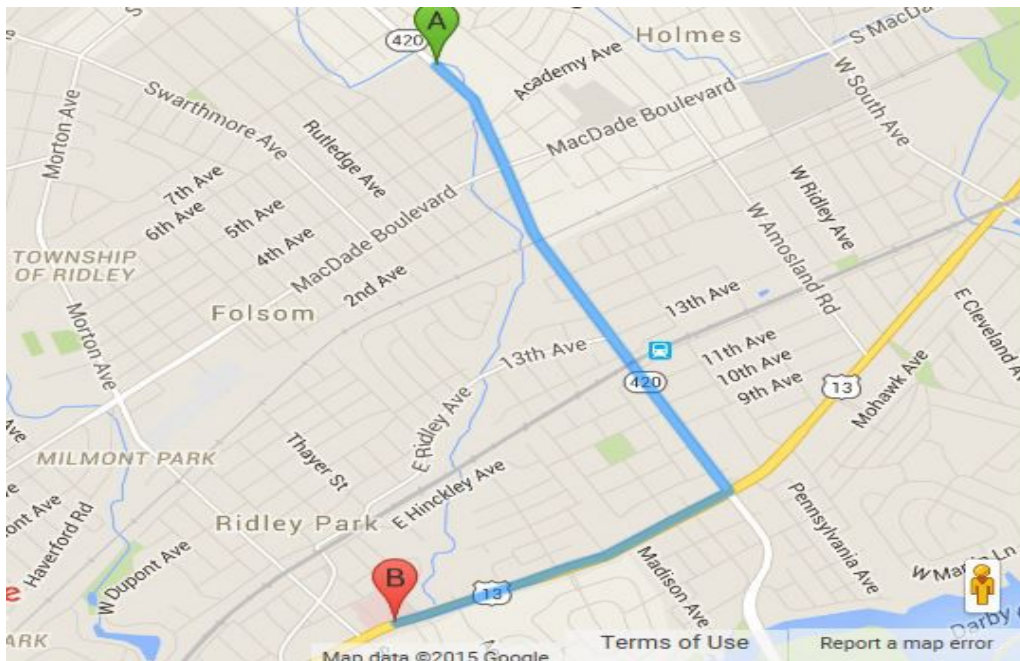
**HOSPITAL/EMERGENCY ROOM:
TAYLOR HOSPITAL
175 E. CHESTER PIKE
RIDLEY PARK, PA 19078
(610) 595-6000**

601 Kedron Ave, Folsom, PA 19033, USA

1. Head southeast on PA-420 S 1.4 mi
toward 5th Ave
2. Turn right onto US-13 0.8 mi
S/Chester Pike
Destination will be on the right



175 E Chester Pike, Ridley Park, PA 19078, USA



5.8 Personal Protective Equipment (PPE)

- **Hazard Assessment Procedures**

The need for the use of PPE will be determined from the hazard analysis (see Section 5.16) for the particular task to be accomplished. Every effort will be made to mitigate the hazard through the use of engineering or administrative controls prior to instituting the use of PPE.

- **Anticipated PPE Requirements**

Based on our review of the contract documents we anticipate that the following PPE requirements will have to be utilized during the course of this project:

- foot protection
- impalement protection on protruding reinforcing
- eye and face protection
- hearing protection
- hard hats
- respiratory protection (if engineering controls are not effective)
- fall protection

Planning:

The Project Safety Plan is meant to supplement Black Horse Group's existing safety program by identifying all real and potential hazards of a project and providing specific plans to deal with those hazards.

Pre-planning is an important step toward achieving a zero-injury project. This document is designed to walk you through the pre-planning process. The written end product of pre-planning activities will be the Project Safety Plan (PSP). The PSP should be a brief outline of the hazardous conditions associated with your project and the controls you intend to implement to remove those hazards, or to prepare for the work to be performed under the condition.

As questions develop, rely on your experience, OSHA Standards, Black Horse Group's Corporate Safety Program, owner's representatives, engineers, insurance and trade association representatives, and consultants for assistance.

Subcontractors are encouraged to participate in the pre-planning process. Through coordination between trades, an effective Project Safety Plan can be

developed. Where project activity can or will affect a client's operations, an owner's representative should also be encouraged to participate.

Responsibilities

The project management staff (Project Manager, Safety Manager, and Superintendent) is responsible for developing a project safety plan whenever the complexity of the project warrants it, when the owner requests it, or when there is a legal requirement for one.

Procedure

1. Through inspection of the site, review of the project plans, inquiries to the customer and other investigation obtain appropriate information about potential hazards and available resources. Record data discovered during the inspection. This should include the following information:
 - a) Materials which will be present in or near the work area
 - i) Locations
 - a) For demolition activities inspect pipes, ductwork, soil, residue from exhaust vents, etc.
 - ii) Quantities
 - iii) Copies of Material Safety Data Sheets
 - iv) Contamination which exists or may exist in or near the work area.
 - v) Locations of regulated materials which may be contacted or disturbed during the work.
 - b) Sources of ionizing radiation (x-ray machines and radioactive sources)
 - c) Any equipment which will be operating or may start automatically (such as robots, conveyors, manipulators, exhaust systems, air handling units, compressors, etc.).
 - d) Ambient noise levels
 - e) Provide a listing of Emergency Procedures and emergency service names, locations, and telephones for hazards involving
 - i) Medical
 - ii) Fire
 - iii) Spills or Releases
 - iv) Utilities
 - v) Facility and Equipment Damage
 - f) Sources of Technical Information
 - i) Safety
 - ii) Environmental Engineering
 - iii) Security
 - g) Special access controls and security requirements.

2. Proposed Operations: Review the proposed scope of work and operations to identify the hazards that are inherent to the project and those that may be created or compounded by adjacent customer operations, facilities, or processes. Specifically identify hazards associated with the following:
 - a) Materials to be used
 - b) Elevated work
 - c) Excavations
 - d) Traffic and pedestrian control
 - e) Confined spaces
 - f) Noise levels
 - g) Dust/contamination
 - h) Utility disruptions
 - i) Production disruption
 - j) Product movement
 - k) Employee discomfort
 - l) Lockouts
 - m) Poor lighting
 - n) Cutting, welding, open flame work
 - o) Internal combustion engines being used
 - p) Cranes and hoists
3. Review all of the information regarding the materials the customer will have at or near the worksite, the materials that we will use and any contamination which may be present.
 - a) Determine whether an incompatibility exists among the various materials and, if so, develop a protective measure to prevent contact between the incompatible materials.
 - b) Determine the respirator protection to be used, if any is needed. Make sure all respiratory protection requirements are met.
 - c) Determine whether measurements of employee exposure to airborne contaminants will be required.
 - i) Work that will require the measurements
 - ii) Contaminants
 - iii) The time and duration of each measurement
 - iv) The person who will take the measurements.
4. Determine what hearing protection, if any, is needed.
5. Determine what other personal protective equipment is needed (such as gloves, hard hats, harnesses, lanyards, etc.)
6. Determine whether special permits, licenses or qualifications will be required.
7. Through review of the above and the personnel training records, determine what training will be necessary.
8. Determine who is responsible for housekeeping, cleaning methods and cleanliness to be maintained.
9. Provide information regarding exit evacuation plans, routes and methods.

10. Write a plan incorporating all of the determinations and requirements developed above and issue it as an addendum to the company safety program applicable to this project. In the plan, describe what actions are needed to meet the requirements identified above, when they are to be done, and who is responsible for doing them. Provide a detailed schedule of the work including project name, location, description, and contact names, phone numbers and pager numbers of both company and contractor responsible personnel. Distribute this plan to all company and contractor employees who will be affected by the project.

5.9 Jobsite Safety Rules

Table of Contents

General Rules

Personal Protective Equipment

Housekeeping

Tools

Electrical Safety

Lockout Tagout (See Lockout Tagout Program for specific requirements)

Material Handling, Storage and Disposal

LPG Liquefied Petroleum Gas

Welding and Cutting

Stairways and Ladders

Scaffolding

Haz-Com General

Spill Control

Fire Protection and Prevention Program

Motor Vehicles

Cranes

Concrete and Masonry Construction

Equipment Inspection

Elevated Work Platforms

Fall Protection

Severe Weather

General Safety Rules

1. All safety-related tools and/or equipment must be available, used, and maintained to ensure work is performed in a safe manner. EM 385-1-1 and/or OSHA Standards govern what safety tools and/or equipment are required when performing any operation. In cases where jobsite safety requirements exceed EM 385-1-1 or OSHA Standards, employees are required to follow the jobsite safety requirements.
2. Report unsafe conditions to your supervisor.
3. The use, possession, or sale of alcohol or illegal drugs is prohibited.
4. If asbestos, lead, PCBs or other potentially hazardous materials are encountered during operations, stop work immediately and notify a supervisor.
5. Be aware of the emergency response plan. Know the alarm signals, evacuation routes, and locations of emergency numbers.
6. All injuries, no matter how minor, should be immediately reported to the superintendent.
7. Do not enter barricaded areas and obey all warning signs.
8. Proper clothing should be worn at all times on site. Proper clothing includes long pants and shirts with at least 4 inch sleeves.
9. Always remove nails from scrap lumber before stacking.
10. Do not stand under or beside suspended loads.
11. Horseplay of any kind is forbidden.
12. Firearms and weapons are forbidden.

Personal Protective Equipment

1. Approved hardhats (not bumpcaps), in good condition, should be worn at all times during working hours. This jobsite is classified a "Hard Hat" area from start to finish.
2. Metal hard hats should never be worn near energized overhead power lines or other high voltage sources.
3. Eye protection will be worn 100% of the time.
4. Additional protection such as face shields and goggles should be worn while performing high hazard tasks including grinding, chipping, overhead drilling, and working with caustics.
5. Gas and electric welding and cutting require the use of burning goggles or a welder's hood with lenses having the proper color density.
6. Ear plugs should be worn in high noise-level areas and when using certain tools and equipment.
7. Approved safety shoes in good condition should be worn at all times.
8. Where needed, work gloves, in good condition and suitable for the task to be performed, should be worn.

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

Housekeeping

1. Materials should be kept in neat stockpiles for easy access. Aisles should be kept clear of loose materials, tools, cords, and waste.
2. A cleanup crew will remove waste from the site on a continuous basis and dispose of it in a suitable manner.
3. Protruding nails should be removed from material and forms. Stack clean lumber in orderly piles.

Tools

1. Hand Tools

- a)** Every tool is designed for a certain job and should only be used for that purpose.
- b)** Keep tools in peak condition. Worn tools are dangerous.
- c)** Don't force tools beyond their capacity or use cheaters to increase leverage.

2. Power Tools

- a)** Do not use power tools unless you are completely familiar with them.
- b)** Before using a power tool, examine it for damaged parts, loose fittings, frayed or cut electric cords. Tag and remove defective tools from service.
- c)** Do not use tools with improper or damaged guards, or with guards removed.
- d)** When using power tools, make sure Ground Fault Circuit Interrupter (GFCI) protection is provided.

3. Powder Actuated Tools

- a)** Only trained and qualified people may use powder actuated tools. Training cards must be provided for employees indicating the training was completed.
- b)** Eye, face and hearing protection should be worn by operators.
- c)** Tool should remain unloaded until ready for use. Do not leave loaded tool unattended.
- d)** Do not drive fastener into hard or brittle material, or into material it will pass through.
- e)** No persons shall be behind the area where the fastener is being driven.

Electrical Safety

1. Ground fault circuit interrupters should be used with all electrical tools and equipment.
2. Examine all cords prior to use. Cords which are frayed, worn, or contain exposed wires should not be used, and should be tagged and removed from service immediately.
3. All cords should be of the three-wire type and designed for hard or extra-hard usage. Flat yellow extension cords and Romex extension cords are prohibited.
4. All live electrical installations, such as receptacles, switches, and panel boxes, should be protected by a faceplate or cover. Cardboard is not an acceptable cover.
5. Bulbs used for temporary lighting should be covered by protective cage guards.
6. Cords should be kept clear of walkways and other locations where they may be subject to damage or present a tripping hazard.
7. Protect cords from foot and vehicle traffic, and sharp corners and edges.
8. All electric equipment and materials should be of an approved type.
9. All plugs, outlets, switches, and panel boxes should be installed according to the national electric code. This includes assuring that receptacle boxes are permanently affixed, Romex type NM cable is not used in damp or wet locations, and that temporary wiring is located where it will not be subject to damage.
10. Only qualified workers should be allowed to perform any type of electrical work.
11. All ground fault circuit interrupters shall be installed and tested with a GFI circuit tester (tripping device) prior to use.
12. Receptacles should be tested for polarity and continuity of the ground. Receptacles whose polarity is reversed or whose ground is not continuous should be tagged out until repaired.
13. Missing knockouts inside panel boxes, on receptacle boxes and on all other equipment containing live parts should be covered or otherwise protected.

- 14.** Temporary electrical distribution systems and devices shall be checked and found acceptable for polarity, ground, continuity and ground resistance before initial use and after modification.
- 15.** Portable and vehicle mounted generators shall be inspected for compliance with EM 385-1-1 and NFPA 70.
- 16.** All electrical equipment located outdoors or in wet locations shall be enclosed in weatherproof enclosures in accordance with EM 385-1-1.
- 17.** Records of all tests and inspections will be kept on site by Black Horse and made available for review by the designated authority.
- 18.** Plan and layout of proposed temporary power for the construction site shall be submitted and approved by the COR before work will be permitted.

Lockout Tagout

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

1. Locks and tags should be used to prevent operation of a switch, valve, or piece of equipment in cases where someone may get hurt or equipment may be damaged.
2. Never operate any tagged-out piece of equipment.
3. Place your lock personally; never have somebody else do it.
4. Do not remove someone else's tag.
5. All locks and tags should be labeled to identify their owner.
6. Follow all switching and locking procedures to remove a piece of equipment from service.

Material Handling, Storage and Disposal

1. By Hand

- a) Know the weight of any object to be handled. If it is too heavy or bulky, get help.
- b) Establish firm footing, keep your back straight and lift with your legs. Lift gradually; do not jerk or twist. Reverse the motion when setting the object down.
- c) Know the weight of the object to be handled, and the capacity of the equipment you intend to use.
- d) When placing blocks under raised loads, make sure blocking material is large enough to support the load safely. Additionally, ensure that the load is not released until employees have clearly moved away from the load.

2. Storage

- a) Store materials so as not to block exits, aisles and passageways, and access to fire extinguishers and electrical panels.
- b) Materials stored in tiers should be secured to prevent sliding, falling, and collapse.
- c) Materials stored inside should not be placed within 6' of any hoistway or inside storage area, or within 10' of an exterior wall which does not extend above the materials stored.
- d) Brick stacks shall not be more than 7' in height. Loose brick stacks shall be tapered back 2' in every foot above 4' level.
- e) When masonry blocks are stacked higher than 6', the stacks shall be tapered back 1/2 block for each tier higher than 6'.
- f) Lumber must not be stacked more than 16' high if it is handled manually; 20' is the maximum stacking height if a forklift is used.
- g) Bags and bundles must be stacked in interlocking rows to remain secure. Bagged material must be stacked by stepping back the layers and cross-keying the bags at least every 10'.
- h) Drums, barrels, and kegs must be stacked symmetrically. If stored on their sides, the bottom tiers must be blocked to keep them from rolling. If stored on end, put planks, sheets of plywood, or pallets between each tier to make a firm, flat, stacking surface.
- i) Nails should be removed from used lumber prior to stacking, and from formwork being stripped.

3. Rigging

- a) Slings should be inspected before use.
- b) Slings and other rigging equipment should be removed from service if damage or defects are visible.
- c) Slings must not be shortened with knots, bolts, or other makeshift devices.
- d) Slings must not be loaded beyond their rated capacity, according to the manufacturer's instructions.
- e) Job or shop hooks and links, or makeshift fasteners, formed from bolts, rods, or other such attachments should not be used.
- f) When U-bolts are used for eye splices, the U-bolt shall be so applied so that the "U" section is in contact with the dead end of the rope. Refer to the diagram on the following page.

LPG Liquefied Petroleum Gas

1. Containers should be placed upright on firm foundations or otherwise firmly secured.
2. Storage of LPG within buildings is prohibited.
3. Storage locations should have at least one approved portable fire extinguisher, rated not less than 20-B:C.
4. LPG containers must be separated from oxygen cylinders a minimum distance of 20' or by a noncombustible barrier at least 5' high having a fire-resistance of at least one-half hour.
5. Storage of LPG outside of buildings:
 - a) Propane tanks shall be located away from the building in accordance with the following:

Quantity of LPG Stored	Distance (feet away from building)
500 lbs. or less	0
501 to 6,000 lbs.	10
6,000 to 10,000 lbs.	20
over 10,001 lbs.	25

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

Welding & Cutting

1. General

- a) You should be instructed in the safe use of welding equipment before using it.
- b) Each welder is responsible for containing sparks and slag and/or removing combustibles to prevent fire.
- c) All employees engaged in welding and burning operations should use a face shield, goggles, or appropriate welding helmet and welding gloves.
- d) No arc or flame welding operation is permitted in areas where the application of flammable paints is taking place or where combustible dust or flammable liquids are present.
- e) A suitable fire extinguisher should be located in welding areas at all times.
- f) When practical, objects to be welded, cut, or heated shall be moved to a designated safe location or, if the object to be welded, cut, or heated cannot be readily moved, all movable fire hazards in the vicinity shall be taken to a safe place, or otherwise protected.
- g) When required by the local authorities, a "Hot Work" permit is required prior to any welding or cutting.

2. Oxyacetylene Torches

- a) All connections should be clean and free from grease and oil.
- b) Hoses should not be laid across traffic areas.
- c) Where a special wrench is required to operate the acetylene cylinder valve, the wrench should be kept in position on the valve to allow for emergency shutoff.
- d) For quick closing, valves on fuel gas cylinders should not be opened more than one and a half turns.
- e) Check valves and flash arrestors should be located at the torch.

3. Electric Arc Welders

- a) When electrode holders are left unattended, the electrodes should be removed and the holders placed or protected so that they cannot make contact with each other, conductive objects, or people.
- b) Arc welding and cutting operations should be shielded by noncombustible or flameproof shields to protect fellow employees from direct arc rays.

- c) All welding cable should be insulated completely. Any splices or repairs should have insulation with a resistance equal to or greater than the original insulation. No repairs are permitted within 10' of the electrode holder.
 - d) Insulated boot covers or other suitable protection should be provided to protect terminals where welding cables are connected to arc welder.
4. Compressed Gas Cylinders
- a) Valve protection caps should be in place when compressed gas cylinders are transported, moved or stored.
 - b) Cylinder valves should be closed when work is finished and when cylinders are empty or are moved.
 - c) Compressed gas cylinders should be secured in an upright position at all times, except if necessary for short periods of time when cylinders are actually being moved or carried.
 - d) Cylinders should be kept at a safe distance or shielded from welding and cutting operations. Cylinders should be placed where they cannot become part of an electrical circuit.
 - e) When oxygen cylinders are stored, they should be separated from other fuel gas or highly combustible materials by 20' or by a noncombustible barrier (a wall at least 5' tall with a half hour resistance).

Stairways & Ladders

1. General

- a) A stairway or ladder should be provided at all points of access where there is a change in elevation of 19" or more and no ramp, runway, sloped embankment or personnel hoist is provided.

2. Stairways

- a) Stairways shall be kept free of hazardous projections such as nails and screws.
- b) Slippery conditions on stairways shall be eliminated before the stairways are used.
- c) Stairways greater than 30" high or with four or more risers should be equipped with a handrail and a stair-rail on unprotected sides or edges.
- d) Stair-rails, which also serve as handrails, should be between 36 and 37 inches high in line with the face of the riser at the forward edge of the tread and be capable of withstanding a 200 lb. load, applied in a downward and outward direction, with a minimum of deflection.
- e) A platform should be provided wherever a door opens directly into a stairway. The platform should extend 20" beyond the swing of the door and be protected by a standard guardrail system. This includes doors to field offices and storage trailers.
- f) Except during construction, pan treads, stairs, and landings shall be filled with wood or other solid materials, and shall be installed the full width and depth if the stairs are going to accommodate any other foot traffic.

3. Ladders

- a) Inspect ladders before use. Ladders with broken or missing rungs, cleats or steps, broken or split rails, or corroded parts should be tagged out and removed from the jobsite immediately.
- b) Ladders used to access an upper floor or platform should extend 3' above the upper landing surface.
- c) When in position, a ladder should be securely tied at the top to prevent slipping or secured at the base by a fellow employee.
- d) Portable ladders should be erected exercising the 4:1 ratio: For every 4' of working length of the ladder, the base will be placed one foot from vertical.
- e) The area at the top and bottom of ladders should be kept clear at all times.

- f) Always face a ladder when ascending or descending and maintain at least three points of contact with the ladder at all times (example: two feet and one hand).
- g) Make sure ladders are free from ice, snow, mud, or other slippery materials before use.
- h) Never use a ladder in a horizontal position as a platform or scaffold.
- i) A double cleated ladder or two or more separate ladders shall be provided if ladders are the only means of access/exit from a working area of 25 employees, or the ladder serves simultaneously two-way traffic.
- j) Ladders shall be used only for the purpose for which they were designed. Ladder rungs shall not be used to support the ends of planks or other similar work platforms.

4. Step Ladders

- a) Do not use ladders in the folded position as a straight ladder would be used. Open the legs and secure the locking mechanism.
- b) Do not stand on the top step of a step ladder.
- c) Step ladders shall be used only for the purpose for which they were designed. Rungs between step ladders shall not be used to support the ends of planks or other similar work platforms.

Scaffolding

1. General

- a) Scaffolding should be erected plumb and secure on sound rigid ground under the supervision of a competent person.
- b) Precautionary measures, including fall protection, to be used during the erection and dismantling of scaffolds should be planned out prior to beginning work. The competent person will decide the feasibility of using fall protection during the erection and dismantling of scaffolds and whether the use of fall protection creates a greater hazard.
- c) No work shall occur on any scaffold until the erection competent person has certified the complete installation of all necessary fall protection and turned the scaffold over to the production crews.
- d) The front edge of all platforms shall not be more than 14" from the face of the work unless a guardrail system is erected along the front edge or personal fall arrest systems are used. The distance from the face for plastering and lathing operations shall not exceed 18".
- e) Standard guardrails and toeboards are required on all open sides and edges of scaffolds. Cross bracing is acceptable in place of a midrail when the crossing point of two braces is between 20" and 30" above the work platform or as a toprail when the crossing point of the two braces is between 38" and 48" above the work platform. To utilize the cross braces as partial guardrail protection, the endpoints at each upright shall be no more than 48" apart.
- f) Screen, consisting of no. 18 gauge US standard wire $\frac{1}{2}$ " mesh or the equivalent, should be installed where tools or materials are stacked above the toeboard and workers are required to pass below scaffold (i.e., to access building).
- g) A ladder, stairtower, ramp or other safe means should be used to access scaffold platforms more than 24" above or below a point of access. Climbing on end frames is prohibited unless the frames are designed with integral ladder frames. Integral ladder frames have a rung length of at least 8"; a uniform rung spacing of no more than 16 $\frac{3}{4}$ " (non-uniform rung spacing caused by joining end frames together is allowed provided rung spacing does not exceed 16 $\frac{3}{4}$ "); and rest platforms must be provided at 35' maximum intervals.

- h) Ladders and staintowers shall be positioned such that their bottom step/rung is not more than 24" above the scaffold supporting level.
 - i) Cross braces on tubular welded scaffolds shall not be used as a means of access or egress.
 - j) Scaffold planks should overhang end supports no less than 6" and no more than 12" unless cleated or otherwise secured in place. The 12" overhang may be exceeded where guardrails block the cantilevered portion of the platform or where the platform length exceeds 10" the maximum overhang increases to 18".
 - k) Any scaffolding component damaged or weakened by any cause should be braced and if possible removed or repaired.
 - l) All scaffold platforms shall be fully planked between the front uprights and the guardrail supports. Platforms shall be decked so that no space between the planks or scaffold supports exceeds 1". Where platforms must fit around scaffold uprights or similar components, the space between the platform and the uprights should not exceed 9 ½".
 - m) Each scaffold platform and walkway shall be at least 18" wide. Exceptions to this rule are on ladder jack, pump jack, and top plate bracket scaffolds whose platform must be at least 12" wide. One further exception occurs where the area in which the scaffold is located is so narrow the platform or walkway cannot be at least 18" wide.
 - n) All planking should be scaffold grade or equivalent. Cracked or split planks should be immediately replaced.
 - o) Do not overload scaffold. Materials should be brought up as needed.
 - p) Unstable objects shall not be used as working platforms.
2. Supported Scaffolds (i.e., Tubular Welded Frame)
- a) Scaffold legs should be set on adjustable bases or plain bases set on mud sills or foundations adequate to support the maximum rated load.
 - b) Where uplift may occur, panels should be locked together vertically by pins or other equivalent means.
 - c) Scaffolds should be properly braced by cross-braces, diagonal braces or both.
 - d) Scaffolds shall be tied off at the closest horizontal scaffold member to a 4:1 height to minimum base dimension ratio, then repeated every 26' vertically at locations of horizontal members. Ties and braces should be located at each end of a scaffold and at 30' intervals horizontally.

- e) Scaffold ties shall brace the scaffold from moving into or away from the building structure. To accomplish this, ties should be constructed of tie wire to prevent movement away from the structure and a rigid "standoff" to provide compressive strength to prevent movement into the building. Other methods may be used to construct tie-offs provided they meet the above support requirements.

3. Mobile Scaffolds

- a) The height of mobile scaffolds should not exceed four times their minimum base dimension.
- b) Scaffolds shall be braced by cross, horizontal, and diagonal braces to prevent racking or collapse and to automatically square and align the vertical members.
- c) Platforms should be tightly planked.
- d) An access ladder should be affixed to the scaffold in a location where its usage will not have a tendency to tip the scaffold.
- e) When in use, casters or wheels should be locked to prevent movement. Only in rare instances are employees allowed to ride mobile scaffolds. 1926.452 (w) should be consulted and jobsite supervisor's approval must be obtained to ensure that operations meet the requirements of this standard prior to employees riding on a mobile scaffold.

4. Suspension Scaffolds

- a) Swing scaffold platforms should not be less than 18" nor more than 36" wide overall.
- b) Roof irons should be of proper size and design and should be securely installed and anchored.
- c) Secondary tiebacks equivalent in strength to the suspension ropes should be installed at right angles to the face of the building, whenever possible, and secured to a structurally sound portion of the building.
- d) Counterweights should be made of a non-flowable material. Sand, gravel and similar materials are not permitted. Additionally, construction material such as masonry units and rolled roofing should also not be used at counterweight.
- e) Counterweights shall be mechanically fastened to the outrigger beam to prevent displacement.
- f) Workers shall be protected by appropriate safety harnesses and independent lifelines.
- g) All supporting parts should be inspected prior to installation and periodically during use.
- h) Check load limits prior to using scaffold and make sure those limits are not exceeded.

- i) Guardrails should be installed on all open sides and ends of suspension scaffolds.
- j) All power operated gears and brakes should be enclosed.

5. Ramps and Walkways

- a) Ramps and walkways 6' or more above a lower level shall be equipped with a standard guardrail system.
- b) No ramp or walkway should be sloped greater than 1 vertical to 3 horizontal
- c) If the slope of the ramp or walkway is steeper than 1:8, cleats shall be securely fastened to the walkway spaced no further than 14" apart to provide footing.

Hazard Communications

- See attached Hazard Communication Program for specific information.
1. Be aware of hazardous chemicals being used on site.
 2. Know where the hazard communication program, hazardous materials list and material safety data sheets (MSDS) are maintained on site.
 3. Employees shall not work with a material until they have been informed of the hazards they may be exposed to and the steps personnel may take to protect themselves. Be knowledgeable of appropriate work practices, emergency procedures and personnel protective equipment when working with hazardous chemicals.
 4. Employees shall be willing to share their knowledge of Hazard Communication and of materials with which they work with other employees and officials.
 5. Notify your supervisor if you bring hazardous materials on site.
 6. The integrity of labels on the worksite shall be maintained by all personnel.

Spill Control

The person responsible for the reporting of spills or hazardous substance releases for this project is the Project Superintendent. In the event of a spill the normal course of action and notification procedures shall be followed as defined in this section. A sample format of the spill report can be found in the attachment section of this plan.

Identified sources for potential spills during the construction process would primarily be from construction equipment fuel, oil and lubricants, curing compounds, form release oil. Specific materials that will be stored on site are listed below. All fuel or lubricants on site will be stored in a contained manner such as a double wall tank or within an impervious dike containment system. In the event that a work operation is underway where there is a high potential that a spill may occur or the result of a spill could be critical (such as adjacent to a body of water) the kit can be transported to the work location. The need for a spill kit at the specific work location should be the subject of the Preparatory Inspections.

SIGNIFICANT MATERIALS

Material	Quantity on Site	Storage Method	Pollution Prevention Measures
Diesel Fuel	500 gallons	Vehicle Fuel Storage Tank	Storage in secondary contained tank. Absorbent materials readily available on site & employees trained in its use.
Concrete curing compounds	1 ea. @ 5 gallons	Spray Bottle	Curing Compound will be onsite only for the concrete finishing. Absorbent materials readily available on site & employees trained in its use.
Gasoline	1 ea. @ 5 gallons	Approved gas cans within a liquid tight storage box	Fuel stored in OSHA approved gas cans in designated area within storage box. Absorbent materials readily available on site & employees trained in its use.

The site superintendent will ensure that the following items at a minimum are on site:

- One 55 gallon polyethylene yellow barrel (hazardous waste transportable)
- Three (3) each 10 ft x 5" containment float booms
- Six (6) each 18" x 18" sorbent pillows
- Eight (8) each 4'x3" sorbent socks (oil, coolant, solvents, water)
- Four (4) pair nit rile gloves
- Four (4) minimum of .0006 ml polyethylene bags w/HDPE ties.

In the event of an unforeseen spill emergency where additional decontaminant materials are needed, contact:

Grainger Industrial Supply
1530 Delmar Dr.
Folcroft, PA 19032-2102
(610)534-5600

The General Contractor will be involved in the control of an incident. The site Superintendent will make the initial contacts to report spills (in his/her absence, the responsibility will fall to the QC manager). The QC manager will assist the site Superintendent in the evaluation of the spill. Working with the Site superintendent, the QC manager will supervise containment and cleanup. If the volume of the spillage is a reportable quantity and human health and or the environment are threatened, the following agencies will be contacted by the site Superintendent:

911- Emergency Response

Then:

Folsom Fire Co. 1
411 Sutton Ave.
Folsom, PA 19033

Non-Emergency:
(610)532-4000

Emergency:
911
Pennsylvania Emergency Response : 800-541-2050

Review the spill site for safety concerns and if there is a threat to personnel safety, evacuate the area. If evacuation is determined to be required, the Quality Control Manager and Site Safety officer will supervise evacuation for the affected areas.

Stop the spill source, if at all possible by turning off any valves, pumps, etc. If the spill occurs within a dike or bermed area, ensure the drain valves are closed. The first step to a successful spill cleanup is the containment of the material to avoid its spread to adjoining areas. The containment must be done in a manner to prevent harm to workers and other personnel in the area. Depending on the amount of material spilled, either the spill containment kit or temporary means such as sandbags and/or earthen berms constructed with construction equipment that is on site can be utilized until the Fire or Emergency Services arrives on the site to assess the condition and establish a cleanup protocol.

The above sequence of initial response action may be altered depending upon spill situations (i.e. type of spill, quantity of spill and/or safety hazards involved). If the spill is small, the spill discovered may be contained and clean up the spill prior to reporting using provided absorbent materials. Spills, no matter how small (i.e. leaks and minor spillage) will be reported to the Folsom Fire Co 1 so that the appropriate corrective action may be taken.

On-site fuel tanks will be compliant with all state, federal, and local regulations (level indicator, leak detection, secondarily contained, etc.). BHG will have an onsite fuel storage tank, which will be contained within a concrete barrier. The tank will be grounded and a fire extinguisher will be located on the barrier.

The cleanup, containerization and delivery of oil-laden sorbent materials and other spill residue to the PW Environmental Branch is the responsibility of BHG. Used sorbent should be placed into DOT approved containers with covers. The containers will be labeled and stored at the appropriate hazardous substance accumulation point of the Public Works Environmental Division. Disposal should be in accordance with local, state, federal requirements and should be approved by the Contracting Officer.

All spills to be reported will be called in to *766. All spills will also be reported to the USACE and PW Environmental Division and the Facility Officer in Charge.

Following spillage event, a spill report shall be prepared by the Quality Control Manager and submitted to the Contracting Officer.

Spill Report

DATE OF

SPILL: _____

SPECIFIC LOCATION OF SPILL:

TIME SPILL WAS FIRST

OBSERVED: _____

SPILL SUBSTANCE KNOWN: _____ APPROX.

QUANTITY? _____

WIND DIRECTION IF

KNOWN _____

INITIAL NOTIFICATIONS MADE: (AS APPLICABLE)

FOLSOM FIRE CO 1: _____ TIME: _____

FORT DRUM ENVIRONMENTAL: _____ TIME: _____

BHG SAFETY DIRECTOR : _____ TIME: _____

CONTRACTING OFFICER OR COR: _____ TIME: _____

OP-TECH: _____ TIME: _____

OTHER: _____ TIME: _____

TIME WHEN SPILL WAS CONTAINED:

TIME WHEN SPILL WAS COMPLETELY CLEANED UP:

EVACUATION, CONTAINMENT, CLEAN-UP SUPERVISOR:

PERSONNEL ACTIVELY INVOLVED IN THE CONTAINMENT AND CLEANUP:

CONTAINMENT AND CLEAN-UP MATERIALS USED:

HAVE THESE MATERIALS BE REPLACED? YES _____ NO _____

EXPLANATION OF HOW THE SPILL OCCURRED, WHO WAS INVOLVED IN CAUSING OR
WITNESSING THE SPILL. WHAT PRECAUTIONS HAVE BEEN ESTABLISHED TO PREVENT A
SIMILAR INCIDENT?

WITNESS STATEMENT

NAME: _____

STATEMENT:

WITNESS SIGNATURE:

DATE:

QUALITY CONTROL MANAGER

DATE:

REPORT SENT TO:

DATE SENT: _____

Fire Protection and Prevention Program

1. Employees shall know where fire extinguishers are located and know how to operate them.
2. Only approved containers and portable tanks shall be used for the storage and handling of flammable and combustible liquids. Refer to MSDS (Material Safety Data Sheet) for approved container type.
3. One 2A rated fire extinguisher shall be present for every 3000 square feet of protected building area. Travel distance to the nearest fire extinguisher shall not exceed 100'.
4. Firefighting equipment shall be conspicuously located.
5. Materials shall not be stored in front of fire extinguishers. Access to fire fighting equipment shall be maintained at all times.
6. Fire extinguishers shall be inspected on a regular basis and serviced annually.
7. No more than 25 gallons of flammable or combustible liquids shall be stored in a room outside of an approved storage cabinet. No more than 60 gallons of flammable or 120 gallons of combustible liquids shall be stored in any one storage cabinet.
8. Flammable liquids shall be kept in closed containers when not actually in use.
 1. Conspicuous and legible signs prohibiting smoking shall be posted in service and refueling areas.

Definitions

Flammable Liquid: Having a flashpoint below 100 degrees Fahrenheit (refer to MSDS).

Combustible Liquid: Having a flashpoint at or above 100 degrees Fahrenheit (refer to MSDS).

Fire Extinguisher Monthly Inspection Log

JOB SITE: _____
 SUPERVISOR: _____ DATE: _____

Location:	
JANUARY	
FEBRUARY	
MARCH	
APRIL	
MAY	
JUNE	
JULY	
AUGUST	
SEPTEMBER	
OCTOBER	
NOVEMBER	
DECEMBER	

Location:	
JANUARY	
FEBRUARY	
MARCH	
APRIL	
MAY	
JUNE	
JULY	
AUGUST	
SEPTEMBER	
OCTOBER	
NOVEMBER	
DECEMBER	

Monthly Inspection Includes:

- Verify that extinguisher is in assigned location
- Extinguisher is Clearly Visible and Access is not Obstructed.
- Extinguisher is Fully Charged
- Nozzle is free of Obstruction
- Lock Pin is in place
- Service tag is attached and current.

Motor Vehicles

1. General

- a) Seat belts shall be worn at all times by employees operating or riding on motor vehicles or machinery. (Exception: equipment designed for stand-up operation.)
- b) Vehicles used to transport employees shall have seats firmly secured and adequate for the number of employees to be carried. Employees shall not ride on fenders or running boards of equipment.
- c) Horns shall be in working order on all bi-directional machinery.
- d) Motor vehicle equipment with an obstructed view to the rear shall not be operated unless the vehicle has a reverse signal audible above the surrounding sound or the vehicle is backed up only when an observer signals that it is safe to do so.
- e) Operators of all motor vehicle equipment must possess a valid license/permit for the equipment being operated at all times and are responsible for the safe operation of their vehicle at all times.

2. Forklift Operation

- a) Only the driver is permitted to ride on fork lift trucks.
- b) Do not exceed the rated capacity of the forklift.
- c) Keep forks down. Operate with forks just high enough to clear obstructions.
- d) Operate the truck in reverse if the load is too high or too wide to see around.
- e) Park with the forks down and the parking brake set.
- f) All forklift operators will receive competency evaluation and training as of 1 December 1999. Reevaluation will be conducted per OSHA Reg. 1910.178,(1) (4) (ii) and at least once every three years.

3. Heavy Equipment Operation

- a) Heavy equipment such as backhoes and dump trucks will only be operated by authorized personnel.
- b) Unauthorized persons are not permitted to ride in the cabs of heavy equipment.
- c) Lower any movable buckets when you stop the vehicle.
- d) Always block any movable bucket if it is being inspected or having maintenance.
- e) Report all operating malfunctions immediately.
- f) If the operator's compartment is designated a high noise level area, hearing protection must be worn.
- g) Maintenance or repairs should not be done with the engine running.

Crane & Derrick Operators

1. Crane usage shall comply with the manufacturer's specifications and limitations where available.
2. Crane operations performed in New York State must have an operator who is certified/licensed with the Department of Labor. Operators must possess a card indicating that they are licensed with New York State when operating a crane on projects within the State of New York.
3. Written proof of qualifications for all crane and derrick operators shall be provided in accordance with EM385-1-1, 16.B.01, 16.B.02 and 16.B.03 and CFR Part 1926. Copies of operator qualifications and crane equipment inspections/test reports must be on site before crane work can start.
4. Rated load capacities, recommended operating speeds, and special hazard warnings or instructions shall be conspicuously posted on all equipment. Instructions or warnings shall be visible from the operator's station.
5. Equipment shall be inspected by a competent person prior to and during use. A complete inspection must be performed annually. Documentation of daily, monthly, and annual inspections will be kept on the jobsite for review by the designated authority.
6. Accessible areas within the swing radius of the crane shall be properly barricaded.
7. A fire extinguisher rated 5:BC or better must be provided in the cab of the crane.
8. No one is permitted to ride loads.
9. Never operate equipment closer than 2' from the edge of an excavation. Cranes shall not be left near the edge of excavations or in an area that may become unstable.
10. Minimum clearance between power lines rated 50 KV. and below and any part of a crane shall be 10'. For power lines rated greater than 50 KV., the clearance shall be 15' plus 0.4" for every 1 KV. above 50 KV.
11. The operator shall avoid swinging load over workers and bystanders.
12. Taglines shall be used on all loads and shall be insulated to prevent shock.
13. Only one person shall be permitted to give signals to the operator.

Concrete and Masonry Construction

1. All protruding reinforcing steel, onto or into which employees could fall, shall be guarded to eliminate the hazard of impalement.
2. No employee shall work under concrete buckets while buckets are being elevated or lowered into position.
3. Formwork shall be designed, fabricated, erected, supported, braced, and maintained so that it will be capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork.
4. A limited access zone shall be constructed and maintained when a masonry wall is being constructed.
5. The limited access zone shall be established prior to and maintained during the construction of the wall.
6. The limited access zone shall be equal to the height of the wall to be constructed plus 4', and shall run the entire length of the wall and shall be maintained during feature of work.
7. The limited access zone shall be established and maintained on the side of the wall without scaffolding.
8. The limited access zone shall be restricted to entry by workers actively engaged in constructing the wall. No other workers shall be permitted to enter.
9. The limited access zone shall remain in place until the wall is adequately supported.
10. All masonry walls over 8' in height shall be adequately braced unless the wall is supported by other means. The bracing shall remain in place until permanent supporting elements of the structure are in place.
11. Workers shall frequently wash exposed skin to prevent irritation from cement dust. Barrier creams can also be an effective deterrent to skin irritation.

Equipment Inspection

- 1) Cranes, trucks, and all other types of construction equipment shall be inspected by a responsible mechanic and certified that the equipment meets EM 385-1-1 and OSHA requirements.
- 2) The project superintendent shall be responsible to obtain equipment certifications for all company owned and rental equipment to be used by the contractor and subcontractors on the job site.
- 3) Copies of records of all equipment inspections shall be kept on the job site for review by the designated authority and recorded in QCS.
- 4) Seat belts and Rollover Protective Devices (ROPS) shall be installed on all construction equipment as required by paragraph 18.B.13 of EM 385-1-1. The operating authority will furnish proof from the manufacturer or licensed engineer that ROPS meets the applicable SAE standards cited in EM 385-1-1 Section 18.B.13 (e).

Elevated Work Platforms

- 1) All elevating work platforms shall be designed, constructed, maintained, used and operated in accordance with ANSI A92.3, ANSI A92.6, ANSI A92.5 and EM 385-1-1, Sections 22.L and 18.G.
- 2) Only personnel trained in the use of elevating work platforms shall be authorized to use them.
- 3) A list of authorized users will be maintained at the job site. The list will be updated to remain current and made available for review on site by the designated authority.
- 4) Personal safety belts must be worn.

Fall Protection

Purpose

To establish fall protection requirements for Black Horse Group employees performing work activities on a walking/working surface that is 6' or more above lower levels. These requirements do not pertain to ladder use, working from scaffolds, or steel erection activities. These activities have their own fall protection criteria.

Responsibilities

The job superintendent is responsible for making sure that measures are taken to provide for fall protection.

Duty to Have Fall Protection

1. Employees on walking or working surfaces in excess of 6' above lower levels shall be protected from falls by one or more of the following:
 - a) Guardrail Systems
 - b) Safety Net Systems
 - c) Personal Fall Protection Systems (to include fall arrest, positioning and restraint)
2. Employees engaged in leading edge work 6' above lower levels shall also be protected by one or more of the systems listed above unless it can be demonstrated that the use of these systems is impossible or creates a greater hazard. In these circumstances a fall protection plan will be developed to cover the leading edge activities. A sample fall protection plan covering these activities is provided in Appendix A of this Section.
3. Employees working in hoist/loading areas 6' or more above lower levels shall be protected from falls by a guardrail system or personal fall arrest system. If guardrails are used, a removable system is recommended. In some circumstances, both a guardrail system and a personal fall arrest system will need to be utilized to safely perform activities at material handling areas.
4. Employees working on formwork or reinforcing steel 6' or more above adjacent levels shall be protected by personal fall arrest systems, safety net systems, or positioning device systems.

5. Ramps, runways, and other walkways 6' or more above lower levels shall be protected by guardrail systems. If multiple planks are used to create a walkway, cleats should be provided to prevent displacement and uneven deflection.
6. Excavations 6' or more in depth whose edges are not easily seen shall be protected by guardrail systems, fences, or barricades. If fences or barricades are used they must be positioned at least 6' back from the excavation edge unless they are capable of withstanding the strength requirements for guardrail systems.
7. Wells, shafts, pits and similar excavations shall be protected by guardrail systems, fences, barricades, or covers. Excavations 6' or more in depth whose edges are not easily seen shall be protected by guardrail systems, fences, or barricades. If fences or barricades are used, they must be positioned at least 6' back from the excavation edge unless they are capable of withstanding the strength requirements for guardrail systems. Covers must meet the requirements provided in the Fall Protection Systems Section.
8. Overhand bricklaying operations must be protected by guardrail systems, safety net systems, or personal fall arrest systems. Employees reaching more than 10" below the level on which they are working shall be protected by a guardrail system or fall arrest system.

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

9. Wall openings whose inside bottom edge height is 39", and whose outside edge height is 6' or greater shall be protected by guardrail systems or fall arrest systems. Areas such as window openings and door openings leading to a porch area must be checked to ensure fall protection is provided.
10. Low-slope roofs with unprotected sides and edges greater than 6' above a lower level shall be protected by guardrail systems, safety nets, slide guards, personal fall arrest systems, or warning line systems in conjunction with a safety monitor. A low slope is a roof having a slope less than or equal to 4 in 1 (vertical to horizontal). See the Fall Protection Systems Section for specific requirements.

11. Steep roofs with unprotected sides and edges greater than 6' shall be protected by guardrail systems, safety nets, slide guards, or personal fall arrest systems. A steep roof is a roof having a slope greater than 4 in 1 (vertical to horizontal). See the Fall Protection Systems Section for specific requirements.
12. Employees engaged in built-up roofing work on roofs with a ground-to-eave height greater than 6' shall be protected by one or two of the following:
 - a) Motion Stopping System(s) (MSS) - MSS are fall protection using the following equipment singly or in combination: standard railings, scaffolds or platforms with guardrails, safety nets, safety belt/harness systems.
 - b) Warning Line Systems installed in accordance with OSHA standards.
 - c) Safety Monitoring System on roofs less than 50' wide where no mechanical equipment is being used. The Safety Monitoring System will only be used in conjunction with another fall protection system.
13. Employees engaged in precast concrete erection at heights greater than 6' shall be protected by guardrail systems or personal fall arrest systems unless the use of these systems is impossible or creates a greater hazard, in which case a written fall protection plan must be implemented. A sample fall protection plan covering these activities is provided in Appendix A of this Section.

Floor Holes

1. Floor holes, which employees may fall through, shall be protected by guardrail systems, covers, or personal fall arrest systems.
2. Floor holes which employees may trip in or step into shall be protected by covers.
3. Floor holes through which objects may fall shall be protected by covers.

Fall Protection Systems

1. Guardrail Systems

- a) Toprails shall be installed between 39 and 45 inches in height and shall not deflect more than 3 inches nor to a height of 39 inches when a downward force is applied. Toprail shall be capable of withstanding a force of at least 200 lb applied within 2 inches of the top edge.
- b) Midrails shall be installed halfway between the toprail and the walking/working surface. Midrails must be able to withstand 150 pounds of force applied in a downward and outward direction.
- c) When using wire rope railings the toprail and midrail shall be ¼ inch steel cable, flagged every 6 feet with high visibility material. Tension must be maintained to provide not more than 3 inches of deflection, in any direction, under a force of 200 lb.
- d) If wood railings are used the toprail shall be constructed of at a minimum 2 inch x 4 inch lumber. Midrails shall be constructed of 1 inch x 6 inch lumber. Posts shall be constructed of 2 inch x 4 inch lumber, and it is recommended that posts do not exceed 8' on center. Wood railing components shall be minimum 1,500 lb-ft/square inch fiber (stress grade) construction grade lumber.

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

- e) Toeboards shall be 3-1/2 inch in vertical height and shall be constructed from 1 inch x 4 inch lumber or equivalent. Toeboards shall be able to withstand a force of 50 lbs.

2. Covers

Covers shall be installed on any hole 2 inch or more on walking/working surfaces. Covers shall be capable of withstanding two times the weight of any object or employee which may pass over them, and be color coded or marked "hole" or "cover." Covers also must be secured from movement. Securing the cover to prevent access to a manhole, vault, or other similar opening is a good practice.

3. Warning line systems

- a) Warning lines may ONLY be used on floors or flat or low sloped roofs (between 0° - 18.4° or 4:12 slope) and shall be erected around all sides of the work area. When performing roof work, the warning line system will be erected not less than 6 feet from the edge. When other work is being performed, such as the use of mechanical equipment, the warning line system shall be erected at least 15 feet from the edge of the roof.
- b) Mechanical equipment on roofs shall be used or stored in areas where workers are protected by a warning line system.
- c) Warning lines shall be rigged and supported in such a way that its lowest point (including sag) is no less than 34 inches from the roof surface and its highest point is no higher than 39 inches from the roof surface. The warning lines must be flagged not more than 6 feet with high visibility material.
- d) When working within the warning line system fall protection is not required. An employee can only work outside of the warning line system when fall protection is used. No worker no matter what work needs to be performed will be allowed to work between the edge and warning line system without the use of fall protection.

4. Safety Monitors

A safety monitoring system is prohibited as being a fall protection method by itself. Safety monitoring systems can ONLY be used in conjunction with other fall protection systems.

Safety Monitors must be competent and comply with the following:

- a) The safety monitor must be able to recognize fall hazards and be capable of warning employees when it appears an employee is unaware of a fall hazard or is acting in an unsafe manner.
- b) The safety monitor must be on the same working level and within visual sighting distance of employees. Safety monitors also must be close enough to communicate orally to employees. This means on a multilevel roof, a safety monitor may be required at each roof level.
- c) The safety monitor shall not have any other responsibilities which could take the monitor's attention from the monitoring function.

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

5. Fall Arrest Systems

- a) Lanyards, vertical lifelines, D-rings, and snap hooks shall have a 5000 lbs. tensile strength.
- b) All lanyard snap-hooks shall be of the locking type, and rated for 3600 lbs.
- c) Harnesses, lanyards and other fall protection equipment are not to be used for any purpose other than employee fall protection.
- d) Fall arrest anchorage points must be able to withstand 5000 lbs. per employee or must be designed as a system which maintains a safety factor of at least 2.
- e) Fall protection systems must be erected under the supervision of a competent person. Any employee who is unsure whether an anchorage point is appropriate should ask the supervisor.
- f) Lanyard and safety line length should be limited so as not to allow a free fall greater than 6'. Additionally, care should be given when designing a system to ensure that an employee will not strike lower levels prior to, or during, the activation of the fall arrest system. This is especially of concern when using shock-absorbing lanyards due to their elongation when arresting a fall.
- g) Positioning devices should allow for a free fall of no more than 2'. This type of system is generally utilized by employees tying rebar of built-up walls.
- h) Employees climbing built-up walls of reinforcing steel must tie-off when they reach their work location. Employees must use continuous fall protection when climbing in excess of 24' vertically.

Fall Protection Training

1. All employees must be trained in the following items:

- a) The nature of fall hazards in the work area.
- b) The correct procedures for erecting, maintaining, disassembling and inspecting the fall protection systems to be used.
- c) The use and operation of guardrail systems, personal fall arrest systems, controlled access zones and other protection to be used.
- d) The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection.
- e) The role of employees in fall protection plans.

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

Appendix A

Sample Fall Protection Plan 1926 Subpart M App E

Non-Mandatory Guidelines for Complying with 1926.502(k)

Standard Number: 1926 Subpart M App E

Standard Title: Sample Fall Protection Plan - Non-Mandatory Guidelines for
Complying with 1926.502(k)

SubPart Number: M

SubPart Title: Fall Protection

Produced by USDOL OSHA - Directorate of Safety Standards & Directorate of Health
Standards

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

Sample Fall Protection Plans

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

This Fall Protection Plan is specific for the following project:

Location of Job _____
Erecting Company _____
Date Plan Prepared or Modified _____
Plan Prepared By _____
Plan Approved By _____
Plan Supervised By _____

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

Appendix A

I. Statement of Company Policy

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

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

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

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

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

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

II. Fall Protection Systems to Be Used on This Project

Where conventional fall protection is not feasible or creates a greater hazard at the leading edge and during initial connecting activity, we plan to do this work using the Personal Fall Arrest system and a safety monitoring system and expose only a minimum number of employees for the time necessary to actually accomplish the job. The maximum number of workers to be monitored by one safety monitor is six (6). We are designating the following trained employees as designated erectors and they are permitted to enter the work area and work using the Personal Fall Arrest system:

Safety monitor:

Designated erector:

Designated erector:

Designated erector:

Designated erector:

Designated erector:

Designated erector:

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

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

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

1. Recognition of the fall hazards in the work area (at the leading edge and when making initial connections-point of erection).
2. Avoidance of fall hazards using established work practices which have been made known to the employees.
3. Recognition of unsafe practices or working conditions that could lead to a fall, such as windy conditions.
4. The function, use, and operation of safety monitoring systems, guardrail systems, body belt/harness systems, and other protection to be used.
5. The correct procedure for erecting, maintaining, disassembling and inspecting the system(s) to be used.
6. Knowledge of construction sequence or the erection plan.

A conference will take place prior to starting work involving all members of the erection crew, crane crew and supervisors of any other concerned contractors. This conference will be conducted by the precast concrete erection supervisor in charge of the project. During the pre-work conference, erection procedures and sequences pertinent to this job will be thoroughly discussed and safety practices to be used throughout the project will be specified.

Safety Monitoring System

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

1. Warn by voice when approaching the open edge in an unsafe manner.
2. Warn by voice if there is a dangerous situation developing which cannot be seen by another person involved with product placement, such as a member getting out of control.
3. Make the designated erectors aware they are in a dangerous area.
4. Be competent in recognizing fall hazards.
5. Warn employees when they appear to be unaware of a fall hazard or are acting in an unsafe manner.
6. Be on the same walking/working surface as the monitored employees and within visual sighting distance of the monitored employees.
7. Be close enough to communicate orally with the employees.
8. Not allow other responsibilities to encumber monitoring. If the safety monitor becomes too encumbered with other responsibilities, the monitor shall
 - (1) stop the erection process; and
 - (2) turn over other responsibilities to a designated erector; or
 - (3) turn over the safety monitoring function to another designated, competent person.

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

Holes

All openings greater than 2 inches will have perimeter guarding or covering. All predetermined holes will have the plywood covers made in the precasters' yard and shipped with the member to the jobsite. Prior to cutting holes on the job, proper protection for the hole must be provided to protect the workers. Perimeter guarding or covers will not be removed without the approval of the erection foreman.

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

III. Implementation of Fall Protection Plan

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

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

Columns

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

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

Inverted Tee Beams

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

Spandrel Beams

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

Floor and Roof Members

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

Appendix A

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

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

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

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

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

The double tee will be rigged with a standard four-way spreader off of the main load line. An additional choker will be attached to the married point of the two-legged spreader at the end of the tee that is to be elevated. The double tee will be hoisted with the main load line and swung into a position as close as possible to the tee's final bearing elevation. When the tee is in this position and stabilized, the whip line load block will be lowered to just above the tee deck. At this time, two erectors will walk out on the suspended tee deck at midspan of the tee member and pull the load block to the end of the tee to be elevated and attach the additional choker to the load block. The possibility of entanglement with the crane lines and other obstacles during this two lining process while raising and lowering the crane block on that second line could be hazardous to an encumbered employee. Therefore, the designated erectors will not tie off during any part of this process. While the designated erectors are on the double tee, the safety monitoring system and warning line system will be used. After attaching the choker, the two erectors then step back on the previously erected tee deck and signal the crane operator to hoist the load with the whip line to the elevation that will allow for enough clearance to let the low end tee legs slide into the pockets when the main load line is lowered. The erector, who is handling the lowered end of the tee at the closed pocket bearing, will step out on the suspended tee. An erection bar will then be placed between the end of the tee leg and the inside face of the pocketed spandrel member. The tee is barred away from the pocketed member to reduce the friction and lateral force against the pocketed member. As the tee is being lowered, the other erector remains on the tee which was previously erected to handle the other end. At this point the tee is slowly lowered by the crane to a point where the tee legs can freely slide into the pockets. The erector working the lowered end of the tee must keep pressure on the bar between the tee and the face of the pocketed spandrel member to very gradually let the tee legs slide into the pocket to its proper bearing dimension. The tee is then slowly lowered into its final erected position.

Appendix A

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

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

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

Detailing

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

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

A. Personal Fall Arrest Systems

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

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

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

Appendix A

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

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

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

When necessary to move away from a retractable device, the worker cannot move at a rate greater than the device locking speed typically 3.5 to 4.5 ft/sec. When moving toward the device it is necessary to move at a rate which does not permit cable slack to build up. This slack may cause cable retraction acceleration and cause a worker to lose their balance by applying a higher than normal jerking force on the body when the cable suddenly becomes taut after building up momentum. This slack can also cause damage to the internal spring-loaded drum, uneven coiling of cable on the drum, and possible cable damage.

The factors causing sudden movements for this location include:

(a) Cranes

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

(b) Weather Conditions

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

(c) Structure/Product Conditions.

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

Appendix A

(d) Human Error.

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

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

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

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

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

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

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

Appendix A

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

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

6. The ANSI A10.14-1991 American National Standard for Construction and Demolition Operations - Requirements for Safety Belts, Harnesses, Lanyards and Lifelines for Construction and Demolition Use, states that the anchor point of a lanyard or deceleration device should, if possible, be located above the wearer's belt or harness attachment. ANSI A10.14 also states that a suitable anchorage point is one which is located as high as possible to prevent contact with an obstruction below should the worker fall. Most manufacturers also warn in the user's handbook that the safety block/retractable lifeline must be positioned above the D-ring (above the work space of the intended user) and OSHA recommends that fall arrest and restraint equipment be used in accordance with the manufacturer's instructions.

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

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

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

Appendix A

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

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

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

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

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

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

B. Safety Net Systems

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

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

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

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

Appendix A

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

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

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

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

C. Guardrail Systems

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

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

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

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

2. There is no permanent boundary until all structural members have been placed in the floor or roof. At the leading edge, workers are operating at the temporary edge of the structure as they work to position the next member in the sequence. Compliance with the standard would require a guardrail and toe board be installed along this edge. However, the presence of such a device

would prevent a new member from being swung over the erected surface low enough to allow workers to control it safely during the positioning process. Further, these employees would have to work through the guardrail to align the new member and connect it to the structure. The guardrail would not protect an employee who must lean through it to do the necessary work, rather it would hinder the employee to such a degree that a greater hazard is created than if the guardrail were absent.

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

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

V. Other Fall Protection Measures Considered for This Job

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

A. Scaffolds are not used because:

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

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

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

B. Vehicle mounted platforms are not used because:

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

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

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

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

C. Crane suspended personnel platforms are not used because:

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

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

Appendix A

VI. Enforcement

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

VII. Accident Investigations

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

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

VIII. Changes to Plan

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

Sample Fall Protection Plan for Residential Construction
(Insert Company Name)

This Fall Protection Plan Is Specific For The Following Project:

Location of Job

Date Plan Prepared or Modified

Plan Prepared By

Plan Approved By

Plan Supervised By

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

I. Statement of Company Policy

(Your company name here) is dedicated to the protection of its employees from on-the-job injuries. All employees of (Your company name here) have the responsibility to work safely on the job. The purpose of the plan is to supplement our existing safety and health program and to ensure that every employee who works for (Your company name here) recognizes workplace fall hazards and takes the appropriate measures to address those hazards.

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

Appendix A

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

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

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

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

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

II. Fall Protection Systems To Be Used on This Job

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

Installation Procedures for Roof Truss and Rafter Erection

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

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

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

Appendix A

On all walls 8' or less, workers will install interior scaffolds along the interior wall below the location where the trusses/rafters will be erected. "Sawhorse" scaffolds constructed of 46 inch sawhorses and 2x10 planks will often allow workers to be elevated high enough to allow for the erection of trusses and rafters without working on the top plate of the wall.

In structures that have walls higher than 8' and where the use of scaffolds and ladders would create a greater hazard, safe working procedures will be utilized when working on the top plate and will be monitored by the crew supervisor. During all stages of truss/rafter erection the stability of the trusses/rafters will be ensured at all times.

Black Horse Group shall take the following steps to protect workers who are exposed to fall hazards while working from the top plate installing trusses/rafters:

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

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

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

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

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

The first two trusses/rafters will be set from ladders leaning on side walls at points where the walls can support the weight of the ladder; and

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

Appendix A

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

Black Horse Group shall take the following steps to protect workers who are exposed to fall hazards while securing trusses/rafters at the peak of the trusses/ridge beam:

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

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

Workers shall have no other duties than securing/bracing the trusses/ridge beam;

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

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

Roof Sheathing Operations

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

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

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

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

Black Horse Group shall take the following steps to protect workers who are exposed to fall hazards while installing roof sheathing:

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

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

Appendix A

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

Only qualified workers shall install roof sheathing;

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

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

Additional rows of roof sheathing may be installed by workers positioned on previously installed rows of sheathing. A slide guard can be used to assist workers in retaining their footing during successive sheathing operations; and

Additional slide guards shall be securely attached to the roof at intervals not to exceed 13' as successive rows of sheathing are installed. For roofs with pitches in excess of 9-in-12, slide guards will be installed at four-foot intervals.

When wet weather (rain, snow, or sleet) are present, roof sheathing operations shall be suspended unless safe footing can be assured for those workers installing sheathing.

When strong winds (above 40 miles per hour) are present, roof sheathing operations are to be suspended unless wind breakers are erected.

Installation of Floor Joists and Sheathing

During the installation of floor sheathing/joists (leading edge construction), the following steps shall be taken to protect workers:

Only the following trained workers will be allowed to install floor joists or sheathing:

Materials for the operations shall be conveniently staged to allow for easy access to workers;

The first floor joists or trusses will be rolled into position and secured either from the ground, ladders or sawhorse scaffolds;

Each successive floor joist or truss will be rolled into place and secured from a platform created from a sheet of plywood laid over the previously secured floor joists or trusses;

Except for the first row of sheathing which will be installed from ladders or the ground, workers shall work from the established deck; and

Any workers not assisting in the leading edge construction while leading edges still exist (e.g. cutting the decking for the installers) shall not be permitted within 6' of the leading edge under construction.

Appendix A

Erection of Exterior Walls

During the construction and erection of exterior walls, employers shall take the following steps to protect workers:

Only the following trained workers will be allowed to erect exterior walls:

A painted line 6' from the perimeter will be clearly marked prior to any wall erection activities to warn of the approaching unprotected edge;

Materials for operations shall be conveniently staged to minimize fall hazards; and

Workers constructing exterior walls shall complete as much cutting of materials and other preparation as possible away from the edge of the deck.

III. Enforcement

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

IV. Accident Investigations

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

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

V. Changes to Plan

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

[59 FR 40746, Aug. 9, 1994; 60 FR 5131, Jan. 26, 1995]

Contingency Plan for Severe Weather

A Contingency Plan for Severe Weather has not been developed in accordance with Section 19.A.03 of EM 385-1-1, due to the fact that a floating plant will not be involved in this project. (Please see Section 19.A.03 of EM 385-1-1 below)

19.A.03 Severe weather precautions.

a. Where floating plant may be endangered by severe weather (including sudden and locally severe weather, storms, high winds, hurricanes, and floods) plans shall be made for removing or securing plant and evacuation of personnel in emergencies.
> See 06.I.01. This plan shall be part of the AHA and shall include at least the following:

- (1) A description of the types of severe weather hazards the plant may potentially be exposed to and the steps that will be taken to guard against the hazards;EM 385-1-1
- (2) The time frame for implementing the plan (using as a reference the number of hours remaining for the storm to reach the work site if it continues at the predicted speed and direction), including the estimated time to move the plant to safe harbor after movement is started;
- (3) The name and location of the safe location(s);
- (4) The name of the vessel(s), type, capacity, speed, and availability that will be used to move any non-self-propelled plant;
- (5) River/tide gage readings at which floating plant must be moved away from dams, river structures, etc., to safe areas;
- (6) Method for securing equipment if not moved.

b. Extended movement of floating plant and tow shall be preceded by an evaluation of weather reports and conditions by a responsible person to ascertain that safe movement of the plant and tow can be accomplished.

c. Work or task orders shall be preceded by an evaluation of weather reports and conditions by a responsible person to ascertain that safe working conditions exist and safe refuge of personnel is assured.

d. USCG approved PFD (Types I, II, III, or V) shall be worn by all personnel on decks exposed to severe weather, regardless of other safety devices used. USCG-approved Type V automatic inflatable PFDs rated for commercial use may be worn by workers on USACE sites per 05.J.02.

e. A sufficient number of vessels of adequate size and horsepower, each designed, outfitted, and equipped for towing service, shall be available at all times to move both self- and non-self-propelled plant against tides, current, and winds during severe weather conditions. EM 385-1-1

f. Contractors working in an exposed marine location shall monitor the National Oceanic and Atmospheric Administration (NOAA) marine weather broadcasts and use other commercial weather forecasting services as may be available.

g. The floating plant shall be capable of withstanding whatever sea conditions may be experienced in the work area during the time period the work is being performed (i.e., seaworthiness, or good “sea keeping” qualities).

5.10 Excavations & Trenching

Purpose

The purpose of this program is to protect all of Black Horse Group's employees that are exposed to hazards associated with excavation and trenching activities.

Policy

When Black Horse Group is performing excavation or trenching activities, our designated competent person will be responsible for classifying soil type as well as performing daily inspections.

Specific Requirements

1. All open excavations made in the earth's surface four (4) feet or greater shall be under the supervision of a competent person trained in, and knowledgeable about soils analysis, the use of protective systems and the requirements of OSHA 29 CFR 1926, Subpart P and EM 385-1-1 Section 25.
2. The competent person shall be designated in writing and a resume of their training and experience submitted to the COR for acceptance prior to start of work.
3. Excavation hazards and methods for their control shall be specified in the activity hazard analysis.
4. CALL BEFORE YOU DIG!! Prior to opening an excavation, the exact location of underground utilities shall be determined. Call the local centralized utility agency before you dig or drill.
5. All excavations less than 20 feet in depth which have vertically lowered portions shall be shielded or supported to a height at least 18 inch above the top of the vertical side with a maximum allowable slope of 1-1/2:1 per EM381-1-1 Section 25.C.01 b.
6. Benching/Sloping: All excavations and trenches 4' or deeper shall be sloped or benched wide enough to achieve stable bank conditions according to the following ratios (Horizontal : Vertical):
7.
 - a) Type C soil, at least 1-1/2 : 1
 - b) Type B soil, at least 1 : 1
 - c) Type A soil, at least 3/4 : 1

- d) Or, if it is not possible to cut back to the angles prescribed, all trenches 5' or more in depth shall be shored or shielded.
 - e) Unclassified soils must be sloped or benched at least 1-1/2 : 1.
 - f) For instructions on how to classify soil, refer to Appendix A, Soil Classification, of Subpart 8 - Excavations, 29 CFR 1926, 650-652.
- 8.** Inspections: No employee shall enter an excavation until it has been inspected by a competent person and declared safe to enter. Excavations shall be inspected daily before employees are allowed to enter and after every rainstorm or other hazard-causing occurrence.
* Definition: *Competent Person* means one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- 9.** Access/Egress: A stairway, ladder, ramp or other safe means of egress shall be located in excavations that are 4' or more in depth so as to allow no more than 25' of lateral travel for employees. Ladders shall extend from the bottom of the excavation to not less than 3 feet above the surface. Earthen ramps shall be sloped so that employees do not have to climb on hands and feet when accessing or egressing an excavation or trench.
- 10.** Loose Debris: Spoil piles, loose rock and soil, tools, and other debris shall be kept at least 2' back from excavation edges, secured or removed to prevent it from falling into excavation where it could cause injuries.
- 11.** Vehicular Traffic: All employees working near traffic shall wear vests or garments made of or marked with reflective or high visibility material.
- 12.** Falling Loads: No employee shall be permitted beneath a load handled by loading or digging equipment, and operators remaining in their vehicles must have adequate canopy protection.
- 13.** Fall Protection: Trenches which are not readily visible will be protected by barricades, covers or other suitable means. Also, where ramps or walkways are utilized to cross over excavations and a fall hazard of 6' or more exists, guardrails or some other form of fall protection will be provided.
- 14.** Hazardous Atmosphere: When it is expected or reasonably predictable to expect that a hazardous atmosphere exists, or an atmosphere containing less than 19.5% oxygen, precautions necessary to ensure employee safety will be taken. Examples include:
- a) Ventilation

- b) Air purifying respirators will be provided in accordance with Black Horse Group's Respirator Program.
 - c) Supplied air respirators will be provided in accordance with Black Horse Group's Respirator Program.
 - d) When a hazardous atmosphere exists, refer to the Confined Space Section of this program.
15. Water Accumulation: Employees will not be permitted to work in excavations where water is accumulating. The designated competent person must determine what safeguards will be taken to protect against the hazards of water accumulation.
16. Mechanical Equipment: When mechanical equipment is operated adjacent to an excavation and the operator does not have a clear view of the edge barricades, stop logs or someone providing signals will be utilized.
17. Surface Encumbrances: Sidewalks, trees, and other miscellaneous surface encumbrances whose stability may be weakened by excavation operations should be braced, secured or removed to prevent their falling into the open excavation.
18. Stability of Adjacent Structures: Whenever excavating operations could weaken adjoining buildings, wall or structures, support systems such as shoring, bracing or underpinning will be utilized.

Support Systems

1. Timber Shoring: All timber shoring systems will be designed in accordance with Appendices A and C of Subpart P - Excavations from 29 CFR 1926 Standards for Construction.
2. Aluminum Hydraulic Shoring (AHD): All aluminum hydraulic shoring systems will be designed from *Manufacturers Tabulated Data* or when not available in accordance with Appendix D of Subpart P - Excavations from 29 CFR 1926 Standards for Construction.

Aluminum hydraulic shoring systems designed from the manufacturer's tabulated data will be in accordance with the manufacturer's recommendations, specifications and limitations.

- a) Important: Any deviation from the manufacturer's recommendations or specifications must be approved by the manufacturer.
- b) Altered systems with the manufacturer's approval shall have a written copy of that approval on site during construction of the system and a copy kept at the main office.

- c) Registered Professional Engineer: Systems designed by a registered professional engineer shall include the following:
 - d) A plan indicating the sizes, types and configurations of the materials to be used in the protective system; and
 - e) The identity of the professional engineer designing the system.
 - f) A copy of the design shall be kept onsite during the construction of the system and a copy will be kept at the main office.
3. Trench Boxes: Trench Boxes will be used in accordance with the loads for which they were designed.
- a) Trench Boxes shall be installed to prevent lateral movement in the event of cave-ins, etc.
 - b) Employees shall not enter or exit a trench box from any part of the trench that is unprotected.
 - c) Employees will not be allowed inside of trench boxes when they are being installed, removed or moved vertically.
 - d) Trench boxes must extend at least 18 inches above the top of the vertical side to prevent tools and/or debris from falling into the excavation/trench.
 - e) Excavations of earth material to a level not greater than 2' below the bottom of the shield or trench box shall be permitted, but only if the shield or support system is designed to resist the forces calculated for the full depth of the trench, and there are no indications of soil movement from behind the shield or support system.

5.11 Hot Work

Purpose

To establish the requirements for safe welding, cutting, soldering, heating, etc.

Responsibilities

The job superintendent is responsible for all aspects of the hot work program.

General

1. All combustible materials must be removed or protected by a welding blanket from the place where the flame or the arc is to be:
 - a) 15' horizontally
 - b) 45' below
 - c) 10' above
2. No arc or flame operation is permitted in an area where painting is being done or where combustible dusts or flammable liquids are present.
3. A fire watch with proper extinguishers must be posted during all flame or electric arc work and for thirty minutes after such work. A fire watch must also be posted for 25 minutes after use of temporary heaters.
4. Mechanical ventilation and /or respirators must be provided when welding, cutting or heating:
 - a) Hazardous materials such as stainless steel, cyanides, zinc, cadmium, heavy metals, etc.
 - b) In confined spaces.

Oxy-Acetylene Torches

1. Fuel gas and oxygen hoses must be easily distinguishable and connections cannot be interchangeable.
2. All connections must be clean and free of grease or oil.
3. Back flow valves must be installed at the mixing tube of all torches.
4. Hoses shall not be laid across traffic areas.
5. All gas cylinders must be secured in an upright position. When in storage the protective cap must be on the cylinder.

Propane Torches

1. Hoses shall not be laid across traffic areas.
2. All gas cylinders must be secured in an upright position. When in storage the protective cap must be on the cylinders and the cylinders protected against mechanical damage.

Electric Arc Welding

1. All arc welding must be protected by non-combustible shields or curtains to prevent personnel or bystanders from viewing the arc.
2. When electrode holders are left unattended, the electrodes must be removed and the holders placed or protected so they cannot make contact with each other, conductive objects or people.
3. All welding cable must be insulated completely. Any splices or repairs must have insulation with a resistance equal to or greater than the original insulation.

Propane Fired Heaters

1. The propane fuel tank must be located 20' from the burner.
2. All gas cylinders must be secured in an upright position. When in storage the protective cap must be on the cylinders and the cylinders protected against mechanical damage.
3. Hoses shall not be laid across traffic areas.

Liquid Fueled Heaters

1. All liquid fuels must have a flash point of 100 degrees F or more.
2. Refueling shall only be done after the heater has been off for 15 minutes or more.
3. Fuel storage must be located well away from any heat source and protected from mechanical damage.

5.12 - Regulated Material Lead and Asbestos

Black Horse Group will not make use of, make contact with, or work in an area containing state or federally regulated materials. In the event regulated materials are suspected of being present in a work area, all work will stop immediately and a supervisor will be notified. The supervisor will notify the owner or contractor for whom Black Horse Group is performing work for confirmation and/or inspection of the area. Work will resume only after Black Horse Group is notified in writing that the suspect material has been declared safe or, if the suspect material is found to be hazardous, the material has been removed and the area declared safe for entry and the resumption of work.

Lead In Construction

Prior to beginning demolition of any structure, or portions of any structure, constructed prior to 1978, testing shall be conducted to determine the presence of lead.

Pre-Planning

Black Horse Group estimating staff should verify whether lead is present prior to bidding on any project involving demolition of buildings, structures, or portions thereof constructed prior to 1978.

Project Specific Plan: Reference RFP Appendix A for abatement plan at the facility.

****BHG scope of work does not include any abatement items. Employee training in Lead and Asbestos Awareness and compliance with EM 385-1-1 06.B.05 will be implemented should these materials be encountered during the performance of the work.**

5.13 – Site Sanitation

Potable Water

1. An adequate supply of potable water shall be provided in all places of employment.
2. Potable containers used to dispense drinking water shall be capable of being tightly closed and equipped with a tap.
3. Common drinking cup is prohibited.

Toilets

Toilets shall be provided for employees according to the following table 2-2 of EM385-1-1:

NUMBER OF EMPLOYEES	MINIMUM NUMBER OF FACILITIES
20 or fewer	1 toilet
20 or greater	1 toilet seat and 1 urinal per 40 workers
200 or greater	1 toilet seat and 1 urinal per 50 workers

Jobsites not provided with a sanitary sewer shall be provided with one of the following toilet facilities unless prohibited by local codes:

1. Privies (where their use will not contaminate ground or surface water)
2. Chemical toilets
3. Recirculating toilets
4. Combustible toilets

5.14 Signs and Signals

Signs

Signs and symbols shall be visible at all times when work is being performed, and shall be removed or covered promptly when the hazard no longer exists. The types of signs and their use are as follows:

- *0 *Danger signs*: Danger signs shall be used only where an immediate hazard exists.
- *1 *Caution signs*: Caution signs shall be used only to warn against potential hazards or to caution against unsafe practices.
- *2 *Exit signs*: Exit signs, when required, shall be placed at all exits.
- *3 *Traffic signs*: Construction areas shall be posted with legible traffic signs at points of hazard.

Signals

When operations are being performed and signs, signals, and barricades do not provide the necessary protection on or adjacent to a highway or street, flagmen or other appropriate traffic controls shall be provided. Signaling requirements are as follows:

- *4 Signaling directions by flagmen shall conform to ANSI requirements.
- *5 Hand signaling by flagmen shall be by use of red flags at least 18 inches square or sign paddles, and in periods of darkness, red lights.
- *6 Flagmen shall be provided with and shall wear a red or orange warning garment while flagging. Warning garment worn at night shall be a reflective material.

NOTE: Signs, signals, and barricades are to be used to warn and protect employees and the public from jobsite hazards. These warning measures shall remain in place at the end of the workday if the public is exposed to the hazard.

5.15 Hearing Conservation

Purpose

To establish procedures and methods that will be utilized by all Black Horse Group employees who are exposed to noise levels that exceed the Time Weighted Average (TWA) of 85 decibels or more.

General

Exposure to high noise levels can cause hearing loss or impairment. There is no cure for noise-induced hearing loss, making prevention of excessive noise exposure the only way to avoid hearing damage. Earplugs are available at each site for employees to use to help reduce exposure. Other forms of hearing protection, such as earmuffs, are available if activities being performed require protection with a higher Noise Reduction Rate (NRR).

Control Methods

When employees are required to work with or near tools or equipment that produce sounds that exceed permissible amounts, engineering controls shall be utilized. If the use of the engineering controls fails to reduce the sound to permissible levels, then hearing protection equipment shall be used to reduce noise exposure to acceptable levels.

Hearing Protection

There are many different types of hearing protection which provide different protection factors. Manufacturers of hearing protection designate protection factors in terms of NRR, Noise Reduction Rate. The higher the NRR, the better the protection. These values are based on the hearing protection fitting the user perfectly. Obviously, the hearing protection will not always provide a perfect fit for all users, so the NRR may be lower.

Consideration must be taken for what type of work will be performed while wearing hearing protection. For instance, if work is being performed near vehicle traffic and hearing protection is being used, the wearer may not hear a warning signal from a piece of machinery. When conditions warrant hearing protection but the use of this protection creates an additional hazard, measures must be taken to address this hazard.

Performing activities such as jack hammering, pile driving, and operating certain tools or equipment can expose an employee to higher decibel levels than are permitted over an eight-hour time period. If these activities are only performed for a short duration, the Time Weight Average (TWA) may not exceed permissible

exposure limits but hearing protection use is encouraged provided its use does not create an additional hazard. A chart demonstrating limits for employee exposure to noise is provided at the end of the Hearing Conservation Program.

HEARING CONSERVATION PROGRAM

1. All employees exposed to an eight-hour time-weighted average of 85 decibels or greater shall be provided with and be required to wear hearing protection. Employees exposed to lower decibels are encouraged to utilize hearing protection if its use does not create additional hazards.
2. Hearing protection shall be available on each jobsite for employee use. The superintendent or foreman shall ensure that hearing protection is being worn by employees exposed to a eight-hour Time Weighted Average (TWA) of 85 decibels or greater.
3. All employees shall be provided with training in the use and care of hearing protection equipment as well as their limitations.
4. Employees who fail to wear hearing protection when its use is required will be disciplined as per Black Horse Group's Disciplinary Program.
5. Employees who are required to regularly wear hearing protection to prevent an exposure to a TWA of 85 decibels or greater will be tested annually for hearing loss.

Training

All employees exposed to noise at or above an eight-hour TWA of 85 decibels shall participate in a fitting training program provided by the employer. The training shall discuss the effects of noise on hearing and how through the use of hearing protection noise levels can be reduced. Additionally, the advantages and disadvantages of various types of hearing protection will be discussed as well as the use and care of often-used protectors.

Table 5-4
Permissible DoD Noise Exposures

Duration/day (hours)	Sound-pressure level dB(A) slow response
No limit	80
9 ½	84
8	85
4 ¾	88
3 ¼	90
1 ½	95
½	100
¼	105

5.16 Assured Equipment Grounding Conductor Program

General

This section describes the company's program to assure that all electrical equipment used on a jobsite is properly grounded. Black Horse Group has established an Assured Equipment Grounding Conductor Program to be implemented on jobsites where ground fault circuit interrupters are not used in accordance with OSHA regulations. The program covers all cord sets, tools/equipment connected by cord and plug which are available for use by employees, and receptacles which are not part of the permanent wiring of the building or structure

1. Procedure

- a) Prior to each day's use, each cord set, attachment cap, plug and receptacle of cord sets, and any tools or equipment connected by cord and plug shall be visually inspected. The inspector should look for external defects, such as deformed or missing pins or insulation damage, and for signs of internal damage. Equipment that is damaged shall be red tagged and removed from service until repaired. As part of the program, tests will be performed on each cord set, attachment cap, plug and receptacle of cord sets, and any tools or equipment connected by cord and plug and documented by color coding or on the Assured Equipment Grounding Conductor Program Inspection Log located in this Section. Records of the tests shall be maintained and available for inspection by any affected employee, and OSHA officials.
- b) NOTE: Use of any cord set, attachment cap, plug and receptacle of cord sets, and any tools or equipment connected by cord and plug that does not meet the standards of the prescribed tests is prohibited.

2. Program Tests

- a) The required tests mentioned below shall be performed prior to first use, or before equipment is used after any incident which can be reasonably suspected to have caused damage. Tests shall be performed at intervals not to exceed three months. All cord sets, receptacles which are not a part of the permanent wiring of the building or structure and Company-owned cord and plug connected equipment required to be grounded shall be tested for the following:

- i) Grounding conductors shall be tested for continuity and shall be electrically continuous.
- ii) Each receptacle and attachment cap or plug shall be tested for correct attachment of the equipment grounding conductor. The equipment grounding conductor shall be connected to its proper terminal. Cord sets and receptacles which are fixed and not exposed to damage shall be tested at regular intervals.
- iii) All tests performed as required in this program shall be recorded identifying each receptacle, cord set, cord and plug connected tools/equipment that passed the test. The date on which the test was conducted or the interval for which it was tested shall be recorded on the Assured Equipment Grounding Conductor Program Inspection Log. As stated earlier, records of the tests shall be available for inspection by any affected employee, and OSHA officials.
- iv) Individuals responsible for conducting tests of equipment shall attend such training sessions as the company may deem necessary in accordance with OSHA Construction Safety and Health Standards.
- v) If an employee uses their own cord sets and cord and connected tools, test and color coding must be performed as required for company-owned equipment.
- vi) Color tape that sticks to the cord sets and cord and plug connected equipment should be used for coding purposes. The identification tape should be 2 inches in length and attached next to each end of cord sets. On cord and plug connected equipment the tape should be applied on the portion of the cord adjacent to the base of the equipment.

3. Daily Equipment Grounding Inspection Checklist

- a) The following checklist should be used by superintendents and foremen to enhance awareness while conducting inspections for job-related electrical hazards.
 - i) Power, portable and/or cord plug connected equipment should be properly grounded or of a double-insulated type.

- ii) Extension cords must be of the three-wire type and designed for hard or extra-hard usage. Cords must not possess worn or frayed parts or lack pins.
- iii) All damaged tools or cord sets should be red tagged and removed from service until repaired.
- iv) Switches, circuit breakers and other disconnecting means should be clearly marked in circuit panels and other temporary services.
- v) Temporary lights must be equipped with heavy duty electric cords, non-conductive guards or grounded parts.
- vi) Suspended temporary lights must be designed and used in the manner prescribed. Suspended temporary lights shall not be suspended by their electric cords, secured with staples, hung by nails or suspended by wire.
- vii) Cables and cords that pass through work areas shall be elevated to be protected from being damaged.
- viii) Outlet boxes containing live parts must be covered.
- ix) Receptacles for attachment plugs shall be the approved concealed type.
- x) Receptacles shall be of such design that attachment plugs are not interchangeable where different voltages or types of current are supplied.
- xi) Disconnecting means for motors and appliances and each service feeder or branch circuit at the point where it originates, must be clearly marked to indicate its purpose, unless located and arranged so that the purpose is evident.
- xii) Non-current-carrying metal parts of fixed, portable and plug connected equipment must be grounded.

Temporary lights shall have exposed bulbs guarded to prevent accidental contact except where bulbs are protected by a reflector that extends beyond the bulb.

5.17 Job Specific Plans

Hazardous Communication Program

General Information

This written hazard communication program shall be available at the worksite job trailer to any interested employee, employee representative or OSHA personnel. This program was written to educate the employees concerning jobsite hazards relating to hazard communication. The jobsite Superintendent has been designated to manage this program. This program has been broken into the following easily referenced sections to assist superintendents, foremen and all other employees.

1. List of hazardous chemicals
2. Container labeling – Per GHS
3. Safety data sheets (SDS)
4. Employee information and training
5. Hazardous non-routine tasks
6. Informing contractors / multi-employer workplaces

This program covers any chemical and materials known to be present at the workplace to which employees and/or subcontractors may be exposed under normal as well as emergency conditions.

List of Hazardous Chemicals

This section of the hazard communication program contains a list of all known or potentially hazardous chemicals used at the jobsite. A hazardous chemical is any chemical which is a physical hazard or a health hazard. It is required that each hazardous chemical used on the jobsite be recorded on a hazardous chemical list. The chemical identity used on the list of hazardous chemicals shall be consistent with the name found on the safety data sheet for that product.

The jobsite superintendent shall be responsible for maintaining the master list of hazardous chemicals onsite from all employees and Subcontractors. When products are brought onto the jobsite, the list shall be checked. If the product is not on the list, it will be added and the superintendent shall confirm that an appropriate SDS for that product is obtained. In the event that an SDS is not readily available for a product arriving on site, the superintendent shall contact the manufacturer and request an SDS for that product and indicate the date on which the call was made on the list of hazardous chemicals.

The form to be used to maintain the list of hazardous chemicals is located at the end of this section. This list of hazardous chemicals form has a designated area for SDSs on file for the corresponding chemical. This will enable the site superintendent to ensure that there is an SDS for each product on the list of hazardous chemicals.

Container Labeling

The site superintendent will verify that all stationary tanks, drums, vessels, and portable containers, and bulk materials are labeled as follows.

1. Container shall be clearly labeled as to contents and associated hazards as required by OSHA Hazard Communication Standard (HCS) dated June 1, 2015 - changed to reflect the Globally Harmonized System Changes (GHS).
2. The label used to identify the chemical shall coincide with the chemical's name used on the Safety Data Sheet (SDS) for that product.

NOTE: If an employee removes a product from a labeled container, the secondary container in which the product is put for use must be properly labeled if the volume removed is in excess of one gallon. If the total amount removed by the employee is less than one gallon, the secondary container does not need to be labeled, provided that the employee is going to immediately use that product, and is not going to leave that container unattended for any period of time.

The employee who removes the product is responsible to ensure that all secondary containers are labeled. The site superintendent shall review the labeling system in place on the jobsite, and provide additional training as needed.

Safety Data Sheets (SDS)

The site superintendent shall be responsible for obtaining and maintaining current SDSs for each chemical used at the jobsite. If an SDS is missing for a particular product, the manufacturer of the chemical shall be contacted by the site superintendent so an SDS can be obtained. If the manufacturer cannot get the SDS to the jobsite that day, then the date the call was made shall be documented, as well as when the SDS is expected to arrive at the jobsite.

Copies of SDSs for all hazardous chemicals to which employees may be exposed will be kept at Black Horse Group's job trailer.

SDSs will be available for review to all employees during each work shift. If SDSs are not available or new chemicals in use do not have SDSs, immediately contact a supervisor.

If during the course of construction an employee is required to perform any task that involves the use of a hazardous chemical, the SDS shall be referred to prior to using that chemical so the proper safety measures are taken.

A sample Safety Data Sheet is included in the hazard communication program for employee review.

Employee Information and Training

Black Horse Group has developed an information and training program to educate employees in hazard communication. This program intends to provide the necessary tools that each employee will need to work safely with hazardous chemicals and to increase employee awareness.

Employee information shall include:

1. Informing employees of the chemicals present in their workplace operations.
2. Location and availability of Black Horse Group's hazard communication program, Material Safety Data Sheets and list of hazardous chemicals.

Employee training shall include:

1. Physical and health effects of the hazardous chemicals.
2. Methods and observation techniques used to determine the presence or release of hazardous chemicals in the work area.
3. How to lessen or prevent exposure to these hazardous chemicals through the use of control/work practices and personal protective equipment.
4. The use of Material Safety Data Sheets to obtain appropriate hazard information.
5. How to properly read and label containers (primary and secondary).
6. Emergency procedures to follow if they are exposed to hazardous chemicals.

Prior to a new chemical hazard being introduced into the workplace, all employees will be given information and training as outlined above.

Hazards of Non-Routine Tasks

During the course of construction, there are times when employees are required to perform hazardous non-routine tasks. Prior to starting work on such projects, each affected employee will be given information and training by the site superintendent about hazardous chemicals to which the employee(s) may be exposed during such activity.

The information and training that shall be covered for hazardous non-routine tasks include:

1. Specific chemical hazards.
2. Protective/safety measures that can be utilized to reduce the exposure.
3. Measures Black Horse Group has taken to reduce the hazards, which may include ventilation, personal protective equipment, presence of another employee, and emergency procedures.

Informing Contractors / Multi-Employer Workplaces

All employers/contractors shall review appropriate hazard communication materials such as the written hazard communication program, list of hazardous chemicals, container labeling and Safety Data Sheets. Any precautionary measures shall be taken to protect employees during normal operating conditions and enforceable emergencies prior to commencement of work.

INVENTORY OF HAZARDOUS CHEMICALS

Project Name: _____

	<u>Common Name</u>	<u>Manufacturer Common Name</u>	<u>SDS On File Section</u>	<u>Date Obtained*</u>
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				




*Date Obtained section should be used to indicate the date on which the SDS is received. In the event that an SDS is not readily available for a product arriving on site, the superintendent shall contact the manufacturer and request an SDS for that product and indicate in this section the date the call was made.



Hazard Communication Standard Pictogram

As of June 1, 2015, the Hazard Communication Standard (HCS) will require pictograms on labels to alert users of the chemical hazards to which they may be exposed. Each pictogram consists of a symbol on a white background framed within a red border and represents a distinct hazard(s). The pictogram on the label is determined by the chemical hazard classification.

HCS Pictograms and Hazards

Health Hazard <ul style="list-style-type: none"> • Carcinogen • Mutagenicity • Reproductive Toxicity • Respiratory Sensitizer • Target Organ Toxicity • Aspiration Toxicity 	Flame <ul style="list-style-type: none"> • Flammables • Pyrophorics • Self-Heating • Emits Flammable Gas • Self-Reactives • Organic Peroxides 	Exclamation Mark  <ul style="list-style-type: none"> • Irritant (skin and eye) • Skin Sensitizer • Acute Toxicity (harmful) • Narcotic Effects • Respiratory Tract Irritant • Hazardous to Ozone Layer (Non-Mandatory)
Gas Cylinder  <ul style="list-style-type: none"> • Gases Under Pressure 	Corrosion <ul style="list-style-type: none"> • Skin Corrosion/ Burns • Eye Damage • Corrosive to Metals 	Exploding Bomb <ul style="list-style-type: none"> • Explosives • Self-Reactives • Organic Peroxides
Flame Over Circle <ul style="list-style-type: none"> • Oxidizers 	Environment (Non-Mandatory) <ul style="list-style-type: none"> • Aquatic Toxicity 	Skull and Crossbones  <ul style="list-style-type: none"> • Acute Toxicity (fatal or toxic)

For more information:

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U.S. Department of Labor
www.osha.gov (800) 321-OSHA (6742)

OSHA 3491-02 2012

Process Safety Management

U.S. Department of Labor
Occupational Safety and Health Administration
OSHA 3132
2000 (Reprinted)

This informational booklet is intended to provide a generic, non-exhaustive overview of a particular standards-related topic. This publication does not itself alter or determine compliance responsibilities, which are set forth in OSHA standards themselves and the *Occupational Safety and Health Act*. Moreover, because interpretations and enforcement policy may change over time, for additional guidance on OSHA compliance requirements, the reader should consult current and administrative interpretations and decisions by the Occupational Safety and Health Review Commission and the Courts.

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Voice phone: (202) 693-1999

Process Safety Management

U.S. Department of Labor
Alexis M. Herman, Secretary
Occupational Safety and Health Administration
Charles N. Jeffress, Assistant Secretary
OSHA 3132
2000 (Reprinted)
Contents

Contents iii

The Problem	1
How the Standard Works	5
Process Safety Information	7
Process Hazard Analysis	9
Operating Procedures	12
Employee Participation	14
Training	15
Initial Training	15
Refresher Training	15
Training Documentation	15
Contractors	16
Application	16
Employer Responsibilities	16
Contract Employer Responsibilities	16
Pre-Startup Safety Review	18
Mechanical Integrity	19
Hot Work Permit	21
Management of Change	22
Incident Investigation	23
Emergency Planning and Response	24
Compliance Audits	25
Trade Secrets	26
Part 1910-Occupational Safety and Health Standards	27
§ 1910.109 Explosives and Blasting Agents	27
§ 1910.119 Process Safety Management of Highly Hazardous Chemicals	28
Appendix A - List of Highly Hazardous Chemicals, Toxics and Reactives (Mandatory)	42
Appendix B - Block Flow Diagram and Simplified Process Flow Diagram (Nonmandatory)	46
OSHA Consultation Directory	48
States With Approved Plans	50
Related Publications	54

The Problem

The Problem 1

Unexpected releases of toxic, reactive, or flammable liquids and gases in processes involving highly hazardous chemicals have been reported for many years. Incidents continue to occur in various industries that use highly hazardous chemicals which may be toxic, reactive, flammable, or explosive, or may exhibit a combination of these properties. Regardless of the industry that uses these highly hazardous chemicals, there is a potential for an accidental release any time they are not properly controlled. This, in turn, creates the possibility of disaster.

Recent major disasters include the 1984 Bhopal, India, incident resulting in more than 2,000 deaths; the October 1989 Phillips Petroleum Company, Pasadena, TX, incident resulting in 23 deaths

and 132 injuries; the July 1990 BASF, Cincinnati, OH, incident resulting in 2 deaths, and the May 1991 IMC, Sterlington, LA, incident resulting in 8 deaths and 128 injuries.

Although these major disasters involving highly hazardous chemicals drew national attention to the potential for major catastrophes, the public record is replete with information concerning many other less notable releases of highly hazardous chemicals. Hazardous chemical releases continue to pose a significant threat to employees and provide impetus, internationally and nationally, for authorities to develop or consider developing legislation and regulations to eliminate or minimize the potential for such events.

On July 17, 1990, OSHA published in the *Federal Register* (55 FR 29150) a proposed standard,—“Process Safety Management of Highly Hazardous Chemicals”—containing requirements for the management of hazards associated with processes using highly hazardous chemicals to help assure safe and healthful workplaces. OSHA’s proposed standard emphasized the management of hazards associated with highly hazardous chemicals and established a comprehensive management program that integrated technologies, procedures, and management practices.

The notice of proposed rulemaking invited comments on any aspect of the proposed standard for process safety management of highly hazardous chemicals and announced the scheduling of a hearing to begin on November 27, 1990, in Washington, DC.

On November 1, 1990, OSHA published a *Federal Register* notice (55 FR 46074) scheduling a second hearing to begin on February 26, 1991, in Houston, TX, enumerating additional issues, and extending the written comment period until January 22, 1991.

2

The hearings on the proposed standard were held in Washington, DC, from November 27, 1990, through December 4, 1990, and in Houston, TX, from February 26, 1991, through March 7, 1991. The Administrative Law Judge presiding at the hearings allowed participants to submit post-hearing comments until May 6, 1991, and file post-hearing briefs until June 5, 1991. OSHA received more than 175 comments in response to the notice of proposed rulemaking. In addition to these comments, the hearings resulted in almost 4,000 pages of testimony and almost 60 post-hearing comments and briefs. For readers’ convenience, this publication includes, as an appendix, the full text of the final OSHA standard issued in the *Federal Register* on February 24, 1992, including the list of covered chemicals and threshold amounts.

State plan States, approved under section 18(b) of the Occupational Safety and Health Act of 1970 (see list on page 36) must adopt standards and enforce requirements which are at least as effective as Federal requirements. There are currently 25 State plan States; 23 covering private and public (State and local government) sectors and two covering public sector only. Plan States must adopt comparable standards to the Federal within six months of a Federal standard’s promulgation.

Approximately four months after the publication of OSHA's proposed standard for process safety management of highly hazardous chemicals, the Clean Air Act Amendments (CAAA) were enacted into law (November 15, 1990). Section 304 of the CAAA requires that the Secretary of Labor, in coordination with the Administrator of the Environmental Protection Agency (EPA), promulgate, pursuant to the Occupational Safety and Health Act of 1970, a chemical process safety standard to prevent accidental releases of chemicals that could pose a threat to employees.

The CAAA requires that the standard include a list of highly hazardous chemicals which includes toxic, flammable, highly reactive, and explosive substances. The CAAA also specified minimum elements that the OSHA standard must require employers to do, as follows:

3

The Problem

- (1) Develop and maintain written safety information identifying workplace chemical and process hazards, equipment used in the processes, and technology used in the processes;
 - (2) Perform a workplace hazard assessment, including, as appropriate, identification of potential sources of accidental releases, identification of any previous release within the facility that had a potential for catastrophic consequences in the workplace, estimation of workplace effects of a range of releases, and estimation of the health and safety effects of such a range on employees;
 - (3) Consult with employees and their representatives on the development and conduct of hazard assessments and the development of chemical accident prevention plans and provide access to these and other records required under the standard;
 - (4) Establish a system to respond to the workplace hazard assessment findings, which shall address prevention, mitigation, and emergency responses;
 - (5) Review periodically the workplace hazard assessment and response system;
 - (6) Develop and implement written operating procedures for the chemical processes, including procedures for each operating phase, operating limitations, and safety and health considerations;
 - (7) Provide written safety and operating information for employees and employee training in operating procedures, by emphasizing hazards and safe practices that must be developed and made available;
 - (8) Ensure contractors and contract employees are provided with appropriate information and training;
 - (9) Train and educate employees and contractors in emergency response procedures in a manner as comprehensive and effective as that required by the regulation promulgated pursuant to section 126(d) of the Superfund Amendments and Reauthorization Act;
 - (10) Establish a quality assurance program to ensure that initial process-related equipment, maintenance materials, and spare parts are fabricated and installed consistent with design specifications;
- Process Safety Management

4

- (11) Establish maintenance systems for critical process-related equipment, including written procedures, employee training, appropriate inspections, and testing of such equipment to ensure ongoing mechanical integrity;
 - (12) Conduct pre-startup safety reviews of all newly installed or modified equipment;
 - (13) Establish and implement written procedures managing change to process chemicals, technology, equipment and facilities; and
 - (14) Investigate every incident that results in or could have resulted in a major accident in the workplace, with any findings to be reviewed by operating personnel and modifications made, if appropriate.
- Also the CAAA, identifies specific duties for EPA relative to the prevention of accidental releases (see section 301 (r)). Generally, EPA must develop a list of chemicals and a Risk Management Plan.

How the Standard Works 5

Process Safety Information

This booklet summarizes the OSHA final process safety management (PSM) standard. Employers and employees may prefer to read this booklet and a companion one entitled, "Process Safety Management - Guidelines for Compliance" (OSHA 3133), before studying the rule itself.

The standard mainly applies to manufacturing industries—particularly, those pertaining to chemicals, transportation equipment, and fabricated metal products. Other affected sectors include natural gas liquids; farm product warehousing; electric, gas, and sanitary services; and wholesale trade. It also applies to pyrotechnics and explosives manufacturers covered under other OSHA rules and has special provisions for contractors working in covered facilities. In each industry, PSM applies to those companies that deal with any of more than 130 specific toxic and reactive chemicals in listed quantities; it also includes flammable liquids and gases in quantities of 10,000 pounds (4,535.9 Kg) or more.

Subject to the rules and procedures set forth in OSHA's Hazard Communication Standard (29 *Code of Federal Regulations (CFR)* 1910.1200(i)(1) through 1910.1200(i)(12)), employees and their designated representatives must be given access to trade secret information contained within the process hazard analysis and other documents required to be developed by the PSM standard.

The key provision of PSM is process hazard analysis (PHA)—a careful review of what could go wrong and what safeguards must be implemented to prevent releases of hazardous chemicals. Covered employers must identify those processes that pose the greatest risks and begin evaluating those first. PHAs must be completed as soon as possible. At least one-quarter of the processes must be evaluated by May 26, 1994, with an additional 25 percent completed each following year so that by May 26, 1997, if not sooner, employers will have evaluated all affected processes. PSM clarifies the responsibilities of employers and contractors involved in work that affects or takes place near covered processes to ensure that the safety of both plant and contractor employees is considered. The standard also mandates

written operating procedures; employee training; prestartup safety reviews; evaluation of mechanical integrity of critical equipment; and written procedures for managing change. PSM specifies a permit system for hot work; investigation of incidents involving releases or Process Safety Management

6

near misses of covered chemicals; emergency, action plans; compliance audits at least every three years; and trade secret protection.

To understand PSM and its requirements, employers and employees need to understand how OSHA uses the term “process” in PSM.

Process means any activity involving a highly hazardous chemical including using, storing, manufacturing, handling, or moving such chemicals at the site, or any combination of these activities. For purposes of this definition, any group of vessels that are interconnected, and separate vessels located in a way that could involve a highly hazardous chemical in a potential release, are considered a single process.

Process Safety Information 7

Process Safety Information

Employers must complete a compilation of written process safety information before conducting any process hazard analysis required by the standard. The compilation of written process safety information, completed under the same schedule required for process hazard analyses, will help the employer and the employees involved in operating the process to identify and understand the hazards posed by those processes involving highly hazardous chemicals. Process safety information must include information on the hazards of the highly hazardous chemicals used or produced by the process, information on the technology of the process, and information on the equipment in the process.

Information on the hazards of the highly hazardous chemicals in the process shall consist of at least the following:

- Toxicity,
- Permissible exposure limits,
- Physical data,
- Reactivity data,
- Corrosivity data, and
- Thermal and chemical stability data, and hazardous effects of inadvertent mixing of different materials.

Information on the technology of the process must include at least the following:

- A block flow diagram or simplified process flow diagram,
- Process chemistry,
- Maximum intended inventory,
- Safe upper and lower limits for such items as temperatures, pressures, flows or compositions, and
- An evaluation of the consequences of deviations, including those affecting the safety and health of employees.

Where the original technical information no longer exists, such information may be developed in conjunction with the process hazard analysis in sufficient detail to support the analysis.

¹Note: Material Safety Data Sheets (MSDSs) meeting the requirements of the Hazard Communication Standard (20 CFR 1910.1200) may be used to comply with this requirement to the extent they contain the required information.

Process Safety Management

8

Information on the equipment in the process must include the following:

- Materials of construction,
- Piping and instrument diagrams (P&IDs),
- Electrical classification,
- Relief system design and design basis,
- Ventilation system design,
- Design codes and standards employed,
- Material and energy balances for processes built after May 26, 1992, and
- Safety systems (e.g., interlocks, detection, or suppression systems).

The employer shall document that equipment complies with recognized and generally accepted good engineering practices. For existing equipment designed and constructed in accordance with codes, standards, or practices that are no longer in general use, the employer shall determine and document that the equipment is designed, maintained, inspected, tested, and operated in a safe manner.

The compilation of the above described process safety information provides the basis for identifying and understanding the hazards of a process and is necessary in developing the process hazard analysis and may be necessary for complying with other provisions of PSM such as management of change and incident investigations.

9

Process Hazard Analysis

Process Hazard Analysis

The process hazard analysis is a thorough, orderly, systematic approach for identifying, evaluating, and controlling the hazards of processes involving highly hazardous chemicals. The employer must perform an initial process hazard analysis (hazard evaluation) on all processes covered by this standard. The process hazard analysis methodology selected must be appropriate to the complexity of the process and must identify, evaluate, and control the hazards involved in the process.

First, employers must determine and document the priority order for conducting process hazard analyses based on a rationale that includes such considerations as the extent of the process hazards, the number of potentially affected employees, the age of the process, and the operating history of the process. All initial process hazard analyses should be conducted as soon as possible, but at a minimum, the employer must complete no fewer than 25 percent by May 26, 1994; 50 percent by May 26, 1995; 75 percent by May 26, 1996; and all initial process hazard analyses by May 26, 1997. Where there is only one process in a workplace, the analysis must be completed by May 26, 1994.

Process hazard analyses completed after May 26, 1987, that meet the requirements of the PSM standard are acceptable as initial process hazard analyses. All process hazard analyses must be updated and revalidated, based on their completion date, at least every five years.

The employer must use one or more of the following methods, as appropriate, to determine and evaluate the hazards of the process being analyzed:

- What-if,
- Checklist,
- What-if/checklist,
- Hazard and operability study (HAZOP),
- Failure mode and effects analysis (FMEA),
- Fault tree analysis, or
- An appropriate equivalent methodology.

Process Safety Management

10

A discussion of these methods of analysis is contained in the companion publication, OSHA 3133, *Process Safety Management - Guidelines for Compliance*. Whichever method(s) are used, the process hazard analysis must address the following:

- The hazards of the process;
- The identification of any previous incident that had a potential for catastrophic consequences in the workplace;
- Engineering and administrative controls applicable to the hazards and their interrelationships, such as appropriate application of detection methodologies to provide early warning of releases. Acceptable detection methods might include process monitoring and control instrumentation with alarms, and detection hardware such as hydrocarbon sensors;
- Consequences of failure of engineering and administrative controls;
- Facility siting;
- Human factors; and
- A qualitative evaluation of a range of the possible safety and health effects on employees in the workplace if there is a failure of controls.

OSHA believes that the process hazard analysis is best performed by a team with expertise in engineering and process operations, and that the team should include at least one employee who has experience with and knowledge of the process being evaluated. Also, one member of the team must be knowledgeable in the specific analysis methods being used.

The employer must establish a system to address promptly the team's findings and recommendations; ensure that the recommendations are resolved in a timely manner and that the resolutions are documented; document what actions are to be taken; develop a written schedule of when these actions are to be completed; complete actions as soon as possible; and communicate the actions to operating, maintenance, and other employees whose work assignments are in the process and who may be affected by the recommendations or

actions.

11

Process Hazard Analysis

At least every five years after the completion of the initial process hazard analysis, the process hazard analysis must be updated and revalidated by a team meeting the standard's requirements to ensure that the hazard analysis is consistent with the current process.

Employers must keep on file and make available to OSHA, on request, process hazard analyses and updates or revalidation for each process covered by PSM, as well as the documented resolution of recommendations, for the life of the process.

Process Safety Management

12 Operating Procedures

The employer must develop and implement written operating procedures, consistent with the process safety information, that provide clear instructions for safely conducting activities involved in each covered process. OSHA believes that tasks and procedures related to the covered process must be appropriate, clear, consistent, and most importantly, well communicated to employees. The procedures must address at least the following elements:

Steps for each operating phase:

- Initial startup;
- Normal operations;
- Temporary operations;
- Emergency shutdown, including the conditions under which emergency shutdown is required, and the assignment of shutdown responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner;
- Emergency operations;
- Normal shutdown; and
- Startup following a turnaround, or after an emergency shutdown.

Operating limits:

- Consequences of deviation, and
- Steps required to correct or avoid deviation.

Safety and health considerations:

- Properties of, and hazards presented by, the chemicals used in the process;
- Precautions necessary to prevent exposure, including engineering controls, administrative controls, and personal protective equipment;
- Control measures to be taken if physical contact or airborne exposure occurs;
- Quality control for raw materials and control of hazardous chemical inventory levels; and
- Any special or unique hazards.
- Safety systems (e.g., interlocks, detection or suppression systems) and their functions.

13

Operating Procedures

To ensure that a ready and up-to-date reference is available, and to form a foundation for needed employee training, operating procedures

must be readily accessible to employees who work in or maintain a process. The operating procedures must be reviewed as often as necessary to ensure that they reflect current operating practices, including changes in process chemicals, technology, and equipment, and facilities. To guard against outdated or inaccurate operating procedures, the employer must certify annually that these operating procedures are current and accurate.

The employer must develop and implement safe work practices to provide for the control of hazards during work activities such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. These safe work practices must apply both to employees and to contractor employees.

Process Safety Management

14 Employee Participation

Employers must develop a written plan of action to implement the employee participation required by PSM. Under PSM, employers must consult with employees and their representatives on the conduct and development of process hazard analyses and on the development of the other elements of process management, and they must provide to employees and their representatives access to process hazard analyses and to all other information required to be developed by the standard.

15

Training

Training

Initial Training

OSHA believes that the implementation of an effective training program is one of the most important steps that an employer can take to enhance employee safety. Accordingly, PSM requires that each employee presently involved in operating a process or a newly assigned process must be trained in an overview of the process and in its operating procedures. The training must include emphasis on the specific safety and health hazards of the process, emergency operations including shutdown, and other safe work practices that apply to the employee's job tasks. Those employees already involved in operating a process on the PSM effective date do not necessarily need to be given initial training. Instead, the employer may certify in writing that the employees have the required knowledge, skills, and abilities to safely carry out the duties and responsibilities specified in the operating procedures.

Refresher Training

Refresher training must be provided at least every three years, or more often if necessary, to each employee involved in operating a process to ensure that the employee understands and adheres to the current operating procedures of the process. The employer, in consultation with the employees involved in operating the process, must determine the appropriate frequency of refresher training.

Training Documentation

The employer must determine whether each employee operating a process has received and understood the training required by PSM.

A record must be kept containing the identity of the employee, the date of training, and how the employer verified that the employee understood the training.

Process Safety Management

16 Contractors

Application

Many categories of contract labor may be present at a jobsite; such workers may actually operate the facility or do only a particular aspect of a job because they have specialized knowledge or skill. Others work only for short periods when there is need for increased staff quickly, such as in turnaround operations. PSM includes special provisions for contractors and their employees to emphasize the importance of everyone taking care that they do nothing to endanger those working nearby who may work for another employer.

PSM, therefore, applies to contractors performing maintenance or repair, turnaround, major renovation, or specialty work on or adjacent to a covered process. It does not apply, however, to contractors providing incidental services that do not influence process safety, such as janitorial, food and drink, laundry, delivery, or other supply services.

Employer Responsibilities

When selecting a contractor, the employer must obtain and evaluate information regarding the contract employer's safety performance and programs. The employer also must inform contract employers of the known potential fire, explosion, or toxic release hazards related to the contractor's work and the process; explain to contract employers the applicable provisions of the emergency action plan; develop and implement safe work practices to control the presence, entrance, and exit of contract employers and contract employees in covered process areas; evaluate periodically the performance of contract employers in fulfilling their obligations; and maintain a contract employee injury and illness log related to the contractor's work in the process areas.

Contract Employer Responsibilities

The contract employer must:

- Ensure that contract employees are trained in the work practices necessary to perform their job safely;

17

- Ensure that contract employees are instructed in the known potential fire, explosion, or toxic release hazards related to their job and the process, and in the applicable provisions of the emergency action plan;
- Document that each contract employee has received and understood the training required by the standard by preparing a record that contains the identity of the contract employee, the date of training, and the means used to verify that the employee understood the training;
- Ensure that each contract employee follows the safety rules of the facility including the required safe work practices required in the operating procedures section of the standard; and
- Advise the employer of any unique hazards presented by the

contract employer's work.
Training
Process Safety Management

18

Pre-Startup Safety Review

It is important that a safety review takes place before any highly hazardous chemical is introduced into a process. PSM, therefore, requires the employer to perform a pre-startup safety review for new facilities and for modified facilities when the modification is significant enough to require a change in the process safety information.

Prior to the introduction of a highly hazardous chemical to a process, the pre-startup safety review must confirm that the following:

- Construction and equipment are in accordance with design specifications;
- Safety, operating, maintenance, and emergency procedures are in place and are adequate;
- A process hazard analysis has been performed for new facilities and recommendations have been resolved or implemented before startup, and modified facilities meet the management of change requirements; and
- Training of each employee involved in operating a process has been completed.

Pre-Startup Safety Review

19

OSHA believes it is important to maintain the mechanical integrity of critical process equipment to ensure it is designed and installed correctly and operates properly. PSM mechanical integrity requirements apply to the following equipment:

- Pressure vessels and storage tanks;
- Piping systems (including piping components such as valves);
- Relief and vent systems and devices;
- Emergency shutdown systems;
- Controls (including monitoring devices and sensors, alarms, and interlocks); and
- Pumps.

The employer must establish and implement written procedures to maintain the ongoing integrity of process equipment. Employees involved in maintaining the ongoing integrity of process equipment must be trained in an overview of that process and its hazards and trained in the procedures applicable to the employees's job tasks. Inspection and testing must be performed on process equipment, using procedures that follow recognized and generally accepted good engineering practices. The frequency of inspections and tests of process equipment must conform with manufacturers' recommendations and good engineering practices, or more frequently if determined to be necessary by prior operating experience. Each inspection and test on process equipment must be documented, identifying the date of the inspection or test, the name of the person who performed the inspection or test, the serial number or other identifier of the equipment on which the inspection or test was performed, a description of the inspection or test performed, and the results of the

inspection or test.

Equipment deficiencies outside the acceptable limits defined by the process safety information must be corrected before further use. In some cases, it may not be necessary that deficiencies be corrected before further use, as long as deficiencies are corrected in a safe and timely manner, when other necessary steps are taken to ensure safe operation.

In constructing new plants and equipment, the employer must ensure that equipment as it is fabricated is suitable for the process application for which it will be used. Appropriate checks and

Mechanical Integrity

Mechanical Integrity

Process Safety Management

20

inspections must be performed to ensure that equipment is installed properly and is consistent with design specifications and the manufacturer's instructions.

The employer also must ensure that maintenance materials, spare parts, and equipment are suitable for the process application for which they will be used.

States with Approved Plans

Hot Work Permit 21

Hot Work Permit

A permit must be issued for hot work operations conducted on or near a covered process. The permit must document that the fire prevention and protection requirements in OSHA regulations (1910.252(a)) have been implemented prior to beginning the hot work operations; it must indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The permit must be kept on file until completion of the hot work.

Process Safety Management

22 Management of Change

OSHA believes that contemplated changes to a process must be thoroughly evaluated to fully assess their impact on employee safety and health and to determine needed changes to operating procedures. To this end, the standard contains a section on procedures for managing changes to processes. Written procedures to manage changes (except for "replacements in kind") to process chemicals, technology, equipment, and procedures, and change to facilities that affect a covered process, must be established and implemented. These written procedures must ensure that the following considerations are addressed prior to any change:

- The technical basis for the proposed change,
- Impact of the change on employee safety and health,
- Modifications to operating procedures,
- Necessary time period for the change, and
- Authorization requirements for the proposed change.

Employees who operate a process and maintenance and contract employees whose job tasks will be affected by a change in the process must be informed of, and trained in, the change prior to

startup of the process or startup of the affected part of the process. If a change covered by these procedures results in a change in the required process safety information, such information also must be updated accordingly. If a change covered by these procedures changes the required operating procedures or practices, they also must be updated.

23

Incident Investigation

A crucial part of the process safety management program is a thorough investigation of incidents to identify the chain of events and causes so that corrective measures can be developed and implemented.

Accordingly, PSM requires the investigation of each incident that resulted in, or could reasonably have resulted in, a catastrophic release of a highly hazardous chemical in the workplace.

Such an incident investigation must be initiated as promptly as possible, but not later than 48 hours following the incident. The investigation must be by a team consisting of at least one person knowledgeable in the process involved, including a contract employee if the incident involved the work of a contractor, and other persons with appropriate knowledge and experience to investigate and analyze the incident thoroughly.

An investigation report must be prepared including at least:

- Date of incident,
- Date investigation began,
- Description of the incident,
- Factors that contributed to the incident, and
- Recommendations resulting from the investigation.

A system must be established to promptly address and resolve the incident report findings and recommendations. Resolutions and corrective actions must be documented and the report reviewed by all affected personnel whose job tasks are relevant to the incident findings (including contract employees when applicable). The employer must keep these incident investigation reports for 5 years.

Incident Investigation

Process Safety Management

24

If, despite the best planning, an incident occurs, it is essential that emergency pre-planning and training make employees aware of, and able to execute, proper actions. For this reason, an emergency action plan for the entire plant must be developed and implemented in accordance with the provisions of other OSHA rules (29 CFR 1910.38(a)). In addition, the emergency action plan must include procedures for handling small releases of hazardous chemicals. Employers covered under PSM also may be subject to the OSHA hazardous waste and emergency response regulation (29 CFR 1910.120(a), (p), and (q)).

Emergency Planning and Response

Compliance Audits

Compliance Audits

25

To be certain process safety management is effective, employers must certify that they have evaluated compliance with the provisions of PSM at least every three years. This will verify that the procedures and practices developed under the standard are adequate and are being followed. The compliance audit must be conducted by at least one person knowledgeable in the process and a report of the findings of the audit must be developed and documented noting deficiencies that have been corrected. The two most recent compliance audit reports must be kept on file.

Process Safety Management

26 Trade Secrets

Employers must make available all information necessary to comply with PSM to those persons responsible for compiling the process safety information, those developing the process hazard analysis, those responsible for developing the operating procedures, and those performing incident investigations, emergency planning and response, and compliance audits, without regard to the possible trade secret status of such information. Nothing in PSM, however, precludes the employer from requiring those persons to enter into confidentiality agreements not to disclose the information.

Part 1910-Occupational Safety and Health Standards 27

Part 1910-Occupational Safety and Health Standards

The following sections comprise the process safety management standard, in its entirety, as published in the *Federal Register* (FR 57(36):6403-6408, February 24, 1992).

1. The authority citation for Subpart H of Part 1910 is revised to read as follows:

Authority Secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12-71 (36 FR 8754), 8-76 (41 FR 25059), 9-83 (48 FR 35736) or 1-90 (55 FR 9033), as applicable.

Sections 1910.103, 1910.106, 1910.107, 1910.108, 1910.109, 1910.110, 1910.111 and 1910.119 are also issued under 29 CFR part 1911.

Section 1910.119 is also issued under Sec. 304, Clean Air Act Amendments of 1990 (Public Law 101 -549, Nov. 15, 1990, reprinted at 29 U.S.C. 655 Note (Supp. 1991)).

Section 1910.120 is also issued under Sec. 126, Superfund Amendments and Reauthorization Act of 1986 as amended (29 U.S.C. 655 note), 5 U.S.C. 553 and 29 CFR Part 1911.

2. Section 1910.109 is amended by revising paragraph (k) to read as follows:

§ 1910.109 Explosives and Blasting Agents

(k) *Scope.* (1) This section applies to the manufacture, keeping, having, storage, sale, transportation, and use of explosives, blasting agents, and pyrotechnics. The section does not apply to the sale and use (public display) of pyrotechnics, commonly known as fireworks, nor the use of explosives in the form prescribed by the official U.S. Pharmacopeia.

(2) The manufacturer of explosives as defined in paragraph (a)(3) of this section shall also meet the requirements contained in

§ 1910.119.

(3) The manufacture of pyrotechnics as defined in paragraph (a)(1) of this section shall also meet the requirements contained in § 1910.119.

Process Safety Management

28

A new § 1910.119 and appendices A through D* to § 1910.119 are added to read as follows:

1910.119 Process Safety Management of Highly Hazardous Chemicals

Purpose. This section contains requirements for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire or explosion hazards.

(a) Application. (1) This section applies to the following:

- (i) A process which involves a chemical at or above the specified threshold quantities listed in Appendix A to this section;
- (ii) A process which involves flammable liquid or gas (as defined in 1910.1200(c) of this part) on site in one location, in a quantity of 10,000 pounds (4535.9kg) or more except for:

(A) Hydrocarbon fuels used solely for workplace consumption as a fuel (e.g., propane used for comfort heating, gasoline for vehicle refueling), if such fuels are not a part of a process containing another highly hazardous chemical covered by this standard;

(B) Flammable liquids stored in atmospheric tanks or transferred which are kept below their normal boiling point without benefit of chilling or refrigeration.

(2) This section does not apply to:

- (i) Retail facilities;
- (ii) Oil or gas well drilling or servicing operations; or,
- (iii) Normally unoccupied remote facilities.

(b) *Definitions.* *Atmospheric tank* means a storage tank which has been designed to operate at pressures from atmospheric through 0.5 p.s.i.g. (pounds per square inch gauge, 3.45 Kpa).

*Appendices C and D are not reprinted here. See OSHA 3133 *Process Safety Management Guidelines for Compliance* for text of Appendix C. See *Federal Register* (FR 56(36) 6416-6417, February 24, 1992), for Appendix D - Sources of Further Information.

Part 1910-Occupational Safety and Health Standards

Boiling point means the boiling point of a liquid at a pressure of 14.7 pounds per square inch absolute (p.s.i.a.) (760mm). For the purposes of this section, where an accurate boiling point is unavailable for the material in question, or for mixtures which do not have a constant boiling point, the 10 percent point of a distillation performed in accordance with the Standard Method of Test for Distillation of Petroleum Products, ASTM D-86-62, may be used as the boiling point of the liquid.

Catastrophic release means a major uncontrolled emission, fire, or explosion, involving one or more highly hazardous chemicals that presents serious danger to employees in the workplace.

Facility means the buildings, containers or equipment which contain a process.

Highly hazardous chemical means a substance possessing toxic, reactive, flammable, or explosive properties and specified by paragraph (a)(1) of this section.

Hot work means work involving electric or gas welding, cutting, brazing, or similar flame or spark-producing operations.

Normally unoccupied remote facility means a facility which is operated, maintained or serviced by employees who visit the facility only periodically to check its operation and to perform necessary operating or maintenance tasks. No employees are permanently stationed at the facility.

Facilities meeting this definition are not contiguous with, and must be geographically remote from, all other buildings, processes or persons.

Process means any activity involving a highly hazardous chemical including any use, storage, manufacturing, handling, or the on-site movement of such chemicals, or combination of these activities. For purposes of this definition, any group of vessels which are interconnected and separate vessels that are located such a that a highly hazardous chemical could be involved in a potential release shall be considered a single process.

Replacement in kind means a replacement which satisfies the design specification.

Trade secret means any confidential formula, pattern, process, device, information or compilation of information that is used in an

29

Process Safety Management

30

employer's business, and that gives the employer an opportunity to obtain advantage over competitors who do not know or use it.

Appendix D contained in § 1910.1200 sets out the criteria to be used in evaluating trade secrets.

(c) *Employee participation.* (1) Employers shall develop a written plan of action regarding the implementation of the employee participation required by this paragraph.

(2) Employers shall consult with employees and their representatives on the conduct and development of process hazard analyses and on the development of the other elements of process safety management in this standard.

(3) Employers shall provide to employees and their representatives access to process hazard analyses and to all other information required to be developed under this standard.

(d) *Process safety information.* In accordance with the schedule set forth in paragraph (e)(1) of this section, the employer shall complete a compilation of written process safety information before conducting any process hazard analysis required by the standard. The compilation of written process safety information is to enable the employer and the employees involved in operating the process to identify and understand the hazards posed by those processes involving highly hazardous chemicals. This process safety information shall include information pertaining to the hazards of the highly hazardous chemicals used or produced by the process, information

pertaining to the technology of the process, and information pertaining to the equipment in the process.

(1) *Information pertaining to the hazards of the highly hazardous chemicals in the process.* This information shall consist of at least the following:

- (i) Toxicity information;
- (ii) Permissible exposure limits;
- (iii) Physical data;
- (iv) Reactivity data;
- (v) Corrosivity data;
- (vi) Thermal and chemical stability data; and

Part 1910-Occupational Safety and Health Standards

31

(vii) Hazardous effects of inadvertent mixing of different materials that could foreseeably occur.

Note: Material Safety Data Sheets meeting the requirements of 29 CFR 1910.1200(g) may be used to comply with this requirement to the extent that they contain the information required by this subparagraph.

(2) *Information pertaining to the technology of the process.* (i) Information concerning the technology of the process shall include at least the following:

- (A) A block flow diagram or simplified process flow diagram (see Appendix B to this section);
- (B) Process chemistry;
- (C) Maximum intended inventory;
- (D) Safe upper and lower limits for such items as temperatures, pressures, flows or compositions; and,
- (E) An evaluation of the consequences of deviations, including those affecting the safety and health of employees.

(ii) Where the original technical information no longer exists, such information may be developed in conjunction with the process hazard analysis in sufficient detail to support the analysis.

(3) Information pertaining to the equipment in the process.

(i) Information pertaining to the equipment in the process shall include:

- (A) Materials of construction;
- (B) Piping and instrument diagrams (P&ID's);
- (C) Electrical classification;
- (D) Relief system design and design basis;
- (E) Ventilation system design;
- (F) Design codes and standards employed;
- (G) Material and energy balances for processes built after May 26, 1992; and,
- (H) Safety systems (e.g. interlocks, detection or suppression systems).

Process Safety Management

32

(ii) The employer shall document that equipment complies with recognized and generally accepted good engineering practices.

(iii) For existing equipment designed and constructed in accordance with codes, standards, or practices that are no longer in general

use, the employer shall determine and document that the equipment is designed, maintained, inspected, tested, and operating in a safe manner,

(e) *Process hazard analysis.* (1) The employer shall perform an initial process hazard analysis (hazard evaluation) on processes covered by this standard. The process hazard analysis shall be appropriate to the complexity of the process and shall identify, evaluate, and control the hazards involved in the process. Employers shall determine and document the priority order for conducting process hazard analyses based on a rationale which includes such considerations as extent of the process hazards, number of potentially affected employees, age of the process, and operating history of the process. The process hazard analysis shall be conducted as soon as possible, but not later than the following schedule:

(i) No less than 25 percent of the initial process hazards analyses shall be completed by May 26, 1994;

(ii) No less than 50 percent of the initial process hazards analyses shall be completed by May 26, 1995;

(iii) No less than 75 percent of the initial process hazards analyses shall be completed by May 26, 1996;

(iv) All initial process hazards analyses shall be completed by May 26, 1997.

(v) Process hazards analyses completed after May 26, 1987, which meet the requirements of this paragraph are acceptable as initial process hazards analyses. The process hazard analyses shall be updated and revalidated, based on their completion date, in accordance with paragraph (e)(6) of this section.

(2) The employer shall use one or more of the following methodologies that are appropriate to determine and evaluate the hazards of the process being analyzed.

(i) What-if;

(ii) Checklist;

(iii) What-if/checklist;

33

(iv) Hazard and Operability Study (HAZOP);

(v) Failure Mode and Effects Analysis (FMEA);

(vi) Fault Tree Analysis; or

(vii) An appropriate equivalent methodology.

(3) The process hazard analysis shall address;

(i) The hazards of the process;

(ii) The identification of any previous incident which had a likely potential for catastrophic consequences in the workplace;

(iii) Engineering and administrative controls applicable to the hazards and their interrelationships such as appropriate application of detection methodologies to provide early warning of releases.

(Acceptable detection methods might include process monitoring and control instrumentation with alarms, and detection hardware such as hydrocarbon sensors.);

(iv) Consequences of failure of engineering and administrative controls;

(v) Facility siting;

(vi) Human factors; and

(vii) A qualitative evaluation of a range of the possible safety and health effects of failure of controls on employees in the workplace.

(4) The process hazard analysis shall be performed by a team with expertise in engineering and process operations, and the team shall include at least one employee who has experience and knowledge specific to the process being evaluated. Also, one member of the team must be knowledgeable in the specific process hazard analysis methodology being used.

(5) The employer shall establish a system to promptly address the team's findings and recommendations; assure that the recommendations are resolved in a timely manner and that the resolution is documented; document what actions are to be taken; complete actions as soon as possible; develop a written schedule of when these actions are to be completed; communicate the actions to operating, maintenance and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.

(6) At least every five (5) years after the completion of the initial process hazard analysis, the process hazard analysis shall be updated

Part 1910-Occupational Safety and Health Standards

Process Safety Management

34

and revalidated by a team meeting the requirements in paragraph (e)(4) of this section, to assure that the process hazard analysis is consistent with the current process.

(7) Employers shall retain process hazards analyses and updates or revalidations for each process covered by this section, as well as the documented resolution of recommendations described in paragraph (e)(5) of this section for the life of the process.

(f) *Operating procedures.* (1) The employer shall develop and implement written operating procedures that provide clear instructions for safely conducting activities involved in each covered process consistent with the process safety information and shall address at least the following elements,.

(i) Steps for each operating phase:

(A) Initial startup;

(B) Normal operations;

(C) Temporary operations;

(D) Emergency shutdown including the conditions under which emergency shutdown is required, and the assignment of shutdown responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner.

(E) Emergency Operations,

(F) Normal shutdown; and,

(G) Startup following a turnaround, or after an emergency shutdown,

(ii) Operating limits;

(A) Consequences of deviation; and

(B) Steps required to correct or avoid deviation.

(iii) Safety and health considerations:

(A) Properties of, and hazards presented by, the chemicals used in the process;

(B) Precautions necessary to prevent exposure, including engineering controls, administrative controls, and personal protective equipment;

(C) Control measures to be taken if physical contact or airborne exposure occurs;

35

Part 1910-Occupational Safety and Health Standards

(D) Quality control for raw materials and control of hazardous chemical inventory levels; and,

(E) Any special or unique hazards.

(iv) Safety systems and their functions.

(2) Operating procedures shall be readily accessible to employees who work in or maintain a process.

(3) The operating procedures shall be reviewed as often as necessary to assure that they reflect current operating practices, including changes that result from changes in process chemicals, technology, and equipment, and changes to facilities. The employer shall certify annually that these operating procedures are current and accurate.

(4) The employer shall develop and implement safe work practices to provide for the control of hazards during operations such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, contractor, laboratory, or other support personnel. These safe work practices shall apply to employees and contractor employees.

(g) *Training.* (1) *Initial training.* (i) Each employee presently involved in operating a process, and each employee before being involved in operating a newly assigned process, shall be trained in an overview of the process and in the operating procedures as specified in paragraph (f) of this section. The training shall include emphasis on the specific safety and health hazards, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks.

(ii) In lieu of initial training for those employees already involved in operating a process on May 26, 1992, an employer may certify in writing that the employee has the required knowledge, skills, and abilities to safely carry out the duties and responsibilities as specified in the operating procedures.

(2) *Refresher training.* Refresher training shall be provided at least every 3 years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures of the process.

The employer, in consultation with the employees involved in operating the process, shall determine the appropriate frequency of refresher training.

Process Safety Management

36

(3) *Training documentation.* The employer shall ascertain that each employee involved in operating a process has received and understood the training required by this paragraph. The employer shall prepare a record which contains the identity of the employee, the date of training, and the means used to verify that the employee

understood the training.

(h) *Contractors.* (1) *Application.* This paragraph applies to contractors performing maintenance or repair, turnaround, major renovation, or specialty work on or adjacent to a covered process. It does not apply to contractors providing incidental services which do not influence process safety, such as janitorial work, food and drink services, laundry, delivery or other supply services.

(2) *Employer responsibilities.* (i) The employer, when selecting a contractor, shall obtain and evaluate information regarding the contract employer's safety and performance and programs.

(ii) The employer shall inform contract employers of the known potential fire, explosion, or toxic release hazards related to the contractor's work and the process.

(iii) The employer shall explain to contract employers the applicable provisions of the emergency action plan required by paragraph (n) of this section.

(iv) The employer shall develop and implement safe work practices consistent with paragraph (f)(4) of this section, to control the entrance, presence and exit of contract employers and contract employees in covered process areas.

(v) The employer shall periodically evaluate the performance of contract employers in fulfilling their obligations as specified in paragraph (h)(3) of this section.

(vi) The employer shall maintain a contract employee injury and illness log related to the contractor's work in process areas.

(3) *Contract employer responsibilities.*

(i) The contract employer shall assure that each contract employee is trained in the work practices necessary to safely perform his/her job.

(ii) The contract employer shall assure that each contract employee is instructed in the known potential fire, explosion, or toxic

Part 1910-Occupational Safety and Health Standards

37

release hazards related to his/her job and the process, and the applicable provisions of the emergency action plan.

(iii) The contract employer shall document that each contract employee has received and understood the training required by this paragraph. The contract employer shall prepare a record which contains the identity of the contract employee, the date of training, and the means used to verify that the employee understood the training.

(iv) The contract employer shall assure that each contract employee follows the safety rules of the facility including the safe work practices required by paragraph (f)(4) of this section.

(v) The contract employer shall advise the employer of any unique hazards presented by the contract employer's work, or of any hazards found by the contract employer's work.

(i) *Pre-startup review.* (1) The employer shall perform a prestartup safety review for new facilities and for modified facilities when the modification is significant enough to require a change in the process safety information.

(2) The pre-startup safety review shall confirm that prior to the introduction of highly hazardous chemicals to a process:

- (i) Construction and equipment is in accordance with design specifications;
- (ii) Safety, operating, maintenance, and emergency procedures are in place and are adequate;
- (iii) For new facilities, a process hazard analysis has been performed and recommendations have been resolved or implemented before startup; and modified facilities meet the requirements contained in management of change, paragraph (1).
- (iv) Training of each employee involved in operating a process has been completed.

(j) *Mechanical Integrity*. (1) *Application*. Paragraphs (j)(2) through (j)(6) of this section apply to the following process equipment:

- (i) Pressure vessels and storage tanks;
 - (ii) Piping systems (including piping components such as valves);
- Process Safety Management

38

- (iii) Relief and vent systems and devices;
- (iv) Emergency shutdown systems;
- (v) Controls (including monitoring devices and sensors, alarms, and interlocks) and,
- (vi) Pumps.

(2) *Written procedures*. The employer shall establish and implement written procedures to maintain the on-going integrity of process equipment.

(3) *Training for process maintenance activities*. The employer shall train each employee involved in maintaining the on-going integrity of process equipment in an overview of that process and its hazards and in the procedures applicable to the employee's job tasks to assure that the employee can perform the job tasks in a safe manner.

(4) *Inspection and testing*. (i) Inspections and tests shall be performed on process equipment.

(ii) Inspection and testing procedures shall follow recognized and generally accepted good engineering practices.

(iii) The frequency of inspections and tests of process equipment shall be consistent with applicable manufacturers' recommendations and good engineering practices, and more frequently if determined to be necessary by prior operating experience.

(iv) The employer shall document each inspection and test that has been performed on process equipment. The documentation shall identify the date of the inspection or test, the name of the person who performed the inspection or test, the serial number or other identifier of the equipment on which the inspection or test was performed, a description of the inspection or test performed, and the results of the inspection test.

(5) *Equipment deficiencies*. The employer shall correct deficiencies in equipment that are outside acceptable limits (defined by the process safety information on paragraph (d) of this section) before further use or in a safe and timely manner when necessary means are

taken to assure safe operation.

(6) *Quality assurance.* (i) In the construction of new plants and equipment, the employer shall assure that equipment as it is fabricated is suitable for the process application for which they will be used.

39

cated is suitable for the process application for which they will be used.

(ii) Appropriate checks and inspections shall be performed to assure that equipment is installed properly and consistent with design specifications and the manufacturer's instructions.

(iii) The employer shall assure that maintenance materials, spare parts and equipment are suitable for the process application for which they will be used.

(k) *Hot work permit.* (1) The employer shall issue a hot work permit for hot work operations conducted on or near a covered process.

(2) The permit shall document that the fire prevention and protection requirements of 29 CFR 1910.252(a) have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The permit shall be kept on file until completion of the hot work operations.

(1) *Management of change.* (1) The employer shall establish and implement written procedures to manage changes except for "replacements in kind") to process chemicals, technology, equipment, and procedures; and, changes to facilities that affect a covered process.

(2) The procedures shall assure that the following considerations are addressed prior to any change:

(i) The technical basis for the proposed change;

(ii) Impact of change on safety and health;

(iii) Modifications to operating procedures;

(iv) Necessary time period for the change; and

(v) Authorization requirements for the proposed change.

(3) Employees involved in operating a process and maintenance and contract employees whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change prior to start-up of the process or affected part of the process.

(4) If a change covered by this paragraph results in a change in the operating procedures or practices required by paragraph (d) of this section, such information shall be updated accordingly.

Process Safety Management

(5) If a change covered by this paragraph results in a change in the operating procedures or practices required by paragraph (f) of this section, such procedures or practices shall be updated accordingly.

(m) *Incident investigation.* (1) The employer shall investigate each incident which resulted in, or could reasonably have resulted in a catastrophic release of highly hazardous chemical in the workplace.

(2) An incident investigation shall be initiated as promptly as possible, but not later than 48 hours following the incident.

(3) An incident investigation team shall be established and consist

of at least one person knowledgeable in the process involved, including a contract employee if the incident involved work of the contractor, and other persons with appropriate knowledge and experience to thoroughly investigate and analyze the incident.

(4) A report shall be prepared at the conclusion of the investigation which includes at a minimum:

- (i) Date of incident;
- (ii) Date investigation began;
- (iii) A description of the incident;
- (iv) The factors that contributed to the incident; and
- (v) Any recommendations resulting from the investigation.

(5) The employer shall establish a system to promptly address and resolve the incident report findings and recommendations. Resolutions and corrective actions shall be documented.

(6) The report shall be reviewed with all affected personnel whose job tasks are relevant to the incident findings including contract employees where applicable.

(7) Incident investigation reports shall be retained for five years.

(n) *Emergency planning and response.* The employer shall establish and implement an emergency action plan for the entire plant in accordance with the provisions of 29 CFR 1910.38(a). In addition, the emergency action plan shall include procedures for handling small releases. Employers covered under this standard may also be subject to the hazardous waste and emergency response provisions contained in 29 CFR 1910.120(a), (p) and (q).

40

Part 1910-Occupational Safety and Health Standards

(o) *Compliance audits.* (1) Employers shall certify that they have evaluated compliance with the provisions of this section at least every three years to verify that the procedures and practices developed under the standard are adequate and are being followed.

(2) The compliance audit shall be conducted by at least one person knowledgeable in the process.

(3) A report of the findings of the audit shall be developed.

(4) The employer shall promptly determine and document an appropriate response to each of the findings of the compliance audit, and document that deficiencies have been corrected.

(5) Employers shall retain the two (2) most recent compliance audit reports.

(p) *Trade secrets.* (1) Employers shall make all information necessary to comply with the section available to those persons responsible for compiling the process safety information (required by paragraph (d) of this section), those assisting in the development of the process hazard analysis (required by paragraph (e) of this section), those responsible for developing the operating procedures (required by paragraph (f) of this section), and those involved in incident investigations (required by paragraph (m) of this section), emergency planning and response (paragraph (n) of this section) and compliance audits (paragraph (o) of this section) without regard to possible trade secret status of such information.

(2) Nothing in this paragraph shall preclude the employer from

requiring the persons to whom the information is made available under paragraph (p)(1) of this section to enter into confidentiality agreements not to disclose the information as set forth in 29 CFR 1910.1200.

(3) Subject to the rules and procedures set forth in 29 CFR 1910.1200(i)(1) through 1910.1200(i)(12), employees and their designated representatives shall have access to trade secret information contained within the process hazard analysis and other documents required to be developed by this standard.

41

Process Safety Management

42 Appendix A to § 1910.119

Appendix A to § 1910.119—List of Highly Hazardous Chemicals, Toxics and Reactives (Mandatory)

This Appendix contains a listing of toxic and reactive highly hazardous chemicals which present a potential for a catastrophic event at or above the threshold quantity.

CHEMICAL name CAS* TQ**

Acetaldehyde	75-07-0	2500
Acrolein (2-Propenal)	107-02-8	150
Acrylyl Chloride	814-68-6	250
Allyl Chloride	107-05-1	1000
Allylamine	107-11-9	1000
Alkylaluminums	Varies	5000
Ammonia, Anhydrous	7664-41-7	10000
Ammonia solutions		
(>44% ammonia by weight)	7664-41-7	15000
Ammonium Perchlorate.....	7790-98-9	7500
Ammonium Permanganate	7787-36-2	7500
Arsine (also called Arsenic Hydride)	7784-42-1	100
Bis(Chloromethyl) Ether	542-88-1	100
Boron Trichloride	10294-34-5	2500
Boron Trifluoride	7637-07-2	250
Bromine	7726-95-6	1500
Bromine Chloride	13863-41-7	1500
Bromine Pentafluoride	7789-30-2	2500
Bromine Trifluoride	7787-71-5	15000
3-Bromopropyne (also called Propargyl Bromide)	106-96-7	100
Butyl Hydroperoxide (Tertiary)	75-91-2	5000
Butyl Perbenzoate (Tertiary)	614-45-9	7500
Carbonyl Chloride (see Phosgene)	75-44-5	100
Carbonyl Fluoride	353-50-4	2500
Cellulose Nitrate (concentration > 12.6% nitrogen)	9004-70-0	2500
Chlorine	7782-50-5	1500
Chlorine Dioxide	10049-04-4	1000
Chlorine Pentafluoride	13637-63-3	1000
Chlorine Trifluoride	7790-91-2	1000
Chlorodiethylaluminum (also called Diethylaluminum Chloride)	96-10-6	5000
1-Chloro-2, 4-Dinitrobenzene	97-00-7	5000
Chloromethyl Methyl Ether	107-30-2	500
Chloropicrin	76-06-2	500
CHEMICAL name	CAS* TQ**	

43

Appendix A to § 1910.119

CHEMICAL name CAS* TQ**

Chloropicrin and Methyl Bromide mixture	None 1500
Chloropicrin and Methyl Chloride mixture	None 1500
Cumene Hydroperoxide.....	80-15-9 5000
Cyanogen	460-19-5 2500
Cyanogen Chloride	506-77-4 500
Cyanuric Fluoride	675-14-9 100
Diacetyl Peroxide (concentration >700%)	110-22-5 5000
Diazomethane	334-88-3 500
Dibenzoyl Peroxide	94-36-0 7500
Diborane	19287-45-7 100
Dibutyl Peroxide (Tertiary)	110-05-4 5000
Dichloro Acetylene	7572-29-4 250
Dichlorosilane	4109-96-0 2500
Diethylzinc	557-20-0 10000
Diisopropyl Peroxydicarbonate	105-64-6 7500
Dilaluroyl Peroxide	105-74-8 7500
Dim ethy Id ich lorosi lane	75-78-5 1000
Dimethylhydrazine, 1,1	57-14-7 1000
Dimethylamine, Anhydrous	124-40-3 2500
2,4-Dinitroaniline	97-02-9 5000
Ethyl Methyl Ketone Peroxide (also Methyl Ethyl Ketone Peroxide; concentration >60%)	1338-23-4 5000
Ethyl Nitrite	109-95-5 5000
Ethylamine	75-04-7 7500
Ethylene Fluorohydrin	371-62-0 100
Ethylene Oxide	75-21-8 5000
Ethyleneimine	151-56-4 1000
Fluorine	7782-41-4 100
Formaldehyde (Formalin')	50-00-0 1000
Furan	110-00-9 500
Hexafluoroacetone	684-16-2 5000
Hydrochloric Acid, Anhydrous	7647-01-0 5000
Hydrofluoric Acid, Anhydrous	7664-39-3 1000
Hydrogen Bromide	10035-10-6 5000
Hydrogen Chloride	7647-01-0 5000
Hodrogen Cyanide, Anhydrous	74-90-8 1000
Hydrogen Fluoride	7664-39-3 1000
Hydrogen Peroxide (52% by weight or greater)	7722-84-1 7500
Hydrogen Selenide	7783-07-5 150
Hydrogen Sulfide	7783-06-4 1500

Process Safety Management

44

CHEMICAL name CAS* TQ**

Hydroxylamine	7803-49-8 2500
Iron, Pentacarbonyl	13463-40-6 250
Isopropylamine	75-31-0 5000
Ketene	463-51-4 100
Methacrylaldehyde	78-85-3 1000
Methacryloyl Chloride	920-46-7 150
Methacryloyloxyethyl Isocyanate	30674-80-7 100
Methyl Acrylonitrile	126-98-7 250
Methylamine, Anhydrous	74-89-5 1000
Methyl Bromide	74-83-9 2500
Methyl Chloride.....	74-87-3 15000
Methyl Chloroformate	79-22-1 500
Methyl Ethyl Ketone Peroxide (concentration >60%)	1338-23-4 5000

Methyl Fluoroacetate	453-18-9 100
Methyl Fluorosulfate	421-20-5 100
Methyl Hydrazine	60-34-4 100
Methyl Iodide	74-88-4 7500
Methyl Isocyanate	624-83-9 250
Methyl Mercaptan	74-93-1 5000
Methyl Vinyl Ketone	79-84-4 100
Methyltrichlorosilane	75-79-6 500
Nickel Carbonyl (Nickel Tetracarbonyl)	13463-39-3 150
Nitric Acid (94.5% by weight or greater)	7697-37-2 500
Nitric Oxide	10102-43-9 250
Nitroaniline (para Nitroaniline)	100-01-6 5000
Nitromethane	75-52-5 2500
Nitrogen Dioxide	10102-44-0 250
Nitrogen Oxides (NO; NO ₂ ; N ₂ O ₄ ; N ₂ O ₃)	10102-44-0 250
Nitrogen Tetroxide (also called Nitrogen Peroxide)	10544-72-6 250
Nitrogen Trifluoride	7783-54-2 5000
Nitrogen Trioxide	10544-73-7 250
Oleum (65% to 80% by weight; also called Fuming Sulfuric Acid)	8014-94-7 1000
Osmium Tetroxide	20816-12-0 100
Oxygen Difluoride (Fluorine Monoxide)	7783-41-7 100
Ozone	10028-15-6 100
Pentaborane	19624-22-7 100

45

CHEMICAL name CAS* TQ**

Peracetic Acid (concentration >60% Acetic Acid; also called Peroxyacetic Acid).....	79-21-0 1000
Perchloric Acid (concentration >60% by weight)	7601-90-3 5000
Perchloromethyl Mercaptan	594-42-3 150
Perchloryl Fluoride	7616-94-6 5000
Peroxyacetic Acid (concentration >60% by Acetic Acid; also called' Paracetic Acid)	79-21-0 1000
Phosgene (also called Carbonyl Chloride)	75-44-5 100
Phosphine (Hydrogen Phosphide)	7803-51-2 100
Phosphorus Oxychloride (also called Phosphoryl Chloride)	10025-87-3 1000
Phosphorus Trichloride	7719-12-2 1000
Phosphoryl Chloride (also called Phosphorus Oxychloride)	10025-87-3 1000
Propargyl Bromide	106-96-7 100
Propyl Nitrate	627-3-4 100
Sarin	107-44-8 100
Selenium Hexafluoride	7783-79-1 1000
Stibine (Antimony Hydride)	7803-52-3 500
Sulfur Dioxide (liquid)	7446-09-5 1000
Sulfur Pentafluoride	5714-22-7 250
Sulfur Tetrafluoride	7783-60-0 250
Sulfur Trioxide (also called Sulfuric Anhydride)	7446-11-9 1000
Sulfuric Anhydride (also called Sulfur Trioxide)	7446-11-9 1000
Tellurium Hexafluoride	7783-80-4 250

Tetrafluoroethylene	116-14-3 5000
Tetrafluorohydrazine	10036-47-2 5000
Tetramethyl Lead	75-74-1 1000
Thionyl Chloride	7719-09-7 250
Trichloro (chloromethyl) Silane	1558-25-4 100
Trichloro (dichlorophenyl) Silane	27137-85-5 2500
Trichlorosilane	10025-78-2 5000
Trifluorochloroethylene	79-38-9 10000
Trimethoxysilane	2487-90-3 1500

*Chemical Abstract Service Number.

**Threshold Quantity in Pounds (Amount necessary to be covered by this standard).

Appendix A to § 1910.119

Process Safety Management

46 Appendix B to § 1910.119

Appendix B to § 1910.119—Block Flow Diagram and Simplified Process Flow Diagram (Nonmandatory)

Example of a Block Flow Diagram

47

Appendix B to § 1910.119

Example of a Simplified Process Flow Diagram

Process Safety Management

48 OSHA Consultation Directory

State Telephone

Alabama	(205) 348-3033
Alaska	(907) 269-4957
Arizona	(602) 542-1695
Arkansas	(501) 682-4522
California	(415) 703-5270
Colorado	(970) 491-6151
Connecticut	(860) 566-4550
Delaware	(302) 761-8219
District of Columbia	(202) 576-6339
Florida	(850) 922-8955
Georgia	(404) 894-2643
Guam	011(671) 475-0136
Hawaii	(808) 586-9100
Idaho	(208) 426-3283
Illinois	(312) 814-2337
Indiana	(317) 232-2688
Iowa	(515) 965-7162
Kansas	(785) 296-7476
Kentucky	(502) 564-6895
Louisiana	(504) 342-9601
Maine	(207) 624-6460
Maryland	(410) 880-4970
Massachusetts	(617) 727-3982
Michigan	(517) 322-6823(H)
.....	(517) 322-1809(S)
Minnesota	(612) 297-2393
Mississippi	(601) 987-3981
Missouri	(573) 751-3403

Consultation programs provide free services to employers who request help in identifying and correcting specific hazards, want to improve their safety and health programs, and/or need further assistance in training and education. Funded by OSHA and delivered

by well-trained professional staff of state governments, consultation services are comprehensive, and include an appraisal of all workplace hazards, practices, and job safety and health programs; conferences and agreements with management; assistance in implementing recommendations; and a follow-up appraisal to ensure that any required corrections are made. For more information on consultation programs, contact the appropriate office in your state listed below.

49

Montana	(406) 444-6418
Nebraska	(402) 471-4717
Nevada	(702) 486-9140
New Hampshire	(603) 271-2024
New Jersey	(609) 292-3923
New Mexico	(505) 827-4230
New York	(518) 457-2238
North Carolina	(919) 807-2905
North Dakota	(701) 328-5188
Ohio	(614) 644-2246
Oklahoma	(405) 528-1500
Oregon	(503) 378-3272
Pennsylvania	(742) 357-2396
Puerto Rico	(787) 754-2171
Rhode Island	(401) 222-2438
South Carolina	(803) 734-9614
South Dakota	(605) 688-4101
Tennessee	(615) 741-7036
Texas	(512) 804-4640
Utah	(801) 530-6901
Vermont	(802) 828-2765
Virginia	(804) 786-6359
Virgin Islands	(340) 772-1315
Washington	(360) 902-5638
West Virginia	(304) 558-7890
Wisconsin	(608) 266-8579(H)
.....	(262) 523-3040(S)
Wyoming	(307) 777-7786

(H) - Health

(S) - Safety

OSHA Consultation Directory

Process Safety Management

50 States with Approved Plans

States administering their own occupational safety and health programs through plans approved under section 18(b) of the Occupational Safety and Health Act of 1970 must adopt standards and enforce requirements that are at least as effective as federal requirements.

There are currently 25 state plan states; 23 cover the private and public (state and local government) sections and 2 cover the public sector only (Connecticut and New York)

Commissioner

Alaska Department of Labor

1111 West 8th Street

Room 304

Juneau, AK 99801-1149
(907) 465-2700

Director

Industrial Commission of Arizona
800 W. Washington
Phoenix, AZ 85007-2922
(602) 542-5795

Director

California Department
of Industrial Relations
455 Golden Gate Avenue -
10th Floor
San Francisco, CA 94102
(415) 703-5050

Commissioner

Connecticut Department of Labor
200 Folly Brook Boulevard
Wethersfield, CT 06109
(203) 566-5123

Director

Hawaii Department of Labor
and Industrial Relations
830 Punchbowl Street
Honolulu, HI 96813
(808) 586-8844

Commissioner

Indiana Department of Labor
State Office Building
402 West Washington Street
Room W195
Indianapolis, IN 46204-2751
(317) 232-2378

Commissioner

Iowa Division of Labor Services
1000 E. Grand Avenue
Des Moines, IA 50319-0209
(515) 281-3447

Secretary

Kentucky Labor Cabinet
1047 U.S. Highway, 127 South,
Suite 4
Frankfort, KY 40601
(502) 564-3070

51

States with Approved Plans

Commissioner

Maryland Division of Labor
and Industry
Department of Labor, Licensing,
and Regulation
1100 N. Eutaw Street,

Room 613
Baltimore, MD 21201-2206
(410) 767-2215

Director

Michigan Department
of Consumer and Industry
Services
P.O. Box 30643
Lansing, MI 48909-8143
(517) 322-1814

Commissioner

Minnesota Department of Labor
and Industry
443 Lafayette Road
St. Paul, MN 55155-4307
(651) 296-2342

Administrator

Nevada Division of Industrial
Relations
400 West King Street
Carson City, NV 89710
(775) 687-3032

Secretary

New Mexico Environment
Department
1190 St. Francis Drive
P.O. Box 26110
Santa Fe, NM 87502
(505) 827-2850

Commissioner

New York Department of Labor
W. Averell Harriman State Office
Building - 12, Room 500
Albany, NY 12240
(518) 457-2741

Commissioner

North Carolina Department
of Labor
4 West Edenton Street
Raleigh, NC 27601-1092
(919) 807-7166

Administrator

Department of Consumer and
Business Services Occupational
Safety and Health Division (OR-
OSHA)
350 Winter Street, NE,
Room 430
Salem, OR 97310-0220
(503) 378-3272
Process Safety Management

52

Secretary

Puerto Rico Department
of Labor and Human Resources
Prudencio Rivera Martinez
Building
505 Munoz Rivera Avenue
Hato Rey, PR 00918
(787) 754-2119

Director

South Carolina Department
of Labor, Licensing, and
Regulation
Koger Office Park,
Kingstree Building
110 Centerview Drive
P.O. Box 11329
Columbia, SC 29210
(803) 896-4300

Commissioner

Tennessee Department of Labor
Attention: Robert Taylor
710 James Robertson Parkway
Nashville, TN 37243-0659
(615) 741-2582

Commissioner

Labor Commission of Utah
160 East 300 South, 3rd Floor
P.O. Box 146650
Salt Lake City, UT 84114-6650
(801) 530-6898

Commissioner

Vermont Department
of Labor and Industry
National Life Building -
Drawer 20
National Life Drive
Montpelier, VT 05620-3401
(802) 828-5098

Commissioner

Virginia Department of Labor
and Industry
Powers-Taylor Building
13 South 13th Street
Richmond, VA 23219
(804) 786-2377

Commissioner

Virgin Islands Department
of Labor
2203 Church Street
Christiansted

St. Croix, VI 00820-4660
(340) 773-1994

Director

Washington Department
of Labor and Industries
P.O. Box 44001
Olympia, WA 98504-4001
(360) 902-4200
States with Approved Plans

53

Administrator

Worker's Safety and
Compensation Division (WSC)
Wyoming Department
of Employment
Herschler Building,
2nd Floor East
122 West 25th Street
Cheyenne, WY 82002
(307) 777-7786
States with Approved Plans

54

Single free copies of the following publications can be obtained
from the OSHA Publications Office, Room N3101, Washington, DC
20210, (202) 693-1888.

All About OSHA - OSHA 2056

Chemical Hazard Communication - OSHA 3084

Consultation Services for the Employer - OSHA 3047

Employee Workplace Rights - OSHA 3021

How to Prepare for Workplace Emergencies - OSHA 3088

OSHA Inspections - OSHA 2098

OSHA: Employee Workplace Rights - OSHA 3021

Personal Protective Equipment - OSHA 3077

Process Safety Management Guidelines for Compliance
- OSHA 3133

Respiratory Protection - OSHA 3079

Process Safety Management of Highly Hazardous Chemicals

Standard, Title 29, Code of Federal Regulations (CFR) Part
1910.119 (FR 57(36):6356 - 6417, February 24, 1992). This contains
the actual text of the PSM rule.

The following items are available from the Superintendent of
Documents, U.S. Government Printing Office, Washington, DC
20402, (202) 783-3238.

OSHA 3104 **Hazard Communication** - (A reference guide to stepby-
step requirements of the OSHA standard.) GPO Order No. 029-
016-00200-6, \$17.00.

Related Publications

Region I

(CT,* MA, ME, NH, RI, VT*)

JFK Federal Building

Room E-340
Boston, MA 02203
Telephone: (617) 565-9860

Region II

(NJ, NY,* PR,* VI*)

201 Varick Street
Room 670
New York, NY 10014
Telephone: (212) 337-2378

Region III

(DC, DE, MD,* PA, VA,* WV)

The Curtis Center - Suite 740 West
170 S. Independence Mall West
Philadelphia, PA 19106-3309
Telephone: (215) 861-4900

Region IV

**(AL, FL, GA, KY,* MS, NC,*
SC,* TN*)**

Atlanta Federal Center
61 Forsyth Street, SW, Room 6T50
Atlanta, GA 30303
Telephone: (404) 562-2300

Region V

(IL, IN,* MI,* MN,* OH, WI)

230 South Dearborn Street
Room 3244
Chicago, IL 60604
Telephone: (312) 353-2220

*These states and territories operate their own OSHA-approved job safety and health programs (Connecticut and New York plans cover public employees only). States with approved programs must have a standard that is identical to, or at least as effective as, the federal standard.

Region VI

(AR, LA, MN,* OK, TX)

525 Griffin Street
Room 602
Dallas, TX 75202
Telephone: (214) 767-4731

Region VII

(IA,* KS, MO, NE)

City Center Square
1100 Main Street, Suite 800
Kansas City, MO 64105
Telephone: (816) 426-5861

Region VIII

(CO, MT, ND, SD, UT,* WY*)

1999 Broadway
Suite 1690
Denver, CO 80202-5716
Telephone: (303) 844-1600

Region IX

**(American Samoa, AZ,* CA,*
Guam, HI,* NV,* Trust
Territories of the Pacific)**

71 Stevenson Street

4th Floor

San Francisco, CA 94105

Telephone: (415) 975-4310

Region X

(AK,* ID, OR,* WA*)

1111 Third Avenue

Suite 715

Seattle, WA 98101-3212

Telephone: (206) 553-5930

U.S. Department of Labor

Occupational Safety and Health Administration

Regional Offices

Emergency Response Plan

The purpose of this Emergency Response Plan (ERP), is to ensure employee safety and prevent further property damage in case of a fire or other emergency during the course of the project.

Employees will be made aware of this plan through:

- New employee indoctrination
- Weekly tool box talks
- Specific ERP training

Emergency Procedures-

1. In the event an emergency occurs on or at the work site, the project superintendent or his designee are responsible to follow the emergency procedures described in this section.
2. The superintendent is required to complete and post the emergency contact form when mobilized on the site. This is to be posted in the Black Horse Group office trailer.
3. Emergencies are classified as life threatening, medical, or serious property damage.
4. In the event of a life-threatening emergency, the following actions are to be taken. (These procedures establish an order for such actions. Actual conditions on the site may dictate that another order or other actions be followed, at the discretion of the person in charge of the work site.)
 - a) If possible, clear all personnel from the site immediately.
 - b) Designate one or two people to contact local police, fire, ambulance, haz-mat or other emergency response teams as quickly as possible.
 - c) Designate one or more people to contact people adjacent to the work site if they are affected by the emergency.
 - d) Contact the main office to notify them of the situation.

5. In the event of an accident or medical emergency, the following actions are to be taken:
 - a) Ascertain the nature of the medical emergency and the number of people affected.
 - b) Immediately call emergency teams. (911, ambulance, police, fire, rescue, etc.). Notify personnel trained in CPR and first aid.
 - c) Have another employee contact the main office.
 - d) Take control of the site and assign tasks as necessary to employees to provide whatever immediate and temporary relief possible until emergency personnel arrive at the scene (bring first aid equipment, blankets, etc.).
 - e) Take pictures as soon as possible and follow the procedures listed in the accident investigation portion of the health and safety program.
 - f) Send a fellow employee to accompany the injured party, if needed.
6. In the event of serious property damage, the following actions are to be taken:
 - a) Determine if there is an immediate danger to workers or persons adjacent to the site.
 - b) If so, follow procedures for life threatening situations.
 - c) If not, immediately call emergency response teams (911, police, fire, haz-mat, etc.) and report the emergency.
 - d) Notify the corporate office.
 - e) Remove any equipment from danger if possible. (If safety is not compromised, such as in the event of an electric powerline contact.)
 - f) Document the emergency.

NOTE: In the event of an emergency, the necessary paperwork (documentation in superintendent's log, accident investigation report, disciplinary action, etc.) and correspondence (letter to contractor addressing the emergency) must be completed and filed. Management must be notified of the incident so the necessary support can be provided to ensure all pertinent paperwork and correspondence is complete.

Respiratory Protection Program

Purpose

The primary objective of this program is to protect employees from inhalation and ingestion of harmful levels of air contaminants.

Policy

Employees shall not be exposed to air contaminants which exceed the limits detailed in OSHA Regulation CFR 1910.1000. When there is a probability of exposure to air contaminants exceeding these limits, proper respiratory protection shall be required. It is our policy to reduce the exposure to harmful contaminants to below TLVs/PEL limits through the use of engineer controls and other measures and the use of respiratory protection is the last protective measure. Exposure exceeding OSHA PEL's or ACGIH TLV's will not be allowed.

Scope

This policy applies to all personnel in the performance of their jobs with Black Horse Group.

Procedures for Selecting Respiratory Protection

1. Determination of Need for Respiratory Protection
 - a) The foreman of any operation involving the release, or possible release, of airborne contaminants such as dusts, gases, fumes, mists, etc. should contact the Job Superintendent or management for advice on precautions to be taken.
 - b) The Job Superintendent shall evaluate the hazard and determine if exposure to contaminants can be eliminated by environmental controls. Example: Substitution of a less hazardous procedure or material, use of general and local ventilation, or enclosing or isolating the operation(s).
 - c) When effective engineering controls have reduced exposures to the lowest possible level and the air quality still exceeds a PEL (Permissible Exposure Limit), the job superintendent will make a decision on the need for respirators based on Safety Data Sheets, industrial hygiene monitoring, medical experience, or other pertinent information.

2. Operations Requiring Respiratory Protection

- a) All employees performing jobs which are designated mandatory respirator jobs shall be informed of this requirement. This shall be done through:
 - Specifying the correct respirator in the Job Specifications report or other such written procedures for the Job and/or Project Safety meetings.
 - Postings at the work site or signs in the area where the job exists.

3. Selection and Procurement of Respirators

- a) Respirators shall be selected according to the hazard(s) to which workers are exposed, keeping in mind the physical and chemical properties of the air contaminant(s) and concentration(s) likely to be encountered.
- b) Prior to donning a respirator, Black Horse Group employees are required to be medically evaluated and fit-tested. After successfully passing the medical examination and the fit-test, respirators will be provided by Black Horse Group and will be permanently assigned to employees that require their use routinely. Respirators for operations involving short-term use will be temporarily assigned to employees and returned to the facility upon completion of the task, where they will be cleaned and properly stored for future use. Replacement air purifying respirators will be issued when needed.
- c) The respirators utilized by Black Horse Group are NIOSH-certified Air Purifying Respirators which remove particulate or gaseous contaminants by passing ambient air through the air-purifying filter, cartridge, or canister. Air purifying respirators must not be used in atmospheres containing less than 19.5% oxygen by volume.
- d) In cases where air purifying respirators are not utilized due to the presence of a hazardous atmosphere, contaminant hazards have not been identified, or employee exposure and protection needed has not been identified or reasonably estimated, the atmosphere shall be considered to be IDLH (Immediately Dangerous to Life and Health). In these circumstances, a full facepiece pressure demand Self Containing Breathing Apparatus (SCBA) or a combination full

facepiece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply will be utilized.

NOTE: Respiratory protection can be achieved through good work practices and the use of air purifying half-face or full-face respirators provided that respirator limitations are not exceeded. Use of a Self Containing Breathing Apparatus or a Supplied Air Respirator typically does not apply to construction activities. In cases where the use of one of these respirators is required, the employee(s) who will be required to don the respirator will receive the necessary medical evaluation, fit-testing, and associated training prior to wearing the SCBA or SAR.

4. Respirator Approval

- a) Only National Institute for Occupational Safety and Health (NIOSH)- and Mine Safety and Health Administration (MSHA)-approved (tested and certified) respirators should be used. Respirators shall be used only for the substances for which they are designed.

5. Medical Approval

- a) Employees will not be assigned to tasks requiring use of respirators unless it has been determined that they are physically able to perform the work while wearing a respirator. Persons who will be assigned to the mandatory use of respirators will have their medical history reviewed by a Medical Department before starting employment. The medical status of those required to use respirators should be viewed periodically thereafter. Based on the overall health of the individual, a doctor shall determine if the employee is to be restricted from wearing respiratory protective equipment. If a restriction is applied, supervision is notified and this fact is indicated on the employee's medical records.
- b) Employees required to wear any respirator will be required to fill out a medical questionnaire (see Appendix A to this Chapter) that will be sent to the physician after it is completed. The physician will review the questionnaire and determine whether a medical evaluation is needed. The employee will then be given an opportunity to discuss the questionnaire and the examination results with the physician.
- c) Employees who voluntarily wear filtering facepieces (dust masks) and are not exposed to a PEL (Permissible Exposure Limit) will not be required to be medically evaluated. Employees who voluntarily wear any other type of respirator will be required to be medically evaluated.

6. Training

- a) Employees required to use a respirator shall be trained at least annually by the respiratory protection program administrator. Additional training will be provided when needed. This training must be documented and shall include:
1. Why the respirator is necessary and how improper fit, usage, or maintenance can compromise the protective effects of the respirator. (A copy of how to perform a positive and negative pressure check will be given to the employee.)
 2. What the limitations and capabilities of the respirator and the air purifying filters, cartridges, and canisters are.
 3. How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions.
 4. How to inspect, put on and remove, use, and check the seals of the respirator.
 5. What the procedures are for maintenance and storage of the respirator. (A copy of respirator cleaning procedures will be given to the employee.)
 6. How to recognize medical signs and symptoms that may limit or prevent the effective use of respirators.
 7. Procedures for proper use of respirators in routine and reasonably foreseeable emergency situations.
 8. Procedures to ensure adequate air quality.
 9. Instructions to employees who voluntarily use filtering facepieces (dust masks) when not required to. (A copy of information pertaining to respirator use when not required will be given to the employee.) (See Appendix B to this Chapter.)
 10. Instructions from respirator manufacturer.

Fit Testing

1. Qualitative Fit Test

- a) Prior to initial use of any tight-fitting respirator, each employee will be fit tested with the same make, model, style, and size of the respirator they will be using. Fit testing will be done annually or when changes in the employee's physical condition could affect respirator use. This is done to ensure that each employee is able to obtain a good facepiece-to-face seal. The fit test will be performed by the respiratory program administrator following protocol established under Appendix A. to 1910.134: Fit Testing Procedures. (See Appendix C to this Chapter.)
- b) Documentation of fit tests performed will be maintained at Black Horse Group's main office. The records will contain information in accordance with the record-keeping requirements set forth in 1910.134(m)

2. Positive and Negative Pressure Tests

- a) Respirator users shall be trained in how to perform positive and negative pressure tests and should use them each time the respirator is donned as a means of quickly checking respirator fit. (See Appendix D to this Chapter.)
- b) Positive Pressure Test: This test is performed by closing off the respirator exhalation valve using the palm of the hand and exhaling gently into the facepiece. The fit is considered satisfactory if slight positive pressure can be built up inside the facepiece without any evidence of outward leakage.
- c) Negative Pressure Test: In this test, the user closes off the air inlet of the respirator by covering it so that it cannot pass air; inhales gently so that the facepiece collapses slightly; and holds breath for about 10 seconds. If the facepiece remains slightly collapsed and no inward leakage is detected, a suitable fit exists.

3. Inspecting, Cleaning, Storing, and Maintaining Respirators

- a) Employees must inspect their respirator each day it is used for proper function, including checking inhalation and exhalation valves, facepiece, and wear and condition of head straps. Rubber elastomer parts shall be inspected for pliability and signs of deterioration.

- b) Filter, cartridge, or canister life must not be exceeded. Gas and vapor cartridges must be equipped with an ESLI (end of service life indicator) certified by NIOSH. When this type of cartridge is not available, they must be replaced before the end of their service life. This will be determined by the superintendent on site.
- c) Respirators permanently assigned must be thoroughly cleaned with a sanitizing solution by the employee after each use. Respirators issued for temporary use will be cleaned when they are returned. Respirator cleaning procedures will follow the manufacturer's guidelines or the following protocol as per Appendix B-2 to 1910.134 will be utilized. (See Appendix E to this Chapter.)
- d) Clean respirators should be stored either in a clean bag, a big coffee can, or in a clean storage cabinet. Respirators must be stored properly to prevent deformation of the facepiece and exhalation valve. To prevent damage, respirators should not be stored in toolboxes unless they are in carrying cases or cartons. Also protect respirators from dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals.
- e) A selection of replacement parts, cartridges, and filters is available from your supervisor. Any repairs or replacement of parts must be done in accordance with the manufacturer's specifications and done by a trained person using NIOSH-approved parts designed for the respirator.
- f) When repairs are made on respirators, NIOSH-approved repair parts must be used which are designed for that specific respirator. Interchanging between different models will void the respirator's certification and may cause dangerous air leaks or equipment failure.

4. Program Evaluation

- a) Random inspections should be conducted regularly by the supervisor to ensure that respirators are properly selected, used, cleaned and maintained. Deficiencies will be noted and corrective measures taken. Failure to wear a respirator when required will result in disciplinary action as per Black Horse Group's Disciplinary Program.

5. ON SITE FIT TEST RECORDS: Fit test records and Medical clearances will be kept on the project site to ensure that each employee has access to their information to ensure correct size and respirator type. It is the employee's responsibility to ensure that they wear the correct size and type respirator that they were fitted for.

Appendix A

OSHA Respirator Medical Evaluation Questionnaire
(Mandatory) Appendix C
to § 1910.134

To the employer: Answers to questions in Section 1 and to question 9 in Section 2 of Part A, do not require a medical examination.

To the employee: Can you read (circle one): Yes/No

Your employer must allow you to answer this questionnaire during normal working hours, or at a time and place that is convenient to you. To maintain your confidentiality, your employer or supervisor must not look at or review your answers, and your employer must tell you how to deliver or send this questionnaire to the health care professional who will review it.

Part A. Section 1. (Mandatory) The following information must be provided by every employee who has been selected to use any type of respirator (please print).

Company _____

1. Your name: _____

2. Today's date: _____

3. Your age (to nearest year): ____

4. Sex (circle one):

Male/Female

5. Your height: ____ ft. ____ in.

6. Your weight: ____ lbs.

7. Your job title: _____

8. A phone number where you can be reached by the health care professional who reviews this questionnaire (include the Area Code): _____

9. The best time to phone you at this number: _____

10. Has your employer told you how to contact the health care professional who will review this questionnaire (circle one):

Yes/No

11. Check the type of respirator you will use (you can check more than one category):

a. ____ N, R, or P disposable respirator (filter-mask, non-cartridge type only).

b. ____ Other type (for example, half- or full-facepiece type, powered-air purifying, supplied-air, self-contained breathing apparatus).

12. Have you worn a respirator (circle one):

Yes/No

If "yes," what type(s):

Part A. Section 2. (Mandatory) Questions 1 through 9 below must be answered by every employee who has been selected to use any type of respirator (please circle "yes" or "no").

1. Do you currently smoke tobacco, or have you smoked tobacco in the last month: Yes/No

2. Have you ever had any of the following conditions?

a. Seizures (fits):

Yes/No

b. Diabetes (sugar disease):

Yes/No

c. Allergic reactions that interfere with your breathing:

Yes/No

d. Claustrophobia (fear of closed-in places):

Yes/No

e. Trouble smelling odors:

Yes/No

3. Have you ever had any of the following pulmonary or lung problems?

a. Asbestosis:

Yes/No

b. Asthma:

Yes/No

c. Chronic bronchitis:

Yes/No

d. Emphysema:

Yes/No

e. Pneumonia:

Yes/No

f. Tuberculosis:

Yes/No

g. Silicosis:

Yes/No

h. Pneumothorax (collapsed lung):

Yes/No

i. Lung cancer:

Yes/No

j. Broken ribs:

Yes/No

k. Any chest injuries or surgeries:

Yes/No

l. Any other lung problem that you've been told about:

Yes/No

4. Do you currently have any of the following symptoms of pulmonary or lung illness?

a. Shortness of breath:

Yes/No

- b. Shortness of breath when walking fast on level ground or walking up a slight hill or incline:
Yes/No
 - c. Shortness of breath when walking with other people at an ordinary pace on level ground:
Yes/No
 - d. Have to stop for breath when walking at your own pace on level ground:
Yes/No
 - e. Shortness of breath when washing or dressing yourself:
Yes/No
 - f. Shortness of breath that interferes with your job:
Yes/No
 - g. Coughing that produces phlegm (thick sputum):
Yes/No
 - h. Coughing that wakes you early in the morning:
Yes/No
 - i. Coughing that occurs mostly when you are lying down:
Yes/No
 - j. Coughing up blood in the last month:
Yes/No
 - k. Wheezing:
Yes/No
 - l. Wheezing that interferes with your job:
Yes/No
 - m. Chest pain when you breathe deeply:
Yes/No
 - n. Any other symptoms that you think may be related to lung problems:
Yes/No
5. Have you ever had any of the following cardiovascular or heart problems?
- a. Heart attack:
Yes/No
 - b. Stroke:
Yes/No
 - c. Angina:
Yes/No
 - d. Heart failure:
Yes/No
 - e. Swelling in your legs or feet (not caused by walking):
Yes/No
 - f. Heart arrhythmia (heart beating irregularly):
Yes/No
 - g. High blood pressure:
Yes/No
 - h. Any other heart problem that you've been told about:
Yes/No
6. Have you ever had any of the following cardiovascular or heart symptoms?

- a. Frequent pain or tightness in your chest:
Yes/No
 - b. Pain or tightness in your chest during physical activity:
Yes/No
 - c. Pain or tightness in your chest that interferes with your job:
Yes/No
 - d. In the past two years, have you noticed your heart skipping or missing a beat: Yes/No
 - e. Heartburn or indigestion that is not related to eating:
Yes/No
 - f. Any other symptoms that you think may be related to heart or circulation problems: Yes/No
7. Do you currently take medication for any of the following problems?
- a. Breathing or lung problems:
Yes/No
 - b. Heart trouble:
Yes/No
 - c. Blood pressure:
Yes/No
 - d. Seizures (fits):
Yes/No
8. If you've used a respirator, have you ever had any of the following problems?
(If
you've never used a respirator, check the following space and go to question 9:)
-
- a. Eye irritation:
Yes/No
 - b. Skin allergies or rashes:
Yes/No
 - c. Anxiety:
Yes/No
 - d. General weakness or fatigue:
Yes/No
 - e. Any other problem that interferes with your use of a respirator:
Yes/No
9. Would you like to talk to the health care professional who will review this questionnaire about your answers to this questionnaire:
Yes/No

Questions 10 to 15 below must be answered by every employee who has been selected to use either a full-facepiece respirator or a self-contained breathing apparatus (SCBA). For employees who have been selected to use other types of respirators, answering these questions is voluntary.

10. Have you ever lost vision in either eye (temporarily or permanently):
Yes/No
11. Do you currently have any of the following vision problems?
a. Wear contact lenses:
Yes/No
b. Wear glasses:
Yes/No
c. Color blind:
Yes/No
d. Any other eye or vision problem:
Yes/No
12. Have you ever had an injury to your ears, including a broken ear drum:
Yes/No
13. Do you currently have any of the following hearing problems?
a. Difficulty hearing:
Yes/No
b. Wear a hearing aid:
Yes/No
c. Any other hearing or ear problem:
Yes/No
14. Have you ever had a back injury:
Yes/No
15. Do you currently have any of the following musculoskeletal problems?
a. Weakness in any of your arms, hands, legs, or feet:
Yes/No
b. Back pain:
Yes/No
c. Difficulty fully moving your arms and legs:
Yes/No
d. Pain or stiffness when you lean forward or backward at the waist:
Yes/No
e. Difficulty fully moving your head up or down:
Yes/No
f. Difficulty fully moving your head side to side:
Yes/No
g. Difficulty bending at your knees:
Yes/No
h. Difficulty squatting to the ground:
Yes/No
i. Climbing a flight of stairs or a ladder carrying more than 25 lbs:
Yes/No
j. Any other muscle or skeletal problem that interferes with using a respirator: Yes/No

Part B Any of the following questions, and other questions not listed, may be added to the questionnaire at the discretion of the health care professional who will review the questionnaire.

1. In your present job, are you working at high altitudes (over 5,000 feet) or in a place that has lower than normal amounts of oxygen:

Yes/No

If "yes," do you have feelings of dizziness, shortness of breath, pounding in your chest, or other symptoms when you're working under these conditions: Yes/No

2. At work or at home, have you ever been exposed to hazardous solvents, hazardous airborne chemicals (e.g., gases, fumes, or dust), or have you come into skin contact with hazardous chemicals:

Yes/No

If "yes," name the chemicals if you know them:

3. Have you ever worked with any of the materials, or under any of the conditions, listed below:

a. Asbestos:

Yes/No

b. Silica (e.g., in sandblasting):

Yes/No

c. Tungsten/cobalt (e.g., grinding or welding this material):

Yes/No

d. Beryllium:

Yes/No

e. Aluminum:

Yes/No

f. Coal (for example, mining):

Yes/No

g. Iron:

Yes/No

h. Tin:

Yes/No

i. Dusty environments:

Yes/No

j. Any other hazardous exposures:

Yes/No

If "yes," describe these exposures:

4. List any second jobs or side businesses you have:

5. List your previous occupations:

6. List your current and previous hobbies:

7. Have you been in the military services?

Yes/No

If "yes," were you exposed to biological or chemical agents (either in training or combat):

Yes/No

8. Have you ever worked on a HAZMAT team?

Yes/No

9. Other than medications for breathing and lung problems, heart trouble, blood pressure, and seizures mentioned earlier in this questionnaire, are you taking any other medications for any reason (including over-the-counter medications):

Yes/No

If "yes," name the medications if you know them:

10. Will you be using any of the following items with your respirator(s)?

a. HEPA Filters:

Yes/No

b. Canisters (for example, gas masks):

Yes/No

c. Cartridges:

Yes/No

11. How often are you expected to use the respirator(s) (circle "yes" or "no" for all answers that apply to you)?:

a. Escape only (no rescue):

Yes/No

b. Emergency rescue only:

Yes/No

c. Less than 5 hours per week:

Yes/No

d. Less than 2 hours per day:

Yes/No

e. 2 to 4 hours per day:

Yes/No

f. Over 4 hours per day:

Yes/No

12. During the period you are using the respirator(s), is your work effort:

a. Light (less than 200 kcal per hour):

Yes/No

If "yes," how long does this period last during the average shift: ____hrs.
____mins.

Examples of a light work effort are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1–3 lbs.) or controlling machines.

b. Moderate (200 to 350 kcal per hour):

Yes/No

If "yes," how long does this period last during the average shift: ____hrs.
____mins.

Examples of moderate work effort are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

c. Heavy (above 350 kcal per hour):

Yes/No

If "yes," how long does this period last during the average shift: ____hrs.
____mins.

Examples of heavy work are lifting a heavy load (about 50 lbs.) from the floor to your

waist or shoulder; working on a loading dock; shoveling; standing while bricklaying or

chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a

heavy load (about 50 lbs.).

13. Will you be wearing protective clothing and/or equipment (other than the respirator) when you're using your respirator:

Yes/No

If "yes," describe this protective clothing and/or equipment:

14. Will you be working under hot conditions (temperature exceeding 77° F):

Yes/No

15. Will you be working under humid conditions:

Yes/No

16. Describe the work you'll be doing while you're using your respirator(s):

17. Describe any special or hazardous conditions you might encounter when you're using your respirator(s) (for example, confined spaces, life-threatening gases):

18. Provide the following information, if you know it, for each toxic substance that you'll be exposed to when you're using your respirator(s):

Name of the first toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

Name of the second toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

Name of the third toxic substance: _____

Estimated maximum exposure level per shift: _____

Duration of exposure per shift: _____

The name of any other toxic substances that you'll be exposed to while using your respirator:

19. Describe any special responsibilities you'll have while using your respirator(s) that may affect the safety and well-being of others (for example, rescue, security):

**Information for Employees Using Respirators When Not
Required Under the Standard**

**Appendix D to § 1910.134
(Non-Mandatory)**

Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection for workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards. If your employer provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard. You should do the following:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations.
2. Choose respirators certified for use to protect against the contaminant of concern.
NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services, certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
4. Keep track of your respirator so that you do not mistakenly use someone else's respirator.

**Fit Testing Procedures
(Mandatory) Appendix A
to § 1910.134**

Part I. OSHA-Accepted Fit Test Protocols

A. Fit Testing Procedures—General Requirements

The employer shall conduct fit testing using the following procedures. The requirements in this appendix apply to all OSHA-accepted fit test methods, both QLFT and QNFT.

1. The test subject shall be allowed to pick the most acceptable respirator from a sufficient number of respirator models and sizes so that the respirator is acceptable to, and correctly fits, the user.
2. Prior to the selection process, the test subject shall be shown how to put on a respirator, how it should be positioned on the face, how to set strap tension and how to determine an acceptable fit. A mirror shall be available to assist the subject in evaluating the fit and positioning of the respirator. This instruction may not constitute the subject's formal training on respirator use, because it is only a review.
3. The test subject shall be informed that he/she is being asked to select the respirator that provides the most acceptable fit. Each respirator represents a different size and shape, and if fitted and used properly, will provide adequate protection.
4. The test subject shall be instructed to hold each chosen facepiece up to the face and eliminate those that obviously do not give an acceptable fit.
5. The more acceptable facepieces are noted in case the one selected proves unacceptable; the most comfortable mask is donned and worn at least five minutes to assess comfort. Assistance in assessing comfort can be given by discussing the points in the following item A.6. If the test subject is not familiar with using a particular respirator, the test subject shall be directed to don the mask several times and to adjust the straps each time to become adept at setting proper tension on the straps.
6. Assessment of comfort shall include a review of the following points with the test subject and allowing the test subject adequate time to determine the comfort of the respirator:

- (a) Position of the mask on the nose

- (b) Room for eye protection
- (c) Room to talk
- (d) Position of mask on face and cheeks

7. The following criteria shall be used to help determine the adequacy of the respirator fit:

- (a) Chin properly placed;
- (b) Adequate strap tension, not overly tightened;
- (c) Fit across nose bridge;
- (d) Respirator of proper size to span distance from nose to chin;
- (e) Tendency of respirator to slip;
- (f) Self-observation in mirror to evaluate fit and respirator position.

8. The test subject shall conduct a user seal check, either the negative and positive pressure seal checks described in Appendix B–1 of this section or those recommended by the respirator manufacturer which provide equivalent protection to the procedures in Appendix B–1. Before conducting the negative and positive pressure checks, the subject shall be told to seat the mask on the face by moving the head from side-to-side and up and down slowly while taking in a few slow deep breaths. Another facepiece shall be selected and re-tested if the test subject fails the user seal check tests.

9. The test shall not be conducted if there is any hair growth between the skin and the facepiece sealing surface, such as stubble beard growth, beard, mustache or sideburns which cross the respirator sealing surface. Any type of apparel which interferes with a satisfactory fit shall be altered or removed.

10. If a test subject exhibits difficulty in breathing during the tests, she or he shall be referred to a physician or other licensed health care professional, as appropriate, to determine whether the test subject can wear a respirator while performing her or his duties.

11. If the employee finds the fit of the respirator unacceptable, the test subject shall be given the opportunity to select a different respirator and to be re-tested.

12. Exercise regimen. Prior to the commencement of the fit test, the test subject shall be given a description of the fit test and the test subject's responsibilities during the test procedure. The description of the process shall include a description of the test exercises that the subject will be performing. The respirator to be tested shall be worn for at least 5 minutes before the start of the fit test.

13. The fit test shall be performed while the test subject is wearing any applicable safety equipment that may be worn during actual respirator use which could interfere with respirator fit.

14. Test Exercises.

(a) The following test exercises are to be performed for all fit testing methods prescribed in this appendix, except for the CNP method. A separate fit testing exercise regimen is contained in the CNP protocol. The test subject shall perform exercises, in the test environment, in the following manner:

(1) Normal breathing. In a normal standing position, without talking, the subject shall breathe normally.

(2) Deep breathing. In a normal standing position, the subject shall breathe slowly and deeply, taking caution so as not to hyperventilate.

(3) Turning head side to side. Standing in place, the subject shall slowly turn his/her head from side to side between the extreme positions on each side. The head shall be held at each extreme momentarily so the subject can inhale at each side.

(4) Moving head up and down. Standing in place, the subject shall slowly move his/her head up and down. The subject shall be instructed to inhale in the up position (i.e., when looking toward the ceiling).

(5) Talking. The subject shall talk out loud slowly and loud enough so as to be heard clearly by the test conductor. The

subject can read from a prepared text such as the Rainbow Passage, count backward from 100, or recite a memorized poem or song.

Rainbow Passage

When the sunlight strikes raindrops in the air, they act like a prism and form a rainbow. The rainbow is a division of white light into many beautiful colors. These take the shape of a long round arch, with its path high above, and its two ends apparently beyond the horizon. There is, according to legend, a boiling pot of gold at one end. People look, but no one ever finds it. When a man looks for something beyond reach, his friends say he is looking for the pot of gold at the end of the rainbow.

(6) Grimace. The test subject shall grimace by smiling or frowning. (This applies only to QNFT testing; it is not performed for QLFT)

(7) Bending over. The test subject shall bend at the waist as if he/she were to touch his/her toes. Jogging in place shall be substituted for this exercise in those test environments such as shroud type QNFT or QLFT units that do not permit bending over at the waist.

(8) Normal breathing. Same as exercise (1).

(b) Each test exercise shall be performed for one minute except for the grimace exercise which shall be performed for 15 seconds. The test subject shall be questioned by the test conductor regarding the comfort of the respirator upon completion of the protocol. If it has become unacceptable, another model of respirator shall be tried. The respirator shall not be adjusted once the fit test exercises begin. Any adjustment voids the test, and the fit test must be repeated.

The Bitrex™ (Denatonium benzoate) solution aerosol QLFT protocol uses the published saccharin test protocol because that protocol is widely accepted. Bitrex is routinely used as a taste aversion agent in household liquids which children should not be drinking and is endorsed by the American Medical Association, the National Safety Council, and the American Association of Poison Control Centers. The entire screening and testing procedure shall be explained to the test subject prior to the conduct of the screening test.

(a) Taste Threshold Screening. The Bitrex taste threshold screening, performed without wearing a respirator, is intended to determine whether the individual being tested can detect the taste of Bitrex.

(1) During threshold screening as well as during fit testing, subjects shall wear an enclosure about the head and shoulders that is approximately 12 inches (30.5 cm) in diameter by 14 inches (35.6 cm) tall. The front portion of the enclosure shall be clear from the respirator and allow free movement of the head when a respirator is worn. An enclosure substantially similar to the 3M hood assembly, parts #14 and #15 combined, is adequate.

(2) The test enclosure shall have a ¾ inch (1.9 cm) hole in front of the test subject's nose and mouth area to accommodate the nebulizer nozzle.

(3) The test subject shall don the test enclosure. Throughout the threshold screening test, the test subject shall breathe through his or her slightly open mouth with tongue extended. The subject is instructed to report when he/she detects a bitter taste.

(4) Using a DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent, the test conductor shall spray the Threshold Check Solution into the enclosure. This Nebulizer shall be clearly marked to distinguish it from the fit test solution nebulizer.

(5) The Threshold Check Solution is prepared by adding 13.5 milligrams of Bitrex to 100 ml of 5% salt (NaCl) solution in distilled water.

(6) To produce the aerosol, the nebulizer bulb is firmly squeezed so that the bulb collapses completely, and is then released and allowed to fully expand.

(7) An initial ten squeezes are repeated rapidly and then the test subject is asked whether the Bitrex can be tasted. If the test subject reports tasting the bitter taste during the ten squeezes, the screening test is completed. The taste threshold is noted as ten regardless of the number of squeezes actually completed.

(8) If the first response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test

subject reports tasting the bitter taste during the second ten squeezes, the screening test is completed. The taste threshold is noted as twenty regardless of the number of squeezes actually completed.

(9) If the second response is negative, ten more squeezes are repeated rapidly and the test subject is again asked whether the Bitrex is tasted. If the test subject reports tasting the bitter taste during the third set of ten squeezes, the screening test is completed. The taste threshold is noted as thirty regardless of the number of squeezes actually completed.

(10) The test conductor will take note of the number of squeezes required to solicit a taste response.

(11) If the Bitrex is not tasted after 30 squeezes (step 10), the test subject is unable to taste Bitrex and may not perform the Bitrex fit test.

(12) If a taste response is elicited, the test subject shall be asked to take note of the taste for reference in the fit test.

(13) Correct use of the nebulizer means that approximately 1 ml of liquid is used at a time in the nebulizer body.

(14) The nebulizer shall be thoroughly rinsed in water, shaken to dry, and refilled at least each morning and afternoon or at least every four hours.

(b) Bitrex Solution Aerosol Fit Test Procedure.

(1) The test subject may not eat, drink (except plain water), smoke, or chew gum for 15 minutes before the test.

(2) The fit test uses the same enclosure as that described in 4. (a) above.

(3) The test subject shall don the enclosure while wearing the respirator selected according to section I. A. of this appendix. The respirator shall be properly adjusted and equipped with any type particulate filter(s).

(4) A second DeVilbiss Model 40 Inhalation Medication Nebulizer or equivalent is used to spray the fit test solution into the enclosure. This nebulizer shall be clearly marked to distinguish it from the screening test solution nebulizer.

(5) The fit test solution is prepared by adding 337.5 mg of Bitrex to 200 ml of a 5% salt (NaCl) solution in warm water.

(6) As before, the test subject shall breathe through his or her slightly open mouth with tongue extended, and be instructed to report if he/she tastes the bitter taste of Bitrex.

(7) The nebulizer is inserted into the hole in the front of the enclosure and an initial concentration of the fit test solution is sprayed into the enclosure using the same number of squeezes (either 10, 20 or 30 squeezes) based on the number of squeezes required to elicit a taste response as noted during the screening test.

(8) After generating the aerosol, the test subject shall be instructed to perform the exercises in section I. A. 14. of this appendix.

(9) Every 30 seconds the aerosol concentration shall be replenished using one half the number of squeezes used initially (e.g., 5, 10 or 15).

(10) The test subject shall indicate to the test conductor if at any time during the fit test the taste of Bitrex is detected. If the test subject does not report tasting the Bitrex, the test is passed.

(11) If the taste of Bitrex is detected, the fit is deemed unsatisfactory and the test is failed. A different respirator shall be tried and the entire test procedure is repeated (taste threshold screening and fit testing).

**User Seal Check Procedures
(Mandatory) Appendix B–1
to § 1910.134**

The individual who uses a tight-fitting respirator is to perform a user seal check to ensure that an adequate seal is achieved each time the respirator is put on. Either the positive and negative pressure checks listed in this appendix, or the respirator manufacturer's recommended user seal check method shall be used. User seal checks are not substitutes for qualitative or quantitative fit tests.

I. Facepiece Positive and/or Negative Pressure Checks

A. Positive pressure check. Close off the exhalation valve and exhale gently into the facepiece. The face fit is considered satisfactory if a slight positive pressure can be built up inside the facepiece without any evidence of outward leakage of air at the seal. For most respirators this method of leak testing requires the wearer to first remove the exhalation valve cover before closing off the exhalation valve and then carefully replacing it after the test.

B. Negative pressure check. Close off the inlet opening of the canister or cartridge(s) by covering with the palm of the hand(s) or by replacing the filter seal(s), inhale gently so that the facepiece collapses slightly, and hold the breath for ten seconds. The design of the inlet opening of some cartridges cannot be effectively covered with the palm of the hand. The test can be performed by covering the inlet opening of the cartridge with a thin latex or nitrile glove. If the facepiece remains in its slightly collapsed condition and no inward leakage of air is detected, the tightness of the respirator is considered satisfactory.

II. Manufacturer's Recommended User Seal Check Procedures

The respirator manufacturer's recommended procedures for performing a user seal check may be used instead of the positive and/or negative pressure check procedures provided that the employer demonstrates that the manufacturer's procedures are equally effective.

Respirator Cleaning Procedures
Appendix B–2 to § 1910.134:
(Mandatory)

These procedures are provided for employer use when cleaning respirators. They are general in nature, and the employer as an alternative may use the cleaning recommendations provided by the manufacturer of the respirators used by their employees, provided such procedures are as effective as those listed here in Appendix B–2. Equivalent effectiveness simply means that the procedures used must accomplish the objectives set forth in Appendix B–2, i.e., must ensure that the respirator is properly cleaned and disinfected in a manner that prevents damage to the respirator and does not cause harm to the user.

I. Procedures for Cleaning Respirators

A. Remove filters, cartridges, or canisters. Disassemble facepieces by removing speaking diaphragms, demand and pressure-demand valve assemblies, hoses, or any components recommended by the manufacturer. Discard or repair any defective parts.

B. Wash components in warm (43° C [110° F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. A stiff bristle (not wire) brush may be used to facilitate the removal of dirt.

C. Rinse components thoroughly in clean, warm (43° C [110° F] maximum), preferably running water. Drain.

D. When the cleaner used does not contain a disinfecting agent, respirator components should be immersed for two minutes in one of the following:

1. Hypochlorite solution (50 ppm of chlorine) made by adding approximately one milliliter of laundry bleach to one liter of water at 43° C (110° F); or,
2. Aqueous solution of iodine (50 ppm iodine) made by adding approximately 0.8 milliliters of tincture of iodine (6–8 grams ammonium and/or potassium iodide/100 cc of 45% alcohol) to one liter of water at 43° C (110° F); or,
3. Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.

E. Rinse components thoroughly in clean, warm (43° C [110° F] maximum), preferably running water. Drain. The importance of thorough rinsing cannot be overemphasized. Detergents or disinfectants that dry on facepieces may result in dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts if not completely removed.

F. Components should be hand-dried with a clean lint-free cloth or air-dried.

G. Reassemble facepiece, replacing filters, cartridges, and canisters where necessary.

H. Test the respirator to ensure that all components work properly.

Health Hazard Control Plan (Hazard Analysis)

It is the intent that with the implementation of this Health Hazard Control Plan all operations, substances, agents, environments and equipment shall be identified and evaluated to determine the presence of hazardous conditions and recommend control measures.

The tool to be used to identify any potential hazards is the Activity Hazard Analysis. Prior to beginning each major phase of work, an Activity Hazard Analysis shall be prepared and submitted for review and acceptance. The format shall be in accordance with EM 385-1-1, Figure 1. Engineering and administrative controls shall be used to control hazards. In cases where engineering or administrative controls are not feasible, personal protective equipment may be used.

Information contained in MSDS Sheets shall be incorporated in the hazard analysis for the activities in which hazardous or toxic materials will be used or generated (e.g. fiberglass, crystalline silica, metal dust, fume, etc).

A major phase of work is defined as an operation involving a type of work presenting hazards not experienced in previous operations or where a new contractor or work crew is to perform.

Work shall not proceed on that phase until the activity hazard analysis has been accepted and a preparatory meeting has been conducted by the designated competent person in order to discuss its contents with everyone engaged in the activities, including the Government's onsite representative.

The activity hazard analyses shall be continuously reviewed and when appropriate modified to address changing site conditions or operations, with the concurrence of the site safety representative, the site superintendent and the Contracting Officer.

Activity hazard analyses shall be attached to and become part of the accident prevention plan.

Each hazard analysis shall identify:

- Activities to be performed
- Location of work activity
- Sequence of work
- Specific hazards anticipated
- Control measures to be implemented
- Name of person certifying evaluation

- Date of evaluation.

Each hazard analysis shall be performed by the project designated competent person. For this project, Chris Widrick is the designated competent person to certify hazard analyses.

DESCRIPTIONS OF CHEMICALS IDENTIFIED FOR USE ON SITE:

- Diesel/Gas – Stored only in OSHA Approved Gas cans, and locked in on-site storage container.
- Concrete Form Oil – Contained in 5 Gallon Buckets, and locked in on-site storage container.
- Concrete Cure Material – Contained in 5 Gallon Buckets, and locked in on-site storage container.
- Additional chemicals to be listed upon use.

Confined Space Program

Purpose

To provide maximum protection for employees assigned to enter and work in confined spaces.

Definition

A confined space is any space having the following characteristics:

- Is large enough and so configured that an individual can bodily enter and perform assigned work; and
- Has limited or restricted means of entry or exit; and
- Is not designed for continuous employee occupancy.

Confined spaces may include:

Boilers	Manholes	Tank Cars
Pits	Vaults	Wells
Tunnels	Sewers	Cisterns
Furnaces	Diked Areas	Digesters
Silos	Septic Tanks	Pumping Stations
Storage Bins	Hoppers	Vessels
Process Vessels		

Hazards

1. Hazards Of Confined Spaces
 - a) Hazardous atmospheres
 - i) Oxygen deficiency or oxygen enrichment
 - ii) Combustible/flammable/explosive gases and vapors
 - iii) Toxic gases or vapors
 - iv) Combustible dust
 - b) Engulfment hazards
 - c) Entrapment or configuration hazards
 - d) Mechanical hazards
 - e) Other hazards
 - i) Corrosive chemicals
 - ii) Electrical
 - iii) Access with ladders
 - iv) Lighting (poor visibility)
 - v) Temperature extremes
 - vi) Falling/tripping/insecure footing
 - vii) Falling objects
 - viii) Weather conditions

2. How Confined Space Hazards Occur
 - a) Confined space hazards occur as a result of both natural and man-made sources.
 - b) Sources of confined space hazards include:
 - i) Chemical reactions from products stored in vessels.
 - ii) Oxidation/reduction reactions (i.e., rusting of metals)
 - iii) Decomposition of organic matter
 - iv) Cleaning reagents (solvents, acids)
 - v) Welding, spray painting, grinding, brazing, sandblasting
 - vi) Inerting with non-flammable gases
 - vii) Fire and explosion hazards from organic hydrocarbon based substances
 - viii) Ignition sources from static electricity, hot work operations, electrical equipment
 - ix) Lack of proper training
 - x) Loose materials stored in tank (grain, sawdust, etc.)
 - xi) Pyrophoric chemicals

Identification of Confined Spaces

1. Existing Facilities

If work is to be performed in an existing facility, the host employer shall have the responsibility of identifying confined spaces within that facility. Prior to beginning work, the Superintendent shall contact the host employer to determine the location of all confined spaces within the work area. If confined spaces are present in the facility, the host employer will inform Black Horse Group of any known hazards the host employer has experienced within the confined spaces and of any precautions that have been instituted by the host employer to protect employees in or near the permit space. Upon receipt of information from the host employer, the permit space program will be adapted to address the specific hazards associated with each space.

Where it is necessary for employees of Black Horse Group and the host employer to work simultaneously in a space, the host employer will be responsible for the development and implementation of procedures to coordinate entry operations. Employees of Black Horse Group will follow the procedures of the host employer in cooperating with their efforts to coordinate entry operations if both parties will have personnel working in the space.

All information pertaining to confined spaces should be provided by the host employer to Black Horse Group in writing.

At the conclusion of activities within a confined space, personnel should be prepared to brief the host employer on any hazards encountered or created while working in the confined space.

2. New Construction

Black Horse Group's jobsite superintendent will be responsible for identifying confined spaces. Spaces which fall within the definition of a confined space shall be treated as such and operations will follow the entry procedures outlined below.

Entry Procedures

No person shall enter a confined space without first being instructed as to the nature of the hazards involved, the necessary precautions to be taken, and in the use of protective and emergency equipment required. The following procedures must be followed to provide for the safety of all personnel working within a confined space.

1. Authorization

All persons assigned to enter a confined space must first obtain instruction from their Superintendent and a Confined Space Entry Permit Form. The permit is to be entirely completed and reviewed and signed by the Superintendent to authorize entry before any work in a confined space begins. The duration of the permit shall not exceed the time required to complete the task. Should the job last longer than one shift, a new permit must be issued at the beginning of each shift. The permit's duration can be stated in terms of a specific task to be performed; for example, the removal and installation of a relief valve. The permit must be posted outside the confined space to inform others that an employee is working inside. All permits must be filed in the jobsite office upon their expiration. Permits should be maintained for a period of one year to allow for an annual review of this Confined Space Entry Program.

2. Atmospheric Testing

The atmosphere in the confined space must be tested prior to entry and continuously monitored while the confined space is occupied. Only personnel trained in the use of air-monitoring equipment and its limitations will be permitted to perform pre-entry testing. Air-monitoring equipment must be calibrated prior to each use unless otherwise specified by its manufacturer. A certificate of calibration shall be supplied for all testing and monitoring equipment. The certificate of calibration shall include: type of equipment, model number, date of calibration, firm conducting calibration and individual certifying calibration. Before entry into the confined space, the atmosphere must test within the acceptable ranges as outlined below. It is important to remember that due to the intrinsic

limitations of air monitoring devices, testing must be performed in the order listed below.

Order	Substance	Acceptable Level
1.	Oxygen	19.5% - 23.5%
2.	Explosive gas or vapor	<10% LFL
3.	Explosive dust	<LFL (5 ft. visibility)
4.	Carbon monoxide (CO)	50 ppm
5.	Hydrogen sulfide	10 ppm

All readings should be recorded on the entry permit. If any values fall outside the acceptable range, appropriate corrective actions should be taken. Where additional substances may exist, the appropriate tubes and testing equipment should be used to assure airborne concentrations are within the acceptable range. This range, referred to as the PEL or TWA, can usually be found on the MSDS for the material generating the airborne substance.

Where testing reveals an unsafe atmosphere, appropriate equipment must be used to purge and ventilate the space. If readings cannot be brought into acceptable levels and entry is absolutely necessary, then a self-contained breathing apparatus (SCBA) must be used.

In the event the audible alarm or flashing lights on the monitor are activated, the entrant must exit the confined space immediately. The exception to this rule is if the person is wearing a SCBA.

NOTE: If a flammable atmosphere is present in the confined space, employees must use spark-proof hand tools and explosion-proof equipment.

3. Completion of Entry Permit

Upon completion of the air monitoring, the remainder of the Confined Space Entry Permit may be completed. All items on the permit must be filled in. Wherever possible, observations necessary to complete the entry permit should be made from outside the confined space. Following are procedures which must be completed and logged onto the permit prior to confined space entry:

- a) Before working in the confined space, flange off all incoming and outgoing pipes and lockout all valves and electrical equipment. Lockout and tag all valves in accordance with the lockout-tagout procedure.
- b) All mechanical equipment must also be tagged out and/or blocked to prevent accidental startup of equipment.
- c) Once an entrance cover is removed, the opening must be promptly guarded by a railing, temporary cover, temporary fences, or other

temporary barriers to prevent individuals from falling into a space and to protect the entrant from falling materials.

- d) A means of communication between the entrant and the attendant must be established. Communication may be by voice, radio, visual, or rope.
- e) Appropriate personal protective equipment must be selected to protect the entrant from any hazards inside the space.
- f) Appropriate rescue equipment must be provided to be used in emergency situations.
- g) Names and numbers of emergency response services must be provided.
- h) An adequate lighting source must be provided which is appropriate for conditions inside the space.

4. Emergency Rescue Procedures

Under no circumstances do we expect personnel to enter a permit space where hazards have not been eliminated or effectively controlled. Additionally, we understand that unexpected situations might arise that prevent entrants from self rescue. In response, the following rescue and emergency action plan has been developed and will be strictly enforced. Blue Star A Joint Venture. has decided to utilize off-site entry rescue services in the event rescue is not possible. Non-entry rescue shall be the first and primary option for emergency rescue.

At no time shall a person enter the confined space for rescue purposes without:

- a) Another person stationed outside,
- b) An approved respirator appropriate for the hazards which may be encountered,
- c) A lifeline, and
- d) A safety harness.

5. Attendant

An attendant, who should be trained in first aid and CPR, shall be stationed outside of a confined space at all times during entry operations to monitor activities inside and outside the space. The attendant must order evacuation of the space if he:

- a) detects a prohibited condition;
- b) detects behavioral effects manifested from exposure to atmospheric hazards in the authorized entrant;
- c) detects a condition outside the space that could endanger the authorized entrant; or
- d) cannot effectively and safely perform all required duties of an attendant.

6. Smoking

Smoking is prohibited inside of, and within twenty (20) feet of the confined space.

7. Welding Within a Confined Space

If welding is to be performed in confined spaces that did or do now contain combustibles, all residues including dry scale or sediment must be removed. If it is not possible to remove all combustible materials, they must be covered by a noncombustible blanket.

The following specific procedures are required when welding is performed in a confined space:

- a) Welding electrodes must be removed from their holders during suspension of work (e.g., during lunch or overnight). The welding machine must be disconnected from its power source.
- b) Mechanical ventilation must be provided.
- c) Compressed gas cylinders and welding machines must be left outside the confined space.
- d) Portable equipment on wheels must be secured to prevent accidental movement.
- e) Gas welding and cutting equipment, such as hoses, connections, torches, etc., must be inspected and tested to ensure their integrity.
- f) Means must be available for the quick removal of a welder in the event of an emergency. A full body harness must be used whenever their use will facilitate rescue.
- g) An attendant with a pre-planned rescue procedure must be stationed outside the space.
- h) Torch valves must be closed and the fuel gas and oxygen supply positively shut off at some point outside the space when the torch is not being used for substantial amount of time. Additionally, the torch and hose must also be removed from the confined space where practicable.
- i) Warning signs should be posted warning of hot metal after welding is completed.
- j) Welders and helpers must use appropriate respiratory protection when ventilation controls are insufficient.
- k) Never use oxygen to ventilate a confined space.

8. Multi-Employer Permit Space Entry Operations

Where employees of Black Horse Group and those of another employer are required to work simultaneously within a confined space, efforts will be made to cooperate with the operations of other employers so employees are not endangered by the operations of another employer.

9. Fire Protection

At least one 20 lb. ABC multi-purpose fire extinguisher must be available for instant use in a confined space containing flammable gases or vapors.

10. Training

Every individual involved in confined space entry will receive initial and annual refresher training. The training will be specific for the duties the employee will perform and the procedures and practices necessary to protect them from the dangers of the permit space.

Training will be based on the responsibilities of each individual as outlined below:

- a) Authorized entrants will be trained to:
 - i) Know the hazards associated with the permit space and their effects.
 - ii) Properly use the equipment required for entry.
 - iii) Maintain a continuous means of communication with the attendant.
 - iv) Alert the attendant in the event of an emergency.
 - v) Evacuate the space if an emergency occurs.
- b) Attendants will be trained to:
 - i) Know the hazards associated with the permit space and their effects.
 - ii) Maintain an accurate account of the authorized entrants.
 - iii) Remain in their assigned station until relieved by another attendant or until the permit space entry is complete.
 - iv) Monitor conditions in and around the permit space.
 - v) Summon rescue and applicable medical services in the event of an emergency.
 - vi) Perform non-entry rescue procedures.
 - vii) Perform appropriate measures to prevent unauthorized personnel from entering the permit space.
- c) Superintendents will be trained to:
 - i) Know the hazards associated with the permit space and their effects.
 - ii) Verify that the safeguards required by the permit have been implemented.
 - iii) Verify that rescue services are available and that means for summoning them are operable.

- iv) Cancel the written permit and terminate the permit space entry when required.
 - v) Remove personnel who are not authorized to enter the permit space during entry operations.
 - vi) Periodically determine that the entry operation is being performed in a manner consistent with the requirements of the permit space entry procedures and that acceptable entry conditions are maintained.
- d) All personnel involved in confined space entry will receive training in:
- i) Types of confined space hazards.
 - ii) Components of the confined space program.
 - iii) Components of the entry permit system.
 - iv) Safe confined space welding practices.
 - v) The need for prompt guarding of the entrance opening.
 - vi) Atmospheric testing equipment including its use, calibration, and maintenance.
 - vii) Atmospheric testing protocol:
 - a) Oxygen, combustibles, toxics
 - b) Pre-entry, frequent or continuous testing
 - c) Check all levels of the space
 - viii) Methods for the control or elimination of any atmospheric hazards:
 - a) Draining and rinsing
 - b) Purging and cleaning
 - c) Continuous forced air ventilation
 - ix) Procedures employees must follow if they detect a hazard.
 - x) The evaluation process to be used for reentry if hazards are detected.
 - xi) Train employees on the use of entry equipment.
 - xii) Personal protective equipment required:
 - a) Full body harness
 - b) Respiratory protection
 - c) Eye and face equipment
 - d) Protective clothing

Confined Space Entry Permit

Date and Time: _____ Project Name: _____
 Permit _____ Expiration _____ Time: _____

Permit Space Location and Description: _____

Purpose of Entry: _____

Pre-Entry Checklist

NOTE: The entire form must be completed prior to entry into the confined space.

1. Atmospheric testing: To be conducted in following order.

A. Order Acceptable	Substance	Acceptable Level	Readings	
			Yes	No
1.	Oxygen (O ₂)	19.5% - 23.5%	Yes	No
2.	Explosive Gas or Vapor	< 10% LFL	Yes	No
3.	Explosive Dust	< LFL (5ft visibility)	Yes	No
4.	Carbon Monoxide	< 50 ppm		Yes
No	5. Hydrogen Monoxide	< 10 ppm	Yes	No
	6. Other		Yes	No
	7. Other		Yes	No

B. Continuous forced air ventilation in place where required? NA Yes

No

C. Are explosion-proof tools and equipment required? NA Yes No

D. Is a 20 lb. ABC extinguisher present where required? NA Yes No

2. Control of Hazardous Energy

A. Are all lines to vessel locked out - broken - capped - or blanked? NA Yes

No

B. Are all switches and valves locked or tagged out? NA Yes

No

C. Is all mechanical equipment locked out or tagged to prevent accidental startup? NA Yes No

3. Is opening to confined space adequately protected? NA Yes No

4. Is a means of communication established between entrant and attendant? NA Yes

No

5. Is entrant equipped with appropriate personal protective equipment? NA Yes

No

6. Is each entrant equipped with a harness and lifeline for emergency rescue operations? NA Yes No

7. Are the names and numbers of emergency rescue services readily available? NA Yes

No

8. Is an adequate lighting source, safe for conditions in the space, provided? NA Yes

No

9. Will welding operations be performed within the space? NA Yes No

⇒ If "yes," a Confined Space Hot Work Permit must be completed.

10. Have all personnel received the appropriate training for their duties? NA Yes No

IF NO IS MARKED FOR ANY ITEM, ENTRY OPERATIONS MAY NOT PROCEED.

Superintendent Entry Authorization: _____

Signature of Attendant: _____

Signature of Entrants: _____

Critical Lift Procedures

As defined in EM 385-1-1, a critical lift is:

- 1) A non-routine crane lift requiring detail planning and additional or unusual safety precautions.
- 2) Lifts made when the load weight is 75% of the rated capacity of the crane.
- 3) Lifts which require the load to be lifted, swung or placed out of the operator's view.
- 4) Lifts made with more than one crane.
- 5) Lifts involving non-routine or technically difficult rigging arrangement.
- 6) Hoisting personnel with a crane or derrick
- 7) Any lift which the crane operator believes is critical.

Before making a critical lift, a critical lift plan shall be prepared by the crane operator, lift supervisor and rigger. The Critical Lift Plan shall be completed by the contractor, signed by an officer of the company and submitted to the Contracting Officer's Representative (COR) for acceptance prior to the lift.

****A site specific Critical Lift Plan will be provided if deemed necessary for the project****

Prevention of Alcohol and Drug Abuse Plan

- Reference FAR Supplement 252.223-7004, "Drug Free Work Force"

Black Horse Group (BHG) has established a Safe Work Environment (Drug Abuse) Policy. This policy is part of the corporate policy manual and is reviewed with and acknowledged by each BHG employee on the project. This policy will be posted in a conspicuous location in the project trailer.

Additionally, each subcontractor and supplier is notified of this policy, (letter attached), and their employees are subject to removal from the jobsite for non-compliance.

Blasting Plan

- Reference EM 385-1-1 (3 Sep 96) Section 29.A.01

Before explosive materials are brought to the site, written approval will be obtained from the COE. Further approvals are not needed for replenishment of material as work progresses.

For purposes of this plan, we request that it be completed in two parts. The first, which is attached, is the blasting firm's qualifications and the employee qualifications.

The second part, which will include:

- Handling, transportation and storage procedures for the explosives.
- Loading procedures.
- Signals.
- Delineation of clearance zones.
- Methods of securing site.
- Vibration and damage control procedures.
- Post blast inspection procedures.
- Post blast ventilation requirements.
- Mis-fire procedures.

We propose to submit the second part after mobilization to the site to permit investigation of the existing site conditions, which will allow the development of an accurate blasting plan.

Energized Line Work Plan

Electrical work shall not be performed on or near energized lines or equipment unless specified in the plans and specifications and a Plan has been submitted in writing to the COR for his approval. The Plan shall describe the method of operation and the equipment to be used on the energized lines.

Proper certification from an approved source certifying the safe condition of all tools and equipment will be provided with the plan. The work shall be planned and scheduled so that proper supervision is constantly maintained.

Emergency procedures, including communication for disconnecting power in the event of an accident shall be outlined in the plan.

No work on lines greater than 600 volts will be performed from the pole or without the use of an insulated bucket truck.

No work will be done on overbuilt lines while underbuilt lines are energized except for temporary isolation and switching.

The Contractor will review the plan with the COR prior to being granted permission to perform the work.

If approved by the COR, the following work may be performed with the lines energized using certified hot line equipment on lines above 600 volts, when the following conditions have been met:

- a) Work below the conductors no closer than the clearance required in EM 385-1-1 from the energized conductors.
- b) Setting and connection of new pre-trimmed poles in energized lines which do not replace an existing pole.
- c) Setting and removing transformers or other equipment on poles.
- d) Installation or removal of hot line connectors, jumpers, dead-end insulators for temporary isolation, etc., which are accomplished with hot line equipment from an insulated bucket truck.

Upon request by the Contractor, arrangements will be made for de-energizing lines and equipment so that the work may be performed. All outages shall be requested through the COR a minimum of 14 days, unless otherwise specified, prior to the beginning of the specified outages. Dates and Durations will be specified.

Traffic Control Plan

- No excavation whether minor or major including utility connections, material deliveries that could avert vehicle traffic on adjacent public roads, trenching, sidewalk replacement, etc. will be permitted without an approved digging permit. No road closure will be permitted without an approved permit. A traffic control plan shall be submitted to the COR 14 days prior to utility connections or material deliveries.
- Extreme care shall be taken to avoid contact or damage with any known or identified underground utilities. Roads shall only be closed one lane at a time and vehicular traffic shall be allowed to pass through the construction area.
- Work on or near roadways shall be flagged in accordance with the safety requirements in EM 385-1-1. Work located along the alert force route shall not cause blockage and unobstructed access shall be maintained for alert force traffic at all times.

If the work continues beyond the original permit expiration date, the Contractor shall reapply for renewal of required work permits.

Hazardous Energy Control Plan (Lockout/Tagout)

Introduction

This document establishes the requirements and procedures for isolating potentially hazardous energy during installation, service, or maintenance of machines and equipment in which the unexpected startup or the release of stored energy could cause injury to employees. These machines will be tagged or locked out before any employee performs any service or maintenance if unexpected startup or release of stored energy could cause injury.

Before any servicing or maintenance on a system where the unexpected energizing, start-up or release of kinetic or stored energy could occur and cause injury or damage, the system shall be isolated in accordance with EM 385-1-1, Section 12 "Control Of Hazardous Energy (Lockout/tagout)".

Implementation of hazardous energy control procedures shall not be initiated until the hazardous energy control plan has been accepted by the COR.

Responsibility

The jobsite superintendent will have overall responsibility for the lockout-tagout program, and is in charge of the lockout-tagout procedure including helping other employees locate, lock and tag valves, switches, etc.

Supervisors are responsible for the enforcement of all jobsite safety rules. All shop employees and traveling maintenance personnel, including new or transferred employees, shall be trained in the scope, identification, and significance of the lockout procedures.

Training

Each employee who will be involved in lockout-tagout shall be given training by the designated jobsite superintendent before performing work on any mechanical, electrical, pressurized, etc. system.

Preparation for Lockout-Tagout

The jobsite superintendent should conduct a survey to locate and identify all energy isolating devices. They should be certain switches, valves, or other isolating devices apply to the equipment. The lockout-tagout procedure involves, but is not limited to, electricity, motors, steam, natural gas, compressed air, hydraulic systems, digesters, sewers, etc.

Lockout Tagout Restrictions

1. The isolating devices locked and tagged must include all of the devices which control energy, must be singularly identified, and must not be used for any other purpose.
2. Locks, hasps, and tags must be able to withstand any kind of adverse environment in which they may be used. Tags which are to be located in adverse conditions must not deteriorate to a point where they become illegible.
3. Lockout requirements are not met by the removal of fuses.
4. Locks and tags are not to be removed by any person other than the individual who applies the lock.
5. No employee shall rely on another employee's lock or tag.

Procedures of Lockout-Tagout System

1. The lockout tag is to be completed before any work is performed. The tag shall consist of the following information:
 - a) Date and time lock was installed.
 - b) Name of employee who applied the lock and tag.
 - c) Name of employee's employer.
 - d) Phone number.
 - e) Review and compare visual identification data with the specific written procedures for the equipment and machinery.
 - f) More than one energy source may be involved.
2. Notify all affected employees that a lockout-tagout system is going to be used and the reason for it. The authorized employee shall know the type and magnitude of energy connected to the machine or equipment and understands the hazards.
3. If the machine or equipment is operating, shut it down by normal stopping procedure.
4. Operate all switches, valves, or other energy isolating devices so that the equipment is totally isolated from its energy sources. Stored energy (such as that in springs, elevated machine members, rotating flywheels, hydraulic systems, and air, gas, steam, or water pressure, etc.) must be dissipated or restrained by methods such as repositioning, blocking, bleeding, disconnecting, etc.

5. Place a lock on each energy isolating device. Only authorized employees may attach the locks. The locks must hold the energy isolating devices in a "safe" or "off" position. Attach "Danger Do Not Operate" tags to each lock. On the tag write the name of the employee, employer, date and time of attachment, and phone number.
6. If more than one individual is required to lockout and tag the equipment, each person must place a separate lock or tag on each energy isolating device. When an energy isolating device cannot accept multiple locks or tags, a multiple lock hasp must be used. Individual locks are removed as each person no longer needs to maintain lockout protection.
7. *No Employee May Remove The Lock Of Another Employee.*
8. After verifying that no personnel are exposed, and as a check on having disconnected the energy sources, operate the push button or other normal operating controls to make certain the equipment will not operate.
9. The system is now properly locked out. CAUTION: Return operating control(s) to "neutral" or "off" position after the test.
10. Implement a tagout system if a lock cannot be utilized. The tag is to be attached so it will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited. Employees are to be trained in the following limitations of the tagout system:
 - a) Tags are warning devices and do not provide the physical restraint a lock does.
 - b) Tags are not to be removed without authorization of the authorized person responsible for them.
 - c) Tags must be legible, understandable and made of a material which will withstand the environmental conditions.
 - d) Tags are to be securely attached so that they cannot be inadvertently or accidentally detached during use.
11. Where a tag cannot be attached directly to the energy isolating device, the tag is to be located as close as safely possible to the device in a position immediately obvious to anyone attempting to operate the device.

Sequence for Restoring Machines to Normal Operation

1. When working on equipment that requires “inching” or “jogging” to move parts for adjustment or maintenance, special attention at the energy source must be continued until work is completed. Special attention involves an employee stationed at the primary disconnect switch (the energy source) during “inching” and “jogging.” In the event the secondary switch should fail, he would switch the primary disconnect off.
2. After servicing and/or maintenance is complete and equipment is ready for normal operation, check the areas around the machines or equipment to ensure that no one is exposed.
3. After checking that all tools have been removed from the machines or equipment, guards have been reinstalled and employees are in the clear, notify the designated lockout/tagout coordinator before the removal of the tag and lock.
4. After authorization is given, remove all locks and tags. Operate the energy isolating devices to restore energy to the machine or equipment.

If An Employee Forgets To Remove a Lock or Tag

No employee may remove the tag or lock of another employee. The only exception to this is if an employee has forgotten to remove the lock and is not available to do so. The designated lockout-tagout coordinator is the only person who may remove a lock or tag and then only after he/she verifies that:

1. It is safe to restore the energy to the machine or equipment,
2. The authorized employee who applied the device is not at the facility,
3. All reasonable efforts are made to contact the authorized employee, and
4. The authorized employee knows his or her lock and tag was removed before he or she resumes work at the facility.

Definitions

Affected Employee: An employee whose job requires operation or normal use of a machine or piece of equipment which may be locked out, or one whose job requires work in an area where a machine or piece of equipment is locked out.

Authorized and Designated Lockout-Tagout Coordinator: A person authorized and designated by the project superintendent for contacting the owner's representative to identify all systems to be locked-tagged out, and then assist other authorized employees to locate and lockout-tagout valves, switches, etc.

Authorized Employee: A person who locks out and tags, or tags out a machine or piece of equipment in order to perform service or maintenance on that piece of equipment. An authorized employee and an affected employee may be the same person when the affected employee's duties also include performing maintenance or service on a machine which must be locked out.

Capable of Being Locked Out: An energy isolating device is capable of being locked out:

- If it can be held in the off or safe position by placing a lock, hasp, or similar part into it,
- If it has a built-in lock which holds the device in the off or safe position, and/or
- If a lock can be placed to hold the device in the "off" or "safe" position without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.

Energy Isolating Device: A mechanical device that physically prevents the transmission or release of energy, such as valves, manually operated electrical switch boxes, disconnect switches, blocks, and any similar device used to block or isolate energy. The term does not include push button, selector switch, and other devices.

Energy Source: Any electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.

Lockout: The placement of a lock and tag on an energy isolating device, in accordance with established procedure, so the energy isolating device and the equipment being controlled cannot be operated until the lock is removed.

Service and/or Maintenance: Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, maintaining, and servicing machines or equipment. These activities include lubrication, cleaning, unjamming, adjustments or tool changes, where the employee may be exposed to unexpected energizing, start up, or a release of hazardous energy.

Tag: A prominent warning device which can be securely fastened to any energy isolating device to indicate that the energy isolating device and the equipment being controlled may not be operated until the tag is removed. The tag must include the name of the employer, name of employee, and date of attachment.

Access/Haul Road Plan

A plan shall be submitted to the COR days prior to utility connections or material deliveries. The plan shall address the following items:

- a) Equipment usage, traffic density and hours of operation.
- b) Road layout and widths, horizontal and vertical curve data and sight distances.
- c) Sign and signal person requirements, road markings and traffic control devices.
- d) Drainage controls.
- e) Points of contact between vehicles and the public and safety controls at these points of contact.
- f) Maintenance requirements including roadway hardness and smoothness and dust control.

Temporary Electric and Lighting Plan

- Temporary electrical distribution systems and devices shall be checked and found acceptable for polarity, ground continuity and ground resistance before initial use and after modification. GFI outlets shall be installed and tested with a GFI circuit tester (Tripping Device) prior to use. Portable and vehicle mounted generators shall be inspected for compliance with EM 385-1-1 and NFPA 70. All electrical equipment located outdoors or in wet locations shall be enclosed in weatherproof enclosures in accordance with EM 385-1-1. Records of all tests and inspections will be kept by the contractor and made available on site for review by the designated authority. Submit a temporary power and lighting plan with sketches to the COE 14 days prior to installation.

Rigging

- 1) Inspection and Use of Rigging Equipment
 - a) Rigging equipment shall be inspected by a Competent Person before each shift and as necessary during its use.
 - b) Damaged or defective rigging shall be removed from service immediately.
 - c) When rigging equipment is not being used, it shall be removed from the work area.
 - d) Be cognizant of the load to be lifted or moved, choose appropriate equipment.
- 2) Qualifications
 - a) Any worker engaged in the duties and the performance of rigging shall be a Qualified Rigger.
 - i) Be at least 18 years old
 - ii) Be able to communicate and demonstrate effectively interaction with the crane operator, lift supervisor, signal person and affected personnel on site.
 - iii) Have basic knowledge and understanding of equipment-operating characteristics, capabilities, and limitations.
 - iv) Prior to specific activity or task, documentation of rigger qualifications shall be provided to the GDA.



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Hazard Analysis -FEATURE: CAULKING

Hazard Analysis - FEATURE: CAULKING
VV912HP-15-C-0010 NA

07 Jan 2016

SFO - MARFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
A. RAC for this task is M		
Applying Caulking	Aerial Lifts	SEE AERIAL LIFT CONTROLS BELOW
	Personal Protection	1. PPE: Hard Hats, Safety Glasses, Hi Visibility Vests, Steel Toe Boots and Proper clothing shall be worn.
	Stooped Postures	Worker awareness towards posture and identify areas that will cause strain to lower back.
Caulk Removal	Aerial Lifts	1. Make sure operators of aerial lifts are properly trained in the safe use of the equipment. 2. Maintain and operate elevating work platforms in accordance with manufactures instructions. 3. DO NOT override hydraulic, mechanical or electrical safety devices. 4. Use a body harness with a lanyard attached to the attachment points provided. Do not attach lanyards to the basket or boom. 5. Never move the equipment with workers in an elevated platform unless this is permitted by the manufacturer. 6. Maintain a minimum clearance of at least 10' or 3 meters, away from the nearest energized power lines. 7. Set brakes and use wheel chocks when on an incline. 8. Use outriggers if provided. 9. Do not exceed the load limit of the equipment. Allow for the combined weight of workers, tools and materials.
Driving to and from jobsite	Motor Vehicle Accident	Wear Prescription Lenses, if required, and seatbelt. Do not talk on your phone or text while driving. Verify that an equipment is working properly. Stay alert for pedestrians, bicyclists, and other motor vehicles.
Striking Caulk	Severe cuts to fingers	Do not strike using bare fingers; use a rag or the striker on the caulking tube.
Using Interior Scaffolding	Scaffolding collapsing: Falling from scaffolding.	Verify that scaffolding is properly assembled and wheels locked. Use safety rails properly. Verify a safe means of climbing on/off scaffolding.
Using Step Ladder	Ladder Collapsing: slipping/ falling from ladder	Inspect ladder before use. Use ladder of proper height. Make sure ladder is properly assembled, locked, and standing on level ground. Do not exceed weight limit for ladder. Do not stand on top of ladder or on top rung.
Using a scraper	Severe cuts from scraper	Do not strike towards another worker or towards yourself. Wear gloves and long sleeves to protect skin. Keep tools in good condition. Use Caution.
Working in area of pedestrian traffic	Pedestrians knocking over ladder, opening door into worker	Secure area with cones and tape before beginning work. Notify personnel inside that work will be performed in an area. Use signs on doors to notify people of work inside.



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Hazard Analysis -FEATURE: CAULKING

Hazard Analysis- FEATURE: CAULKING
V1912HP-15-C-0010 NA

07 Jan 2016

SFO - MARFORRES

Equipment to be used	Inspection Requirements	Training Requirements
Ladder Caulk Gun Scraper Knife Aerial Lifts Safety Harness shall be used	Check ladder for wear Check scraper for damage Check the knife and verify it locks and is sharp Aerial Lifts are to be inspected daily and immediately following any malfunction.	Trained Operators Required



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Hazard Analysis- FEATURE: CLEANING

Hazard Analysis - FEATURE: CLEANING
W912ff>-15-C-0010 NA

07 Jan 2016

SFO - MA.RFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
A. RAC for this task is M	PPE	<p>PPE.</p> <ol style="list-style-type: none"> 1. The following PPE are required at all times. Hard Hats, Safety Glasses, Hi Visibility Vests and Steel Toe Boots. 2. Additional PPE is required for individual tasks and is addressed in the Recommended Controls sections to follow.
B. cleaning Metal Frame Components	1. Aerial Lifts	<ol style="list-style-type: none"> 1. Maintain and operate elevating platforms according to the manufacturers instructions. 2. Assure that workers operating lifts have been properly trained in the safe use of the equipment. 3. Do not allow workers to position themselves between overhead hazards such as joists and beams, and the rails of the basket. Movement of the lift could create a caught between condition. 4. Always treat power lines, wires and other conductors as energized, even if they are down and appear to be insulated. Maintain a minimum clearance of at least 10' away from the nearest energized overhead lines. 5. Use a body harness with lanyard attached to the provided anchor points. Do not attach directly to the boom or the basket. 6. Set the brakes and use wheel chocks when on an incline. Use outriggers if provided. 7. Do not exceed the load limits of the equipment. Allow for the combined weight of the worker, tools and materials.
	Dust Irritant	<ol style="list-style-type: none"> 1. Safety Glasses, Goggles or Face Shields shall be used during all sanding and grinding processes. 2. NIOSH approved respiratory protection shall be properly fitted and used. 3. Vacuum dust collection may be considered.
	Falls From Ladders.	<ol style="list-style-type: none"> 1. Choose the right ladder for the task. 2. Tie the top and bottom of the ladder to fixed points when necessary 3. Don't carry tools or other materials in-hand while climbing ladders.
C. cleaning Metal Door Frames	Chemical Cleaners	<ol style="list-style-type: none"> 1. The use of chemical cleaners may be required. The use of rubber gloves shall be used to prevent the possibility of chemical burns. 2. Safety Glasses, Goggles or Face Shields may be necessary.
	Dust Irritant	<ol style="list-style-type: none"> 1. Sanding procedures will create dust and proper fitting and use of NIOSH approved respiratory protection may be required
D. cleaning Concrete	Chemical Burns	<ol style="list-style-type: none"> 1. Rubber gloves and face shields shall be used during this process. 2. Cleaning chemicals shall be prepared in accordance with the manufacturers written directions. 3. SDS shall be reviewed prior to beginning this process and at the start of a new days work.



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Hazard Analysis- FEATURE: CLEANING

Hazard Analysis- FEATURE: CLEANING
V19121-P-15-C-0010 NA

07 Jan 2016

SFO - M<\RFffires

Equipment to be used	Inspection Requirements	Training Requirements

Hazard Analysis - FEATURE: CONCRETE

07 Jan 2016

Hazard Analysis - FEATURE CONCRETE
W19121-P-15-C-0010 NA

SFO - rv/ARFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
A. RAC for this task item is M	FPE	1. FPE for this task item includes but is not limited to Hard Hats, Safety Glasses, Hi Visibility Vests, Protective Clothing and Steel Toe Boots. 2. Additional PPE required will be listed in the Potential Hazards Recommended Controls.
B. Demolition / Saw Cutting	Silica exposure	1. Use Wet Cutting to reduce employee exposures to silica dust. 2. Vacuum (Jst Collecting tray also be used. 3. PPE If wet cutting is not appropriate or feasible, a properly fitted NIOSH-approved half face piece or disposable respirator equipped with an N-, R-, or P.95 filter may be required.
	Strains / Sprains associated with improper lifting techniques.	1. Use proper lifting techniques. 2. Reduce demolished items into small pieces for ease in handling. 3. The use of equipment such as Skid-Steer or Forklifts will aid in transport of debris to proper disposal locations. 4. Wear gloves when handling concrete and wood debris.
	Struck By Flying Debris / Splinters / Structures	1. The use of face shields may be required during concrete breaking processes. 2. Use cones or barricades to establish a safe distance of access by non-work essential personnel. 3. Choose the correct breaking equipment in order to keep flying debris to a minimum. 4. During demolition of wood structures, be sure to wear gloves to prevent splinters and punctures by old fastening
C. Formwork / Rebar	Impalement / Structure	1. Provide and install rebar caps where required. 2. Assure an adequate number of rebar caps are on site prior to the rebar installation activity.
	Sprains / Strains	1. Use proper lifting techniques when handling and placing forms. 2. Recut rebar to required lengths prior to placement, eliminating the need to transport heavy, bulky materials to the installation site. 3. Bend from the knees when installing forms and placing rebar.
	Trips and Falls (housekeeping)	1. Keep the work area free of msc. materials not required for forming activities. 2. Keep cutting and fabricating processes a safe distance from forming locations. 3. Initial and daily inspection of all associated tools shall be performed.
D. Concrete Testing	Chemical Burns	1. Rubber gloves shall be worn while gathering and testing concrete samples. 2. Safety Glasses or Goggles are required.
	Struck By	1. Have an employee not directly involved with the concrete testing activity control the chute to prevent the chute from striking the head or body of the testing agency taking samples.
E. Concrete Placement	Chemical Burns	1. Wear rubber boots and gloves as required. 2. Should contact with the skin occur, flush area with fresh potable water as soon as possible. 3. Review MSDS / SDS prior to any concrete placement and follow additional precautions contained therein
	Concrete Splatter	1. Employees operating chutes and vibrators may require face shields in addition to the Safety Glasses required under Recommended Controls section of Principle Step A.
	Concrete Trucks	1. Confirm back up alarms and all safety controls are in working order. 2. Maintain eye contact with the driver during all positioning procedures. 3. Do not permit the driver to dispense concrete from the driver's seat unless the truck is of the front discharge type.
	Electric Shock	1. GFCIs shall be used. 2. If electric concrete vibrators are used, be sure to inspect cords and switch operation prior to placing concrete. 3. Assure generators have been checked for polarity and grounded. 4. Use double insulated tools when possible.
F. Concrete Curing	Inhalation / Dermal Contact	1. Review MSDS / SDS prior to application of curing compounds. Follow any additional PPE requirements contained therein.



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Hazard Analysis -FEATURE: CONCRETE

Hazard Analysis - FEATURE CONCRETE
W9121-P-15-C-0010 NA

07 Jan 2016

SFO- rv/ARFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
G. Protection	Damage to Concrete	1. Provide adequate barriers to keep persons from entering the concrete placement location to prevent accidental contact with fresh concrete resulting in damage and possible personal injury. 2. As soon as possible, cover curing concrete with sturdy material to prevent indigenous mammals from coming in contact with concrete that may result in an unsatisfactory finish resulting in repair and or replacement.



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Hazard Analysis -FEATURE: CONCRETE

07 Jan 2016

Hazard Analysis- FEATURE: CONCRETE
V19121-P-15-C-0010 NA

SFO - IV1<RFORRES

Equipment to be use d	Inspection Requirem ents	Training Requirements
1. Pow er tools 2. Skid Steer Loader 3. Generator s 4. Concrete trucks 5. Demo saw s	1. Initial and daily inspection of tools. Remove from service any defective tools 2. Initial and daily inspection of equipment 3. Assure generators are checked for polarity and are grounded prior to use 4. Initial and daily inspection of equipment once on site. Truck operators ensure their equipment is in safe working condition before being dispatched. 5. Initial and daily inspection prior to use. Check all guards and safety controls for proper function.	1. Employees shall be trained in the safe use of hand and power tools 2. Only qualified persons shall operate equipment 3. Trained Personnel 4. Certified Operators 5. Trained Personnel



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Hazard Analysis- FEATURE: DOORS & HARDWARE

07 Jan 2016

Hazard Analysis- FEATURE: DOORS & HARDWARE
V19121-P-15-C-0010 NA

SFO - 1\A\IRFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
A. RAC for this item is L	FfE	FfE for this task item includes but is not limited to: hard hats, Safety Glasses, High Visibility Vest, Protective Clothing and Steel Toe Boots.
B. Hardware Installation	Electrical Shock	1. GFCIs shall be used for all electrical power tools. 2. Power tools and cords are to be inspected prior to starting the task. 3. Use double insulated tools when possible.
	Falls from Ladders	1. Choose the right ladder for the job, is it the correct height? Are all labels in place and legible? 2. Do not carry tools when climbing ladders. 3. Protect from accidental swinging or opening of doors with the use of wedge door stops or deadmen. 4. Assure proper bracing for ladders to prevent tipping or slipping of the ladder.
Door Adjustment	Falls from Ladders	1. See Recommended Controls as detailed in Hardware Installation
	Struck By	1. Assure accidental closing or slaming of the door is protected by use of wedges or deadmen. 2. Restrict access to the work area by personnel not involved with this task using cones, barricades or non-working spot



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Hazard Analysis- FEATURE: DOORS & HARDWARE

Hazard Analysis- FEATURE: DOORS & HARDWARE
V19121-P-15-C-0010 NA

07 Jan 2016

SFO - MCRFORRES

Equipment to be used	Inspection Requirements	Training Requirements
Ladders Electrical Tools Hand Tools	Initial and daily inspections shall be conducted. Check for proper labels and load limitations. Inspect all electrical power tools for damage prior to commencement of this task and remove from service any suspect tools and cords. GFCIs shall be used at all times. Initial and daily inspection of all hand tools will be conducted and any damaged tools shall be removed from service	Workers using ladders shall be properly trained in the safe use of each type of ladder required for each task,



US Army Corps
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Hazard Analysis - FEATURE: ELECTRIC

07 Jan 2016

Hazard Analysis - FEATURE B...S:TRIC
W9121-P-15-C-0010 NA

SFO- r/ARFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
EXTERIOR BULB REPLACEMENT	Aerial Lifts	1. Make sure operators of aerial lifts are properly trained in the safe use of the equipment. 2. Maintain and operate elevating work platforms in accordance with manufacturer's instructions. 3. DO NOT override hydraulic, mechanical or electrical safety devices. 4. Never move the equipment with workers in an elevated platform unless this is permitted by the manufacturer. 5. Maintain a minimum clearance of at least 10' or 3 meters, away from the nearest energized overhead lines. 6. Use a body harness with a lanyard attached to the attachment points provided. Do not attach lanyards to the basket or boom. 7. Use outriggers if provided. 8. Set brakes and use wheel chocks when on an incline. 9. Do not exceed the load limit of the equipment. Allow for the combined weight of workers, tools and materials.
	Electrical Shock	1. LOTO prior to removal and installation of replacement bulbs. 2. Use nonconductive ladders. 3. Initial and daily inspection of all tools associated with this activity. 4. FE Hard hats, safety glasses, gloves and proper work clothing shall be used.
	Slips and Falls	1. Use extreme caution setting and using ladders. Wet conditions will create very slippery conditions. 2. Use the proper size ladder for required task.
EXTERIOR BULB REPLACEMENT ON LIGHT FIXTURE	ELECTROCUTION	1. THIS ACTIVITY WILL NOT BE PERFORMED UNTIL A COMPETENT PERSON HAS ASSESSED AND SERVICE INTERRUPTION HAS BEEN SCHEDULED. 2. THIS ACTIVITY WILL HAVE AN ADDITIONAL, INDIVIDUAL SAFETY MEETING AND JHA PRIOR TO ANY WORK BEING PERFORMED.
FIXTURE REPLACEMENT	Aerial Lifts	1. Review the Controls listed above. 2. A spotter will be required to assure no damage to entry doors and equipment stored inside.
	Cuts and Abrasions	1. Use gloves during demolition to guard against sharp edges and potential broken glass.
	Dust Irritant	1. The use of respiratory equipment may be required as the existing fixtures are old and may create a dust irritant situation.
INTERIOR BULB REPLACEMENT	Electrical Shock	1. LOTO procedures will be followed prior to any demolition and throughout installation of replacement fixtures. 2. Nonconductive tools and PPE shall be used. 3. GFCI will be used at all times.
	Electrical Shock	1. Implement LOTO procedures prior to and for the duration of bulb replacement. 2. Use nonconductive ladders and tools.
	Falls	1. Select the correct size ladder to provide adequate access without over reaching. 2. Check ladder footing for loose carpets, rugs etc to insure proper ladder stability.



US Army Corps
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Hazard Analysis - FEATURE: ELECTRIC

07 Jan 2016

Hazard Analysis- FEATURE: B...S:TRIC
V\19121-P-15-C-0010 NA

SFO - M\RFORRES

Equipment to be used	Inspection Requirements	Training Requirements
Electric hand tools Man lift Safety Harnesses shall be used.	Initial and daily inspection Man Lifts are to be inspected daily and immediately following any malfunction. Safety Harnesses shall be inspected daily for signs of wear and be removed from service should any defects be found.	Weekly safety meetings Trained operators required. Trained operators required.



US Army Corps
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Hazard Analysis- FEATURE: FENCING

Hazard Analysis- FEATURE: FENCING
W19121-P-15-C-0010 NA

07 Jan 2016

SFO - 11th AFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
A. RAC for this activity is M	FfE	1. FfE required includes but is not limited to hard hats, Safety Glasses, High Visibility Vests, Steel Toed Work Boots. 2. Additional FfE requirements are listed in the Recommended Controls for the hazards listed.
B. Materials Handling	Cuts and Abrasions	1. Wear gloves and protective clothing as recommended by the wire manufacturer. 2. Secure wire bundles to prevent uncoiling during transport.
	Sprains and Strains	1. Use proper lifting techniques including assistance from others if the load is too bulky to be properly lifted by one person. 2. Use specialized equipment to locate materials closer to the activity. 3. Material Handling will follow the criteria in 8v385-1-14. A
C. Fence Fast Replacement	Concrete Hazard	1. Use respiratory protection when handling and mixing ready mix concrete. 2. Wear rubber gloves when mixing and placing concrete to avoid chemical burns. 3. MSDS / SDS will be reviewed prior to concrete applications. 4. Safety glasses shall be worn at all times.
	Fall From Ladders	1. Inspect ladders prior to use and assure all labels are intact and legible. 2. Select the proper height ladder. 3. Do not load ladders beyond their maximum intended load per their manufacturer's rated capacity. 4. Assure ladder foundation is sound. 5. Use barricades to keep traffic away from this activity.
	Struck By Hazard	1. Use equipment to extract the existing fence pole and assure proper restraints to prevent the pole from tipping / falling and striking a worker.
D. Barbed Wire Removal	Cuts and Punctures	1. Appropriate clothing and gloves will be worn at all times. 2. Wire shall be coiled in small coils to facilitate safe handling from the task area to the disposal area. 3. Safety glasses shall be worn at all times.
	Falls from Ladders	1. See Fall from Ladder in Fence Fast Replacement section. 2. Many of the areas of barbed wire removal are on grass areas. Extra attention will need to be paid in these areas due to freezing and thawing conditions. 3. Assure proper footing stability at each ladder location. If a ladder is left for an extended time during the process, recheck the footing stability will be required.
	Struck By	1. Several areas of the barbed wire removal have vegetation intertwined in the 3 strands of wire. It is imperative the vegetation be cut and/or removed prior to removal of the wire to prevent the possibility of the wire to "snap or spring" back and strike
E Barbed Wire Installation	Falls from Ladders	1. See controls listed in Fence Fast Replacement 2. A spotter may be required during the fastening process.



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Hazard Analysis -FEATURE: FENCING

07 Jan 2016

Hazard Analysis- FEATURE: FENCING
V19121-P-15-C-0010 NA

SFO - IV1<RFORRES

Equipment to be use d	Inspection Requirem ents	Training Requirements
Skidsteer rand Tools Ladders	1. Initial and daily inspection of equipment is required. 2. Hand tools are to be inspected prior to use and should any defects be found they shall be removed from service. 3. Ladders are to be inspected prior to use, labels shall be in place and legible. Ladders shall be selected for proper size and load requirements. 4. Ladders found to have any defects shall be removed from service.	1. Only trained personnel shall operate equipment. 2. Personnel using ladders shall be trained in the proper and safe use.



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Hazard Analysis -FEATURE: FLOORING

Hazard Analysis- FEATURE: FLOORING

V\19121-P-15-C-0010 NA

07 Jan 2016

SFO - M\RFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
Installation of Flooring	A. Lifting Techniques	1. Train personnel for proper lifting techniques. 2. Use lifting equipment as necessary.
	B. Skin Protection	1. Protective clothing, gloves and footwear used. 2. IVSOS sheets reviewed at safety meeting.
	C. Personal Injury	1. Wear gloves when removing or cutting carpet 2. Wear Protective Clothing 3. Wear Eye Protection 4. Wear Knee Pads when working on the ground
	D. Housekeeping	1. Work areas to be kept clear of construction material and debris. 2. No flammable materials to be stored in the building.
	E Breathing Hazards	1. Use of proper respirators if needed.



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Hazard Analysis -FEATURE: FLOORING

Hazard Analysis- FEATURE: FLOORING
V\19121-P-15-C-0010 NA

07 Jan 2016

SFO - M\RFORRES

Equipment to be used	Inspection Requirements	Training Requirements
1'-and tools	Daily inspection of tods	Weekly safety rreetings



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Hazard Analysis -FEATURE: GENERAL

Hazard Analysis- FEATURE Ge.ERAL
W9121-P-15-C-0010 NA

07 Jan 2016

SFO - rv/ARFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
General Contract Requirements	Military Ordnances	1. Stop work, shut off equipment. 2. Move away from area. 3. Post watches to keep others away. 4. Report finds immediately to base.
	Personal Injury	1. Hardhats and eye protection required. 2. Steel toes boots required. 3. High Visibility Vests required.
	Public Safety	1. Drivers obey posted speed limits



US Army Corps
of Engineers

Hazard Analysis -FEATURE: GENERAL

Hazard Analysis- FEATURE: GB-ERAL
V\19121-P-15-C-0010 NA

07 Jan 2016

SFO - MRFORRES

Equipment to be used	Inspection Requirements	Training Requirements
Hand tools	Daily inspection of tools	Weekly safety meetings

Hazard Analysis - FEATURE: MASONRY

07 Jan 2016

Hazard Analysis - FEATURE MASONRY
W19121-P-15-C-0010 NA

SFO- rV'ARFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
A. RAC for this task is M	FPE	<ol style="list-style-type: none"> The following FPE is required at all times: Hard Hats, Safety Glasses, High Visibility Vests, Proper Clothing and Steel Toe Boots. Additional FPE may be required for individual tasks and is addressed in the Recommended Controls sections to follow.
B. Brick and Mortar Removal	Cuts and Abrasions	<ol style="list-style-type: none"> Wear proper clothing to prevent cuts and abrasions from flying debris. Wear gloves when handling brick pieces.
	Electrical Shock	<ol style="list-style-type: none"> GFCIs shall be used at all times. Inspect power tools and extension cords prior to beginning the task. Remove from service any frayed, cut or otherwise damaged tools or cords. Assure generators have been checked for polarity and are grounded. Use double insulated tools whenever possible.
	Silica Exposure	<ol style="list-style-type: none"> Joint grinding can result in employee exposure to silica dust. Wet cutting is not practical in this task and the use of Vacuum Dust Collecting methods should be considered. Additional FPE: If Vacuum Collecting is not a practical or feasible, the use of a properly fitted NIOSH-approved half face piece or disposable respirator equipped with an N-, R-, or F95 filter may be required.
	Struck by Flying Debris	<ol style="list-style-type: none"> Due to the brittle nature of the brick to be removed, face shields may be required. Use cones or caution tape to establish a safe distance of access by non-work essential personnel. Select the correct breaking equipment in order to keep flying debris to a minimum.
C. Brick Replacement	Chemical Burns	<ol style="list-style-type: none"> Wear protective gloves when mixing mortar for brick installation. Immediately flush any contact areas with fresh potable water. Review MSDS/SDS prior to mixing mortar and follow additional precautions contained therein.
	Cuts and Abrasions	<ol style="list-style-type: none"> Inspect hand tools prior to use and remove from service any tool showing excessive wear or defect. Use gloves whenever practical and extra caution when making final brick placement.
	Silica Exposure	<ol style="list-style-type: none"> Silica exposure is possible when mixing mortar for brick replacement.



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Hazard Analysis- FEATURE: MASONRY

Hazard Analysis- FEATURE: MASONRY

V\19121-P-15-C-0010 NA

07 Jan 2016

SFO - M\RFORRES

Equipment to be use d	Inspection Requirem ents	Training Requirements
1\..brtar mxers M3sonry saw s mosaw 8ec tric tools	1. Initial and daily inspection of mxers. 2. Initial and daily inspection of masonry saw s. Assure all gurards are in place and functioning properly. 3. Initial and daily inspection of demo saw s. Assure all guards are place and functioning properly. Have a certified fire extinguisher in close proxmty. 4. Initial and daily inspection of all power tools and cords. Remove any suspect items from service.	1. Only trained employees shall operate mxers. 2. Errployees shall have proper training prior to use. 3. Only trained empyees shall operate demo saw s. 4. Assure employees have been trained in the safe use of all tools required for each task.



US Army Corps
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Hazard Analysis - FEATURE: MECHANICAL

07 Jan 2016

Hazard Analysis - FEATURE MECHANICAL
W9121-P-15-C-0010 NA

SFO- r/ARFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
A. RAC for this task item is L	FPE	1. The following FPE is required at all times. Hard Hats, Safety Glasses, High Visibility Vests, Steel Toe Boots and Roper clothing. 2. Any additional FPE required will be addressed in the Recommended Controls sections to follow.
B. Strainers and Loop Roping Check and Service	1. Electric Shock	1. Verify any and all disconnects are in the off position prior to beginning work. 2. Test conductors before starting task items to insure the absence of power to work area. 3. Initial inspection of any required power tool shall be performed before work begins and at the start of each work shift. 4. Should any tools or cords be found to have any defects, immediately remove the tools and or cords from service.
	2. Property Damage	1. The locations of the WSI-Ps are in finished areas. Roper protection of all finished areas shall be maintained. 2. Roper containers shall be used as necessary to capture any water dispensed during the strainer cleaning process. 3. Hoses, if necessary, shall be used to control water expulsion into appropriate containers. 4. All areas of work shall be left in undamaged condition. Should any damage occur, it will be the responsibility of the contractor to repair the damage to a like new condition.
	3. Housekeeping	1. The building is occupied, identify work zones to eliminate the possibility of non essential personnel from having access to the work area.
	4. Personal Injury	1. The system is under pressure. Verify all valves have been isolated and placed in the off positions prior to opening drain ports. 2. Additional PPE may include Face Shields or Goggles in addition to Safety Glasses.



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Hazard Analysis- FEATURE: MECHANICAL

Hazard Analysis- FEATURE MECHANICAL
W9121-P-15-C-0010 NA

07 Jan 2016

SFO - iv'ARFORREB

Equipment to be used	Inspection Requirements	Training Requirements
1. Electric hand tools 2. Testing equipment	1. Initial and Daily inspections. 2. Initial and Daily inspections of all electrical and pressure testing equipment.	1. Employees shall be trained in the proper and safe use of all tools. 2. Only qualified technicians are allowed to perform testing requiring special testing equipment.



US Army Corps
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Hazard Analysis- FEATURE: MOBILIZE

Hazard Analysis - FEATURE MOBILIZE
W19121-P-15-C-0010 NA

07 Jan 2011

SFO - r/ARFORRE

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
Delivery of IVBterial	Heavy Trucks	<ol style="list-style-type: none"> 1. Schedule deliveries to prevent trucks from entering the site unescorted 2. Have a guide for all trucks entering and exiting the site 3. A-event people from walking behind a truck reversing
	Personal Injury	<ol style="list-style-type: none"> 1. Hardhats and eye protection required. 2. Hearing protection as needed. 3. Keep work area free of construction materials and debris. 4. Perform daily cleanup of work area.
Job Trailer Delivery and Anchoring	Anchoring	<p>ELECTRIC SHOCK</p> <ol style="list-style-type: none"> 1. GFCIs shall be used at all times. 2. Use double insulated tools when possible. 3. Assure generators have been checked for polarity and grounded. <p>DUST IRRITANT</p> <ol style="list-style-type: none"> 1. Wet drilling is preferred 2. Use applicable respiratory protection. 3. Wear safety glasses. <p>CUTS AND ABRASIONS</p> <ol style="list-style-type: none"> 1. Use proper tools for installing and cutting banding used for anchoring. 2. Wear safety glasses. 3. Wear gloves.
	Backing	<ol style="list-style-type: none"> 1. Use of a signal person is required for all backing procedures. 2. Verify no overhead interference is present prior to backing.
	Disconnecting Trailers	<p>Chock wheels of the truck and trailer to prevent accidental shifting while unhooking trailers.</p> <p>Check for proper quantities of blocking and shimmy materials to secure trailers.</p>
	Lifting Injuries shirrmng.	<ol style="list-style-type: none"> 1. Train personnel of proper lifting techniques of Cribbing, Blocking and
	Personal Injury	<ol style="list-style-type: none"> 2. Use lifting equipment if needed. 1. Hardhats and eye protection required.
	Lifting Techniques	<ol style="list-style-type: none"> 2. Watch for pinch points, especially when in blocking trailer Use lift whenever possible Get help for heavy lifts, if material cannot be broken down Wear gloves
Temporary Back To Trailers	Personal Injury	<p>Be aware and avoid getting into pinch points</p> <ol style="list-style-type: none"> 1. Keep work area free of construction materials and debris. 2. Perform daily cleanup of work area.
	Temporary R3nels	<ol style="list-style-type: none"> 1. Initial and daily inspection of tools prior to beginning work. 2. Insure all wood cutting and fastening tools have required guards in place and functional. <p>ELECTRIC SHOCK</p> <ol style="list-style-type: none"> 1. Insure all panels are tested, labeled and grounded prior to energizing. 2. Use nonconductive ladders and tools. <p>SLIPS AND FALLS.</p> <ol style="list-style-type: none"> 1. Wet conditions will increase the chance of slips and falls. Use extra care with ladder footing and general movements in slippery conditions.

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Hazard Analysis- FEATURE: MOBILIZE

Hazard Analysis- FEATURE MOBILIZE
W9121-P-15-C-0010 NA

07 Jan 2016

SFO - rv/ARFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
		1. Hard hats, safety glasses, proper clothing, gloves and Hi Visibility Vests are required.



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Hazard Analysis -FEATURE: MOBILIZE

07 Jan 2016

Hazard Analysis- FEATURE: MOEILIZE
V\19121-P-15-C-0010 NA

SFO - M\RFORRES

Equipment to be used	Inspection Requirements	Training Requirements
1. Bectric / Battery operated drills. 2. Hand Tods. (e.g. hamners. w renches,screw drivers) 3. Ladders	1. Initial and daily inspection of electric /battery operated tools, cords and chargers. 2. Initial and daily inspection of hand tots. 3. Ladders are to be nonconductive, inspected prior to use for condlion and assurance all labels are in place and readable.	Weekly safety rreetings



US Army Corps
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Hazard Analysis- FEATURE: PAINTING

Hazard Analysis - FEATURE: PAINTING
V\19121-P-15-C-0010 NA

07 Jan 2016

SFO - M\RFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
A. RAC for this task item is M	FA::	<ol style="list-style-type: none"> 1. The fallON ingFA:: is required at all times, Hard Hats, Safety Glasses, ft Visibility Vests, Steel Toe Boots and A"oper aothilg. 2. Additional FA::as required for ildividualtasks are addressed in the Recommrended Controls sections to follow .
B. Paint Reroyal / A"ep.	1. Aerial Lifts	<ol style="list-style-type: none"> 1. Maintain and operate elevating platforms in accdrdnce w ith the manufactures instructions. 2. Assure workers operating lifts have been properly trained in the safe use of the equipment. 3. Alw ays treat power lines, w ires and other conduc tors as energized. rvBintain a rriminum clearance of 10' aw ay from the nearest energized overhead lines. 4. Do not allow workers to position themselves between overhead hazards such as joists and beams, and the rails of the basket. M:jvement of the basket could result in a caught between condition. 5. Use a body harness w ith lanyard attache to the provided anchor points. Do not attach directly to the boom or basket. 6. Set brakes and use wheelchocks when operating on an inclined surface. Use outriggers if provided. 7. AllaN for the corri:iled w eight of thew orker s, tools and materials. Do not exc eede the load limits of the equipment.
	2. Falls fromLadders	<ol style="list-style-type: none"> 1. Choose the right ladder for the task being performed. 2. Inspect ladders prior to use. Should any defects be identified, rerove the ladder from service. Verify all labels are intact a legible. 3. Do not carry tools or materials in-hand w hile accessing ladders. 4. Tie the top and bottom of the ladder to fixed points when necessary.
	3. D.Jst Irritant	<ol style="list-style-type: none"> 1. Goggles and cr Face Shields may be requi"ed in addition to Safety Glasses during sanding and grinding procedures. 2. NIOSH approved respiratcry protection shall be properly fitted.
	4. Cherrical Oeaner s	<ol style="list-style-type: none"> 1. Review MSDS / SDS prior to beginning any cherricalreroyalprocess. The use of any specialized FA:: recomended shall be used. 2. Wear Rubber Gloves to prevent cherricalburns.
C. Paint Application	1. Aerial Lifts	1. Review the AerialLift Recommrended Contrds listed in A"incipie Step B above.
	2. Falls fromLadders	1. Review the Recommrended Contr ols listed for Falls fromLadders in A"incipal Step B above.
	3. Breathing Hazards	<ol style="list-style-type: none"> 1. Use low VOC paints. 2. Wear properly fitted, NIOSH approved respiratory protection. 3. A"ovide adequate ventilation for interior painting processes.
	4. Lifti lg Injuries	<ol style="list-style-type: none"> 1. Train employees in proper lifting techniques. 2. Use carts, dollys etc. to transport materials to work locations. 3. Transfer paints to appropriate sized containers to reduc e excessive w eights. 4. L:itilize additional manpower er should furniture need to be removed from the w rck area.
	5. Trips and Slips	<ol style="list-style-type: none"> 1. Maintain tidy work areas keeping clear paths to and from work areas. 2. Oean any paint drips or spills immediately to prevent slippery conditons. 3. Tape edges of tarps and plastic to reduce potential trpping hazards.
D. eean up	Hazardous Cherricals	<ol style="list-style-type: none"> 1. Any and all cherricals shall be disposed of at an approved hazardous w aste disposalsite. 2. is not permitted to clean tools, brushes, paint pans etc. using silks w ithin the facility.



Hazard Analysis - FEATURE: PAINTING

07 Jan 2016

Hazard Analysis - FEATURE PAINTING
V19121-P-15-C-0010 NA

SFO- r\ARFORRES

Equipment to be used	Inspection Requirements	Training Requirements
1. Lifts 2. Safety Harnesses 3. Ladders 4. Sprayer s	1. Lifts are to be inspected daily and immediately following and malfunction. 2. Safety f-Bresses shalbe inspected daily for signs of wear and removed from service should any defect be found. 3. Initial and daily inspections of ladders. Assure all labels are intact and legible. 4. Inspect sprayer s before each use and after any extended down time insuring lines and nozzels do not become clogged.	1. Trained operator s are required. 2. Brployees shall be properly trained in harness fitting and use. 3. Brployees shall be trained in the safe use of ladders. 4. Brployees shall be trained in the proper use of each type of sprayer used.



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Hazard Analysis -FEATURE: PUNCHLIST

07 Jan 2016

Hazard Analysis- FEATURE: PUNCHLIST
V1912HP-15-C-0010 NA

SFO - 1A<IRFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
Finish Work	Electric Shock from Tools	1. Inspection of power tools and cords.
	Hand Power Tools	1. Use tools only for designed purposes. 2. Repair or replace defective tools.
	Lifting Injuries	1. Train personnel of proper lifting techniques. 2. Use lifting equipment if needed.
	Personal Injury	1. Wear Protective Equipment 2. Keep Areas Clean of Debris 3. When Cleaning use Wet Road Signs 4. Check Extension cords for wear.
	Skin Protection	1. Protective clothing, gloves and footwear used. 2. MSDS sheets to be reviewed in safety meetings.
	Slips, Trips, and Falls	1. Keep work area free of debris.



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Hazard Analysis- FEATURE: PUNCHLIST

07 Jan 2016

Hazard Analysis- FEATURE: PUNCHLIST
V\1912HP-15-C-0010 NA

SFO - M\<RFFfiRES

Equipment to be used	Inspection Requirements	Training Requirements
Hand Tools	Daily inspection of equipment	Weekly safety meetings



US Army Corps
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Hazard Analysis -FEATURE: ROOFING

Hazard Analysis - FEATURE ROOFING
W9121-P-15-C-0010 NA

07 Jan 2011

SFO - r/ARFORRB

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
A. RAC for this task item is H	FPE	1. The following FPE is required at all times. Hard Hats, Safety Glasses. H Visibility Vests. Steel Toe Boots and proper clothing. 2. Additional FPE if required for specific tasks, they will be noted in the Recommended Controls sections below
B. Contact with hot rubber	Burns to skin	Wear gloves. Work on the roof in the cooler parts of the day-early morning or evening; schedule to work on shady side of the building.
C. Removal and Installation of Roofing	Fall Hazard	1. Inspect the roof before beginning 2. Right sized ladders - tied off. 3. Fall Protection- harnesses, lanyards. 4. Scaffolding - set by certified erector, top, riddle and kick rails. 5. Housekeeping- keep areas free of debris.
	House Keeping	1. Daily clean up of work area.
	Ladder Collapsing; Slipping/ falling from ladder	1. Use boom lift instead of a ladder 2. Verify that ladder is properly assembled and that it is securely positioned on level ground. 3. Use 1'4" rule. 4. Use OSHA. Decal to verify that ladder is in the proper position
	Lifting Techniques	1. Train personnel for proper lifting techniques. 2. Use lifting equipment as
	necessary. Personal Injury	1. Wear protective clothing 2. Wear Eye Protection 3. Proper Lifting Techniques 4. Wear hard hat 5. Avoid excessive heavy lifting 6. Wear proper fall protection
D. Using Boom Lift	Wind Conditions	1. Cancel work with winds over 25mph 2. Never leave unsecured boards on the roof in high winds
	Falling out of bucket while working	1. Verify boom operator is certified 2. Use outriggers to level truck 3. If moving lift, lower bucket before proceeding 4. Do not lean out of the bucket 5. 100% fall protection required 6. Do not overload the weight limit.
	Overhead Hazards	1. No Person under suspended loads
E Using contact adhesives or gasoline	Airbducts are flammable; vapors can be toxic	1. Wear rubber gloves 2. Do not use near fire, open flame, or any source of ignition such as sparks or electric tools 3. Work upwind of fumes
F. Using hand tools	Cuts, pinches, scratches, punctures, severing of fingers	1. Repair or replace defective tools. 2. Inspections of electric tools, cords and generators performed daily. 3. Wear safety glasses



US Army Corps
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Hazard Analysis- FEATURE: ROOFING

Hazard Analysis- FEATURE: ROOFING
V19121-P-15-C-0010 NA

07 Jan 2016

SFO - 1A<RFORRES

Principal Steps	Potential Safety/Health Hazards	Recommended Controls
		5. Use caution when working with tools 6. Use tools only for designed purposes.
G. Working near electrical wires	Electrical shock; electrocution	1. Avoid going near wires if electrical wires are close to work area. 2. Have insulator blankets installed before beginning work 3. Turn power off before working in the area.
H Working on Roofs	Exposure to extreme heat or cold	1. Dress properly for temperatures 2. On hot days, do work in the cooler parts of the days- early morning or evening. 3. Work in shady areas
	Slipping/Falling	1. Avoid working on roof when it is wet 2. Use boom lift if possible 3. Use safety- climbing gear 4. Use roofing jacks or ladder jacks when possible 4. Wear fall protection
	Sunburn, Skin Cancer; Windburn	1. Use Sunscreen 2. Wear proper clothing, including a hat and safety sunglasses
I. Working with metal flashing	Cuts/skin lacerations	1. Wear gloves 2. Watch all sharp edges 3. Roll folding edge on flashing to avoid sharp edges



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Hazard Analysis- FEATURE: ROOFING

07 Jan 2016

Hazard Analysis- FEATURE: ROOFING
V19121-P-15-C-0010 NA

SFO - 1A-1RFORRES

Equipment to be used	Inspection Requirements	Training Requirements
1. Forklift 2. Boom Truck 3. Power tools 4. GFCI	1. Forklift - Initial and daily inspections are required before use. 2. Boom Truck- Initial and daily inspections are required prior to each lifting session. 3. Power Tools are to be inspected before the start of each shift and any suspect tools shall be removed from service. 4. GFCIs shall be used on all electrical tools and equipment.	1. Forklift- Trained operators only 2. Boom Truck shall be operated by a certified operator ONLY 3. All employees shall be properly trained in the safe use of any and all power tools for the task being performed.



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Hazard Analysis- FEATURE: SITEWORK

Hazard Analysis - FEATURE SITEWORK
W9121-P-15-C-0010 NA

07 Jan 2016

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Principal Steps	Potential Safety/Health Hazards	Recommended Controls
Heavy Equipment	Equipment Accidents	<ol style="list-style-type: none"> 1. Spotter used to verify excavator swings are clear. 2. Backup alarms operational. 3. Qualified equipment operators. 4. Operational horns. 5. Fire Extinguishers required.
	Existing utilities	<ol style="list-style-type: none"> 1. Be aware of surroundings. 2. Establish and maintain markings. 3. Hand dig within 4' of either side of existing utilities. 4. Be aware of clearances between equipment and power lines.
	Fueling	<ol style="list-style-type: none"> 1. Make sure a fire extinguisher is ready 2. Do not over fill the tank 3. Do not spill diesel fuel onto a hot engine. 4. Proper fueling practices used. 5. Spill prevention plan in place. 6. Fire extinguishers in place.
	Personal Injury	<ol style="list-style-type: none"> 1. Stay clear of moving equipment 2. Tape off construction work area 3. Use cones to mark out excavator rear swing clearance 4. Hard hats required. 5. 100% eye protection.
Slipping Into a Trench	Slipping into a trench	<ol style="list-style-type: none"> 1. Erect Barricades surrounding any holes 2. Traffic Control 3. Avoid ladders or ramps for safe egress in four foot deep excavations at no more than twenty five feet of lateral travel. 4. Slope or bench trenches four feet or deeper to achieve stable bank conditions. 5. Trench boxes shall be installed to prevent lateral movement in the event of cave-ins. 6. Watch for uneven ground and snow and ice.
Unloading of Material	Personal Injury	<ol style="list-style-type: none"> 1. Stay clear of material 2. Watch for Dump Trucks 3. Use guides 4. Use proper lifting techniques



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Equipment to be used	Inspection Requirements	Training Requirements
plate tarrper	Initial inspection when equipment is brought on site Weekly written inspection Daily inspection before equipment is placed in service	Trained operators only