# Ludlow Construction Company, Inc.

# Accident Prevention Plan/Safety Assurance

## DURHAM MEADOWS WATERLINE,

## MIDDLETOWN AND DURHAM CT

## CONTRACT NO. W912WJ19C0002

**Version 3 Date: April 30, 2019**

# PROJECT-SPECIFIC

# ACCIDENT PREVENTION PLAN

## DURHAM MEADOWS WATERLINE,

## MIDDLETOWN AND DURHAM CT

## CONTRACT NO. W912WJ19C0002

**Version 3 Date: April 30, 2019**

**19 Carmelina's Circle**
**Ludlow, MA 01056**
**Phone: (413) 583-25225**
**Fax: (413) 583-2039**

# PROJECT ACCIDENT PREVENTION PLAN
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# 1. SIGNATURE SHEET

## a. PLAN PREPARER

This Ludlow Construction Company, Inc. Project Accident Prevention Plan was prepared and approved by:

Jeremiah Anderson 09 May 2019

Jeremiah Anderson /April 1, 2019/ (252) 515-7522

## b. APPROVAL BY COMPANY OFFICER

This plan is approved by:

Scott Pio, President /September 1, 2019/ (413) 315-0447

## c. PLAN CONCURRENCE

Accident Prevention Plan concurrence by:

Michael Pio, Project Manager / September 1, 2019 / (413) 262-0237

Robert Peddicord SSHO /September 1, 2019/ (859)310-2377

Jonathan Pio, Project Superintendent /September 1, 2019 / (413) 313-2428

# 2. BACKGROUND INFORMATION

The Project Accident Prevention Plan contents correspond with the US Army Corps of Engineers EM 385-1-1 Safety and Health Requirements Manual Minimum Basic Outline for Accident Prevention Plans (Appendix A).

On this Project, Ludlow Construction Company, Inc. has adopted the requirements of the Army Corps of Engineers EM 385-1-1 Safety and Health Requirements Manual (version 30 Nov 2014, sections 2 through 34) for safety plans, policies and procedures. In instances throughout the manual were EM 385 identifies USACE as the responsible party, Ludlow Construction Company, Inc. will be substituted in effect as the responsible party.

## a. CONTRACTOR

**Ludlow Construction Company, Inc.**

## b. CONTRACT NUMBER

**CONTRACT NO. W912WJ19C0002**

## c. PROJECT NAME

**DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT**

## d. PROJECT DESCRIPTION

**1. Construction of a new 0.8 million gallon prestressed concrete water storage tank, access roadway, site improvements, and appurtenances off Talcott Ridge Drive in the City of Middletown.**

**2. Modifications at the Long Hill Pump Station in the City of Middletown.**

**3. Installation of approximately 31,200 linear feet water main (20-inch to 6-inch diameter) and appurtenances in Town of Durham and CTDOT roadways, including but not limited to:**

**(1) South Main Street (Route 17) in Middletown from Talcott Ridge Drive to the town line with Durham,**
**(2) Main Street (Route 17) in Durham from the town line to Mill Pond Lane,**
**(3) Talcott Lane in Durham,**
**(4) Maple Avenue in Durham from Talcott Lane south to the Allyn Brook crossing and from the south point of the crossing near John's Way to connect to the existing water main,**
**(5) Wallingford Road from Main Street west past Maple Avenue to near No. 47 Wallingford Road,**
**(6) Maiden Lane from Main Street to the intersection with Pickett Lane,**
**(7) Pickett Lane; and**

**(8) Main Street service extensions (limited lengths) at; Royal Oak Drive, Littleton Lane, Parson Lane, Winsome Road, Middlefield Road, Haddam Quarter Road, Maiden Lane and Pickett Lane.**

**4. Installation of approximately 500 linear feet of 12-inch water main and appurtenances on Town of Durham property west of Maple Avenue and crossing Allyn Brook.**

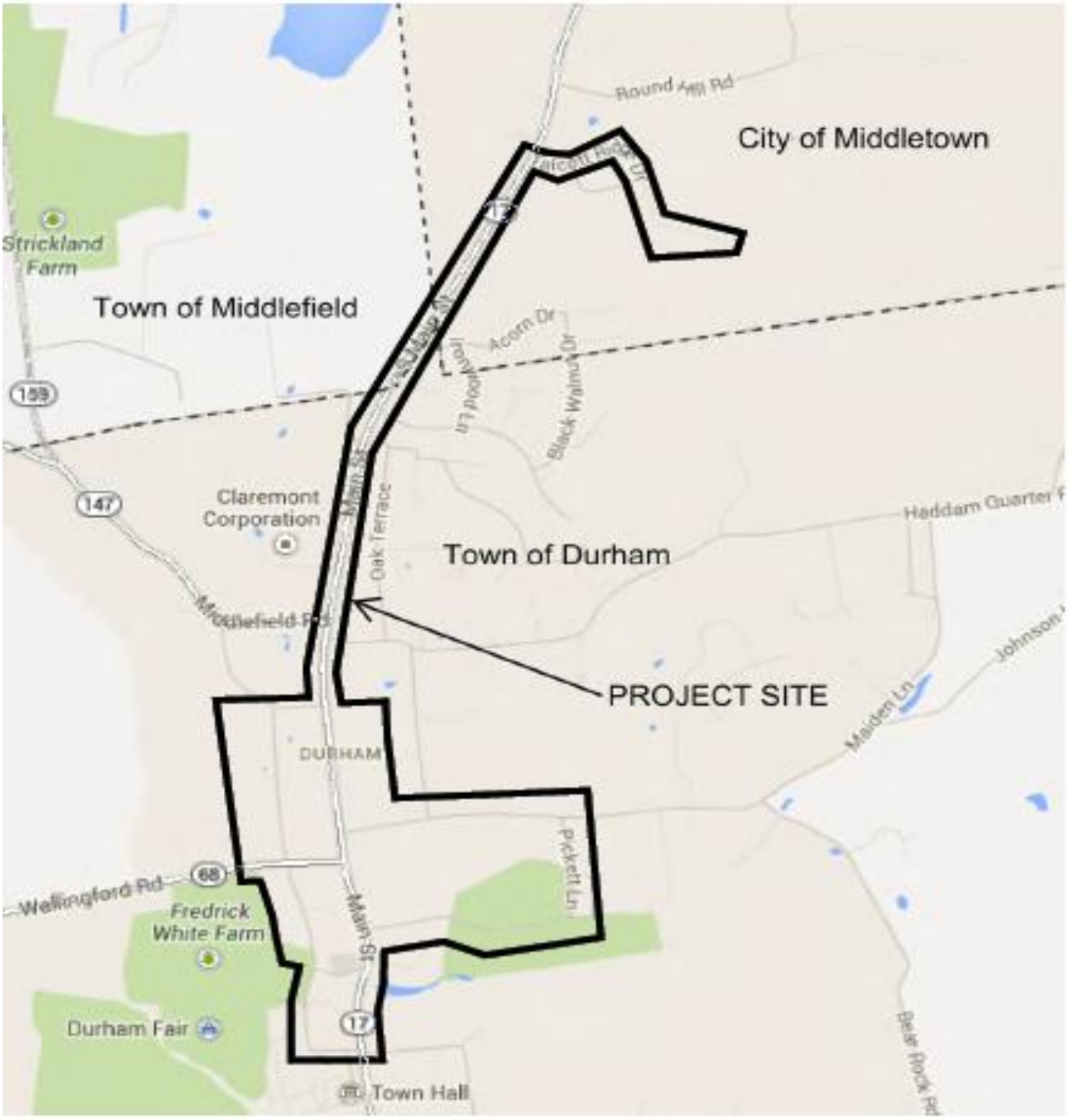
**5. Installation of approximately 206 water service connections (from corporation to curb stops) of which approximately 115 will be installed into the building structure to establish a new water supply. Components of approximately 114 existing private water supply systems to be abandoned include existing wells and appurtenances, including pressure tanks and water treatment devices to be removed, as specified, including property restoration. Six supply wells shall be converted to monitoring wells.**

**6. Construction of a booster pump station on South Main Street, including site improvements and appurtenances, in Middletown on the northern portion of the CT DOT property across from the intersection of Talcott Ridge Road.**

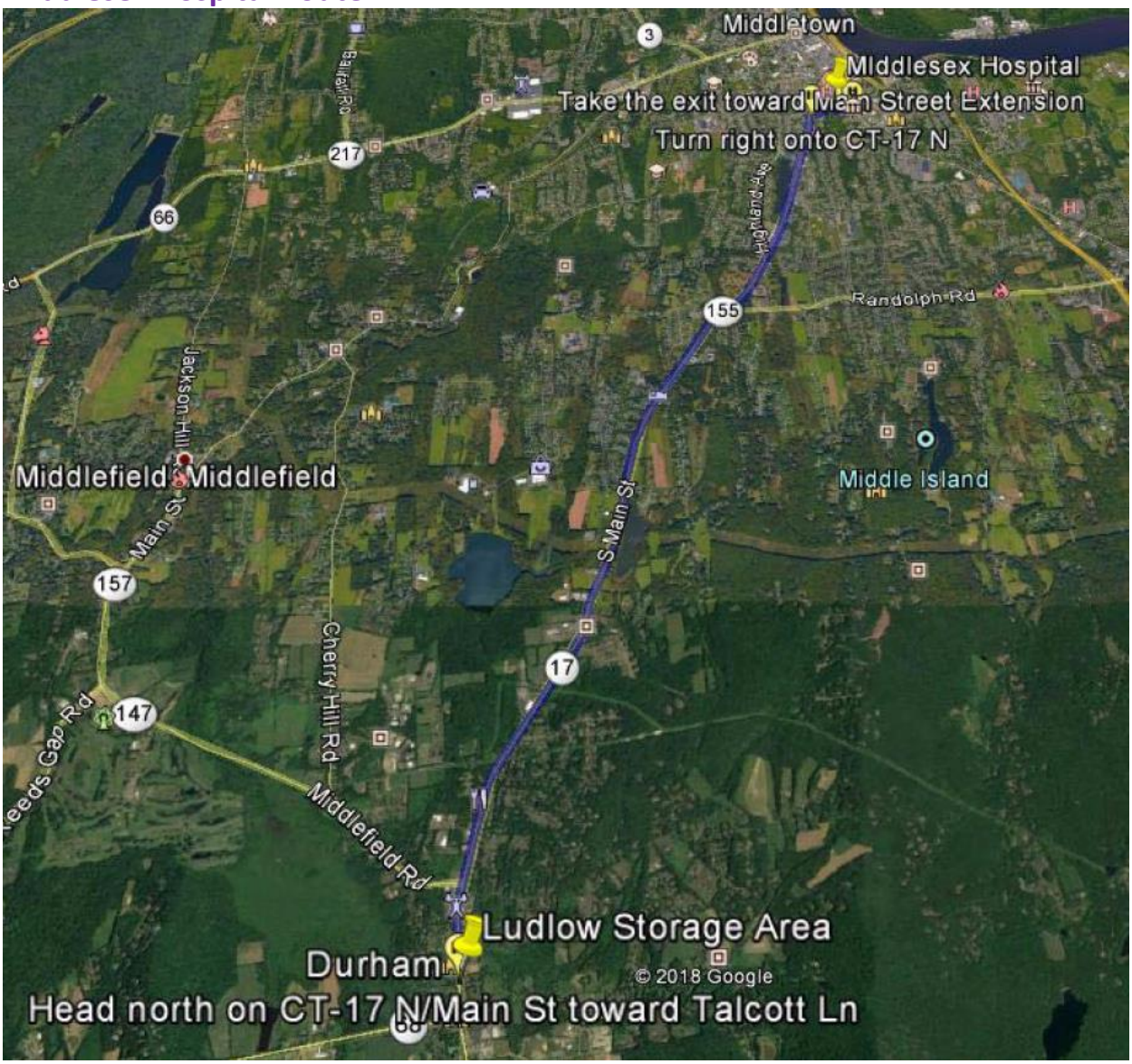
**7. Construction of a water meter station, including site improvements and appurtenances, in the City of Middletown on City-owned property on South Main Street at the corner of Acorn Drive.**

## (1) PROJECT LOCATION

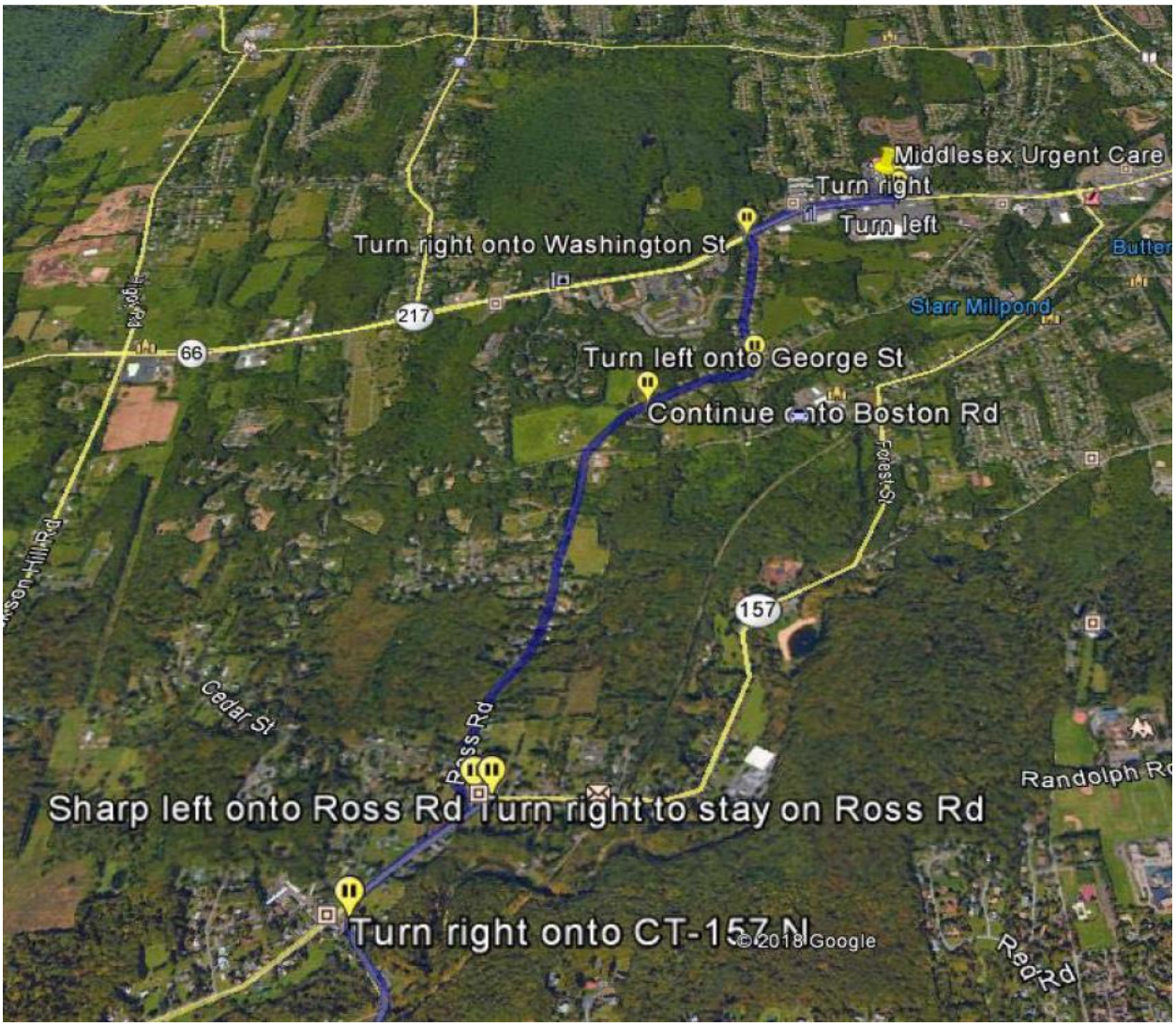
## DURHAM MEADOWS, DURHAM CT



## Middlesex Hospital Route



## Middlesex Urgent Care Route



## (2) PROJECT SCOPE

Ludlow Construction Company, Inc. (LCC) is responsible for providing the appropriate, code compliant repairs as indicated. LCC is also responsible for ensuring that repairs are done by appropriately licensed and/or certified individuals as required by applicable codes, standards and the indicated reference documents.

Specific Repairs -

1. Construction of a new 0.8 million gallon prestressed concrete water storage tank, access roadway, site improvements, and appurtenances off Talcott Ridge Drive in the City of Middletown.

2. Modifications at the Long Hill Pump Station in the City of Middletown.

3. Installation of approximately 31,200 linear feet water main (20-inch to 6-inch diameter) and appurtenances in Town of Durham and CTDOT roadways, including but not limited to:

(1) South Main Street (Route 17) in Middletown from Talcott Ridge Drive to the town line with Durham,
(2) Main Street (Route 17) in Durham from the town line to Mill Pond Lane,
(3) Talcott Lane in Durham,
(4) Maple Avenue in Durham from Talcott Lane south to the Allyn Brook crossing and from the south point of the crossing near John's Way to connect to the existing water main,
(5) Wallingford Road from Main Street west past Maple Avenue to near No. 47 Wallingford Road,
(6) Maiden Lane from Main Street to the intersection with Pickett Lane,
(7) Pickett Lane; and
(8) Main Street service extensions (limited lengths) at; Royal Oak Drive, Littleton Lane, Parson Lane, Winsome Road, Middlefield Road, Haddam Quarter Road, Maiden Lane and Pickett Lane.

4. Installation of approximately 500 linear feet of 12-inch water main and appurtenances on Town of Durham property west of Maple Avenue and crossing Allyn Brook.

5. Installation of approximately 206 water service connections (from corporation to curb stops) of which approximately 115 will be installed into the building structure to establish a new water supply. Components of approximately 114 existing private water supply systems to be abandoned include existing wells and appurtenances, including

pressure tanks and water treatment devices to be removed, as specified, including property restoration. Six supply wells shall be converted to monitoring wells.

6. Construction of a booster pump station on South Main Street, including site improvements and appurtenances, in Middletown on the northern portion of the CT DOT property across from the intersection of Talcott Ridge Road.

7. Construction of a water meter station, including site improvements and appurtenances, in the City of Middletown on City-owned property on South Main Street at the corner of Acorn Drive.

## (3) SAFETY CONTROLLED FEATURES OF WORK

Ludlow Construction Company, Inc. will control safety on each project Definable Feature of Work. An activity hazard analysis will be performed for each Definable Feature of Work and the results of the analysis will be used to control safety.

A listing of each Definable Feature of Work for this project is included in Table 3-1 of this subsection on following page.

# Ludlow Construction Company, Inc.
# Safety Controlled Definable Feature of Work List

## Table 3-1

Version: March 11, 2019

| Project ID | Project Name | Preparer | Date |
|---|---|---|---|
| CONTRACT NO. W912WJ19C0002 | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT | Jeremiah Anderson | Arpil 1, 2019 |
| **Contract Section** | **A hazard analysis is performed for each safety controlled Definable Feature of Work listed below. DFOW safety inspections series including the three phases of control inspections are performed on each Definable Feature of Work: PREPARATORY, INITIAL & FOLLOW-UP** | | **Notes:** |
| 02012 | Protecting Existing Underground Utilities | | |
| 02013 | Connections to Existing Buried Pipelines | | |
| 02100 | Site Preparation | | |
| 02210 | Earth Excavation, Backfill, Fill, & Grading | | |
| 02211 | Rock Excavation | | |
| 02230 | Site Cleaning | | |
| 02240 | Dewatering | | |
| 02371 | Riprap Placement | | |
| 02740 | Flexible Paving | | |
| 02820 | Chain Link Fences and Gates | | |
| 02900 | Painting | | |
| 02922 | Hydroseeding | | |

| | | |
|---|---|---|
| 03100 | Concrete Formwork | |
| 03300 | Cast-In-Place Concrete | |
| 03410 | Precast Structural Concrete | |
| 13225 | Prestressed Concrete Tanks | |
| 13300 | Utility Control Instrument System | |
| 15400 | Plumbing Systems | |
| 16050 | Electrical Work | |

# 3. STATEMENT OF SAFETY AND HEALTH POLICY, GOALS, AND OBJECTIVES

## a. SAFETY AND HEALTH POLICY

Ludlow Construction Company, Inc. is committed to safe and healthful workplace for all employees.

Our goal is to achieve the highest standard of safety throughout all phases of our operations and to ensure that all employees work safely on jobsites free of avoidable hazardous. When hazards are unavoidable, we take a proactive approach to prevent injuries. Furthermore, we are ready to respond quickly and effectively to any accidents to minimize the extent of injuries, and to prevent similar accidents.

It is the policy of Ludlow Construction to abide by all of the safety standards of the Corps of Engineers, including those outlined in EM 385-1-1 Safety and Health Requirements Manual, OSHA regulations, and described in this Accident Prevention Plan.

Public and personal safety shall be a top priority during the course of work under this contract. All employees shall be trained and equipped to work in a safe and healthful manner, and shall comply with all safety and security requirements.

In carrying out our commitment to safety:

- Every employee is indoctrinated into the Ludlow Construction Safety System through training of the Ludlow Construction Safety System, Safety Policies, and procedures.
- Each project has an Accident Prevention Plan that addresses site-specific conditions and hazards. We prepare an activity hazard analysis for every phase of construction.
- We systematically reinforce safety during the project through ongoing training and heightened awareness of hazards.
- Every employee has the responsibility and authority to stop work should they discover an unsafe condition. Employees will not be reprimanded for stopping work.
- We closely monitor safety through every phase of construction. Should problems be found, we correct them and take action to prevent recurrences. A system of incentives and disciplinary action reinforces adherence to safe work practices.

## b. PROJECT SAFETY PERFORMANCE GOALS AND OBJECTIVES

Our primary safety goal is based on the philosophy that all occupational injuries and illnesses can be prevented and that a 'Zero Accident and Injury' goal is achievable.

We strive for the safest possible conditions to protect and preserve people, property and the environment. On each construction site, the Project Superintendent will be directly accountable for the safety performance on the construction project. Quite simply, the company's project safety and loss goals are:

- Zero injuries, illnesses
- Zero permanent disabilities
- Zero fatalities
- Zero safety and health violations

- Prevention of any major fires, vehicle accidents, or property damage/losses
- No environmental accidents

To achieve zero accidents and injuries our objective is to use a sound approach to accident prevention and to deploy it effectively. Our approach uses the Accident Prevention Plan and Activity Hazard Analysis to implement policies, procedures, and action to assure safety. Plans are followed with inspections and controls in to assure that the plans are followed. Our secondary goal is zero safety nonconformances as measured by our inspections and audits, or observations by external organizations.

# Ludlow Construction Company, Inc.
# Emergency Contact List

| Project ID | Project Name | Preparer | Date | |
|---|---|---|---|---|
| CONTRACT NO. W912WJ19C0002 | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT | | Arpil 1, 2019 | |
| **CONTACT** | **PURPOSE** | **Contact Responsibilities** | **Phone Contact Numbers** | **Address** |
| DURHAM FIRE DEPARTMENT | ROUTINE CALLS/EMERGENCY | Emergency Response | (860) 349-9112 | 41 Main St. Durham, ,CT 06422 |
| MIDDLEFIELD POLICE DEPT | ROUTINE CALLS/EMERGENCY | Emergency Response | (860) 349-9685 | 405 Main St. Middlefield, CT 06455 |
| MIDDLESEX HOSPITAL | EMERGENCY MEDICAL TREATMENT | EMERGENCY MEDICAL | (860) 358-6000 | 28 Crescent St. Middletown, CT 06457 |
| MIDDLESEX HOSPITAL URGETN CARE | EMERGENCY MEDICAL TREATMENT | Emergency Care (8a.m. to 8p.m.) | (860) 788-3632 | 896 Washington St. Middletown, CT |
| MIDDLETOWN WATER DEP | WATER SERVICE | Water Utilities | (860) 343-8018 | Randolph Rd. Middletown, CT 06457 |
| CONNECT ELECTRIC INC | ELECTRICAL UTILITY COMPANY | Electrical Utilities | (860) 205-5197 | Durham, CT |
| TMC ENVIRONMENTAL | TMC EMERGENCY ENVIRIONMENTAL SERVICES | Field Service 24 Hour Response | (860)349-1127 | 92 Commerce Circle Durham, CT 06422 |

# 4. RESPONSIBILITIES AND LINES OF AUTHORITIES

## a. COMPANY RESPONSIBILITY STATEMENT

Ludlow Construction Company, Inc. is ultimately responsible for the implementation of this safety program on this project.

## b. IDENTIFICATION AND ACCOUNTABILITY OF PERSONNEL RESPONSIBLE FOR SAFETY

Personnel assigned to this project have the safety duties, responsibilities and authority defined by their job position. Table 4-1 shows the name of the person assigned to this project and their respective job position(s).

Table 4-1

| Safety Personnel Name | Job Position |
|---|---|
| **Forrest Brown** | **Site Safety and Health Officer** |
| **Jonathan Pio** | **Project Superintendent** |

The President has overall responsibility for implementation safety including performance and results of the Ludlow Construction Safety System, including safety on this project.

The Site Safety and Health Officer is responsible for implementation of the Ludlow Construction Safety System on this project including the preparation of the project specific Accident Prevention Plan, its implementation, conformance to its requirements, and all phases of safety control.

The Project Superintendent has the responsibility for assuring conformance to the Accident Prevention Plan and the authority to approve and carry out all disciplinary actions for those who violate the policies, procedures and/or rules and regulations.

Each Employee is responsible for abiding by the policies, procedures, rules, regulations and orders set forth by this Safety & Health Program. Each Employee is responsible for maintaining a safe and healthful workplace environment for all involved.

The Site Safety and Health Officer, Forrest Brown, has completed the OSHA 30-hour course. His resume and certificate of completion are included in **Appendix D** (Project Personnel Resumes).

The OSHA 30-hour course was completed therefore the requirements of an equivalent course itemized in EM 385-1-1 Appendix A.4.b1-9 do not apply to this project.

## c. Names of Competent and/or Qualified Persons

Competent and/or qualified personnel assigned to this project are identified by Table 4-2.

Table 4-2

| Safety Personnel Name | Job Position |
|---|---|
| **Forrest Brown** | **Site Safety and Health Officer** |
| **Jonathan Pio** | **Project Superintendent** |
| **Michael Pio** | **Project Manager** |

Job qualifications for each person appointed to key project job positions are documented by their resumes and OSHA certificates. ***Resumes and certificate exhibits are found in Appendix D (Project Personnel Resumes).***

## d. Presence of Competent Personnel

No work will be performed unless a designated competent person is present on the job site.

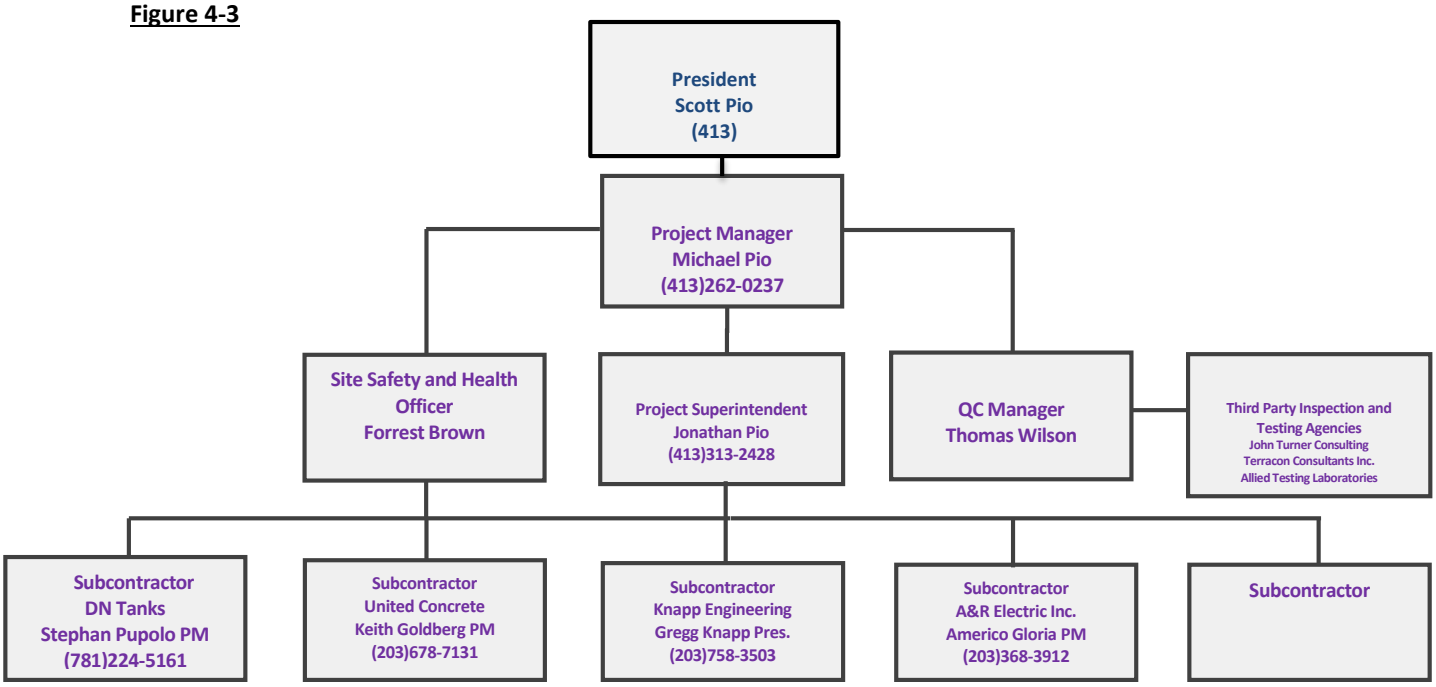
## e. Pre-Task Safety and Health Analysis

Before work can start on a Definable Feature of Work the Site Safety and Health Officer will 1) perform a pre-task safety and health analysis and 2) the listed inspections and controls must be fully implemented. A record of the analysis will be maintained on an Activity Hazard Analysis form (*sample of the AHA form can be viewed in Appendix C: Accident Hazard Analysis Form).*

# f. SAFETY LINES OF AUTHORITY

The Project Safety Organization Chart shows the safety organizational structure. The chart includes job positions along with the name of each person appointed to that position. Figure 4-3 shows the Safety Organization Chart for this project. (*Additional contact information can be found on Contractor Point of Contact List pg. 45*)

**Figure 4-3**



## g. Policies and Procedures Regarding Noncompliance

All Ludlow Construction Company, Inc. subcontractor and supplier personnel shall be held to a "Zero Tolerance Policy" of immediate termination with no opportunity for rehire on the project in regards to the following offenses:

- Noncompliance with the requirements of this Accident Prevention Plan
- Noncompliance with the Ludlow Construction Company Safety Policies
- Fighting on the jobsite
- Possession of firearms or other dangerous weapons or devices
- Dishonesty or fraud, including falsification of security, personnel or other records
- Possession, use, or being under the influence of alcoholic beverages, narcotics or non-prescribed drugs while on a project jobsite
- Violence, intimidation, or threats of violence to supervisory personnel, security officers, or fellow workers
- Theft of property
- Willfully damaging or mutilating materials, tools, equipment, or personal property of another employee
- Intentional violation of a safety rule, policy, or procedure
- Removal or destruction of any tags or markings on plant components
- Violation of equipment lock out / tag out (LOTO) procedures
- Violation of mandatory 100% fall protection / continual tie-off procedures.
- Use of electronic communications while operating any motorized equipment is prohibited (cell phones, smart phones, computers, music players, radios, communication radios)
- Unauthorized entry into a red barrier/banner tape area

## h. Company Procedures for Holding Managers and Supervisors Accountable for Safety

Safety personnel assigned to this project have the duties, responsibilities and authority defined by their job position. Table 4-4 shows the duties, responsibilities, and authority assigned to personnel on this project.

Table 4-4

| Safety Personnel Name | Job Position |
|---|---|
| **Michael Pio** | **Project Manager** |
| **Forrest Brown** | **Site Safety and Health Officer** |
| **Jonathan Pio** | **Project Superintendent** |

Project safety personnel, including the Site Safety and Health Officer, Project Manager and Project Superintendent, are appointed to the project by the Ludlow Construction Company President.

Each appointment is recorded on a Letter of Appointment. The project-specific Letter of Appointment exhibits are included in this subsection (*pages 31-33).*

Key project personnel have accepted their appointments and declared their ability to carry out the appointments as indicated by their signature.

All Ludlow Construction managers and supervisors will be held to a "Zero Tolerance Policy" of immediate termination with no opportunity for rehire on the project for failure to carry out their safety duties and responsibilities.

## (1) President Safety Responsibilities

While everyone is responsible for safety, the President (***Scott Pio***) is the one person in the company ultimately responsible for safety. Regardless of other duties, safety responsibilities of the President include:

- Ensuring that each employee understands his or her safety responsibilities as well as Ludlow Construction safety policies
- Establishing company safety policies and objectives.
- Conducting management reviews of the Ludlow Construction Safety System.
- Ensuring the availability of necessary resources and information for effective operation of the Safety System
- Demonstrating commitment to the Ludlow Construction Safety System and its integrity
- Ensuring achievement of Ludlow Construction safety objectives
- Continuously improving the Safety System

## (2) Site Safety and Health Officer Safety (SSHO) Responsibilities

The Project Site Safety and Health Officer (***Forrest Brown***) is responsible for ensuring the overall effectiveness of the Safety System for a specific project. The Site Safety and Health officer or an approved alternate shall be on site at all times when work is performed under Contract No. W912WJ19C002, the approved SSHO (***Forrest Brown***) will serve on all day shift operations. *An alternate shall be named and approved by the Contracting Officer to serve as SSHO on all night shift operations, this alternate shall be named and submitted for approval prior to the start of any night shift operations.* Regardless of other duties, the Site Safety and Health Officer is responsible to:

- Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300A and Daily Production reports for prime and sub-contractors.
- Maintain applicable safety reference material on the job site.
- Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
- Implement and enforce accepted APPS and AHAs.
- 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.
- Ensure sub-contractor compliance with safety and health requirements.
- Fully implement all provisions of the Ludlow Construction Safety System and related documents.
- Manage the operation of the Ludlow Construction Company Safety System
- Implement and manage all phases of safety control
- Ensure company-wide effectiveness of the Safety System
- Ensure that the Safety System is established and implemented by persons doing work that impacts safety
- Ensure company-wide conformance to Safety System requirements
- Act as Ludlow Construction liaison with parties outside the company on matters relating to safety

- Report to senior management on performance of the Safety System, including needed improvements
- Review and approval of all Safety System documents
- Review and approval of all Safety System records
- Review and approve of safety-related contract submittals
- Manage all project inspection and safety control activities
- Identify existing and predictable hazards

The Site Safety and Health Officer has the authority to:

- Stop work when continuing work may adversely affect safety or cover up a defect
- Prevent the use of materials that may adversely affect safety or cover up a defect
- To direct the removal and replacement of any non-conforming work or material by Ludlow Construction, any subcontractor, or any supplier.
- Suspend work and/or supply of materials by any staff member, subcontractor personnel, or supplier as deemed necessary to assure safety results.

## (3) PROJECT SUPERINTENDENT SAFETY RESPONSIBILITIES

The President appoints one or more Project Superintendents (***Jonathan Pio***) for each project. Every Project Superintendent must have completed a 30-hour OSHA construction safety class or equivalent within the last 5 years.

A Project Superintendent has specific safety responsibilities for:

- Ensure that that work performed complies with Ludlow Construction safety standards, the project APP, and AHAs.
- Ensure that subcontractors begin work only when conditions will not adversely affect safety
- Conduct safety inspections, tests, and recording findings
- Accurately assessing subcontractor safety performance

The Project Superintendent has the authority to:

- Stop work when continuing work may adversely affect safety
- Prevent the use of materials that may adversely affect safety
- Suspend work and/or supply of materials as deemed necessary to assure safety results

Failure to perform the above responsibilities duties will result in dismissal.

## (4) PROJECT MANAGER SAFETY RESPONSIBILITIES

The Project Manager (***Michael Pio***) is the one person responsible for management of a specific project. Regardless of other duties, the Project Manager is responsible for:

- 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.
- Demonstrate commitment to the Ludlow Construction Safety System and its integrity
- Ensure achievement of project safety objectives
- Provide adequate resources for effective operation of the Safety System on the project
- Ensure that each project employee understands his or her safety responsibilities as well as Ludlow Construction safety policies

The Project Manager has authority to:

- Stop work when continuing work adversely affects safety
- Prevent the use of materials that would adversely affect safety
- Suspend work and/or supply of materials by any staff member, subcontractor personnel, or supplier as deemed necessary to assure safety results.

Failure to perform the above responsibilities duties will result in dismissal.

# Ludlow Construction Company, Inc.
# Project Site Safety and Health Officer
# Competent Person Appointment Letter

Version Arpil 1, 2019

| | |
|---|---|
| Project Number | CONTRACT NO. W912WJ19C0002 |
| Project Name | **DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT** |
| Appointed Site Safety and Health Officer | Robert Peddicord |

Please be advised that you are hereby appointed as Site Safety and Health Officer for the above referenced project. Your responsibilities include managing and implementing the Ludlow Construction Company Safety System and the Project Accident Prevention Plan regarding the referenced project.
I assign you responsibility to:

- Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub-contractors
- Maintain applicable safety reference material on the job site
- Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings
- Implement and enforce accepted APPS and AHAs
- 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
- Ensure sub-contractor compliance with safety and health requirements
- Fully implementing all provisions of the Ludlow Construction Company Safety System and related documents
- Manage the operation of the Ludlow Construction Company Safety System
- Implement and manage all phases of safety control
- Ensure company-wide effectiveness of the Safety System
- Ensure that the Safety System is established and implemented by persons doing work that impacts safety
- Ensure company-wide conformance to Safety System requirements
- Act as Ludlow Construction Company liaison with parties outside the company on matters relating to safety
- Report to senior management on performance of the Safety System, including needed improvements
- Review and approval of all Safety System documents
- Review and approval of all Safety System records
- Review and approval of safety-related contract submittals
- Manage all project inspection and safety control activities
- Identify existing and predictable hazards

I grant you unrestricted authority for carrying out the above responsibilities including:

- Stopping work when continuing work may adversely affect safety or cover up a defect
- Preventing the use of materials that may adversely affect safety or cover up a defect
- Directing the removal and replacement of any non-conforming work or material by Ludlow Construction Company, any subcontractor, or any supplier.
- Suspending work and/or supply of materials by any staff member, subcontractor personnel, or supplier as deemed necessary to assure safety results.

**President signature and date:** _____

**COMPETENT PERSON STATEMENT: I am the designated Site Safety and Health Officer capable and competent to carry out the responsibilities and authority as stated above.**

**Project Site Safety and Health Officer signature and date:**
Robert C Peddicord 9/3/19

# Ludlow Construction Company, Inc.
# Project Manager Competent Person Appointment Letter

Version Arpil 1, 2019

| | |
|---|---|
| Project Number | CONTRACT NO. W912WJ19C0002 |
| Project Name | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT |
| Appointed Project Manager | Michael Pio |

Please be advised that you are hereby appointed as Project Manager for the above referenced project. Your responsibilities include managing and implementing the Ludlow Construction Company Safety System and the Project Accident Prevention Plan regarding the referenced project.
The Project Manager is the one person responsible for management of a specific project. I assign you responsibility for:

- Demonstrating commitment to the Ludlow Construction Company Safety System and its integrity
- Ensuring achievement of project safety objectives
- Providing adequate resources for effective operation of the Safety System on the project
- Ensuring that each project employee understands his or her safety responsibilities as well as Ludlow Construction Company safety policies

I grant you unrestricted authority for carrying out the above responsibilities including:

- Stopping work when continuing work may adversely affect safety or cover up a defect
- Preventing the use of materials that may adversely affect safety or cover up a defect
- Directing the removal and replacement of any non-conforming work or material by Ludlow Construction Company, any subcontractor, or any supplier.
- Suspending work and/or supply of materials by any staff member, subcontractor personnel, or supplier as deemed necessary to assure safety results.

**President signature and date:** 

**COMPETENT PERSON STATEMENT**

**I am the designated Project Manager capable and competent to carry out the responsibilities and authority as stated above.**

**Project Manager signature and date:** _____

# Ludlow Construction Company, Inc.
# Project Superintendent Competent Person Appointment Letter

Version Arpil 1, 2019

| | |
|---|---|
| Project Number | CONTRACT NO. W912WJ19C0002 |
| Project Name | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT |
| Appointed Project Superintendent | Jonathan Pio |

Please be advised that you are hereby appointed as Project Superintendent for the above referenced project. Regardless of your other duties, in the role of Project Superintendent I assign you responsibility for:

- Conducting 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.
- Ensuring that that work is performed complies with Ludlow Construction Company safety standards, the project APP, and AHAs.
- Ensuring that subcontractors begin work only when conditions will not adversely affect safety
- Conducting safety inspections, tests, and recording findings
- Accurately assessing subcontractor safety performance
- Ensuring that safety standards are achieved before approving subcontractor or work crew completion of work

I grant you unrestricted authority for carrying out the above responsibilities including:

- Stopping work when continuing work may adversely affect safety or cover up a defect
- Preventing the use of materials that may adversely affect safety or cover up a defect
- Directing the removal and replacement of any non-conforming work or material by Ludlow Construction Company, any subcontractor, or any supplier.
- Suspending work and/or supply of materials by any staff member, subcontractor personnel, or supplier as deemed necessary to assure safety results.

**President signature and date:** _____

**COMPETENT PERSON STATEMENT**

**I am the designated Project Superintendent capable and competent to carry out the responsibilities and authority as stated above.**

**Superintendent signature and date:** _____

# 5. SUBCONTRACTORS AND SUPPLIERS

## a. IDENTIFICATION OF SUBCONTRACTORS AND SUPPLIERS

A list of subcontractors and suppliers approved by the Site Safety and Health Officer is recorded on the Project Subcontractor and Supply List, included in this subsection page 34.

## b. SAFETY RESPONSIBILITIES OF SUBCONTRACTORS AND SUPPLIERS

The Ludlow Construction Company, Inc. safety responsibilities encompass all project activities including those of subcontractors. Ludlow Construction Company does not transfer any safety responsibilities to any subcontractor.

Ludlow Construction Company extends the safety system to subcontractors by holding each subcontractor responsible for complying with the Ludlow Construction Company Safety System requirements. Requirements of the Ludlow Construction Company Safety System include this Accident Prevention Plan, Activity Hazard Analyses, site specific hazard plans, safety policies, procedures, the requirements of EM 385-1, rules, standards, safe work practices, as well as federal/state/OSHA requirements and other pertinent safety and health regulations.

For the purpose of enhancing deployment of the Ludlow Construction Company Safety System in subcontractor organizations Site Safety and Health Officer ensures that each subcontractor:

- Assigns all employees and personnel with the all the safety qualification requirements, responsibilities and authority as Ludlow Construction Company employees.
- Complies with the training requirements.
- At the time of mobilization, provides a list of the Supervisors names and contact numbers. This list shall be kept current and provide phone numbers where the Supervisors can be reached 24 hours a day, 7 days a week for emergency purposes.
- Receives a site specific operational and safety brief before starting work at the site.

The subcontractor many not delegate project-related safety responsibilities to any other organization.

When there is a specific limited task with limited safety risks and exposures, only the Site Safety and Health Officer may exempt subcontractor personnel from safety policies, procedures, and reporting. The Site Safety and Health Officer records any safety-related exemptions on the Project Subcontractor and Supply List.

The Site Safety and Health Officer will ensure that each subcontractor:

- Appoints a safety manager with all the responsibilities and authority as the Ludlow Construction Company Site Safety and Health Officer including the responsibility to stop unsafe work and the authority to do so. The subcontractor's safety manager must be on site at all times that subcontractor personnel are on the jobsite.

- Appoints a supervisor or superintendent with all the safety qualification requirements, responsibilities and authority as the Ludlow Construction Company Project Superintendent including the responsibility to stop unsafe work and the authority to do so.

Every sub-subcontractor works directly under the subcontractor's safety system. The subcontractor many not delegate project-related safety management responsibilities to any other organization.

Subcontractors will meet the requirements of this Accident Prevention Plan.

Each subcontractor must comply with the training requirements of section 6 of this Accident Prevention Plan. The Site Safety and Health Officer may approve subcontractor to perform their own training when the training is equivalent to Ludlow Construction Company training.

Subcontractors will receive a site specific operational and safety brief before starting work at the site.

Subcontractors will meet the requirements of Section 7 Safety and Health Inspections of this Accident Prevention Plan.

The Site Safety and Health Officer will approve subcontractor to perform inspections equivalent to the Ludlow Construction Company inspections.

Subcontractors will meet the requirements of Section 8 of this Accident Prevention Plan.

Each subcontractor must comply with the reporting section 8 of this Accident Prevention Plan. The Site Safety and Health Officer will receive the reports and incorporate the information in Ludlow Construction Company reporting.

Subcontractors will meet the requirements of safety policies and procedures of this Accident Prevention Plan.

The Site Safety and Health Officer may approve a subcontractor to use a safety plan, policy or procedures that is equivalent to a Ludlow Construction Company policy or procedure. The subcontractor must submit the documents for written approval prior to use.

Subcontractors will meet the requirements of this Accident Prevention Plan.

Contractors that perform work are responsible for ensuring that their personnel comply with Ludlow Construction Company Safety System and the project Accident Prevention Plan including safety policies, rules, standards and safe work procedures, as well as federal/state/OSHA and EM 385-1-1 requirements and other pertinent safety and health regulations.

## (1) SUBCONTRACTOR NONCOMPLIANCE POLICY

The Site Safety and Health Officer will terminate any subcontractor who does not conform to the requirements of this Accident Prevention Plan.

The Site Safety and Health Officer has the authority to reinstate a subcontractor only after all deficiencies have been corrected. The subcontractor may not continue work with known safety nonconformances.

The Site Safety and Health Officer also has the authority to reinstate a subcontractor provided all subcontractor personnel on the project work directly under the Ludlow Construction Company Safety System.

# Ludlow Construction Company, Inc.
# Project Subcontractor and Supplier List

| Project ID | Project Name | | | Preparer/ Date |
|---|---|---|---|---|
| CONTRACT NO. W912WJ19C0002 | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT | | | |

| Features of Work | Subcontractor/Supplier Name | Description of Materials / Services | Safety Control Method (Not Applicable/ Subcontractor QC/ Ludlow Construction Company QC) | Remarks |
|---|---|---|---|---|
| Tanks | DN Tanks | | ON SITE INSPECTION: LUDLOW | |
| Concrete | United Concrete | | ON SITE INSPECTION: LUDLOW | |
| Electric | A&R Electric Inc. | | ON SITE INSPECTION: LUDLOW | |
| Testing | Allied Testing Laboratories | | OFF SITE: SUBCONTRACTOR QC | |

# 6. TRAINING

All Project personnel must undergo all training required by this plan before they may perform project work.

As the project proceeds, newly hired employees and new employees assigned to the project must undergo training required by this plan before they may perform project work.

The Training Plan and Log form (*pages39-41)* lists the training required by this project.

### (1) SAFETY TRAINING RECORDS

Records will be kept on training activities including training topics and participants.

Training records will be kept on the Training Record form included as an exhibit in this subsection.

## a. REQUIREMENTS FOR NEW HIRE SOH ORIENTATION TRAINING

The Site Safety and Health Officer conducts a meeting with the Project Manager, Project Superintendent, and other key management and safety personnel. Topics to discuss include:

- Details of the APP and how they will be incorporated plans, programs, and procedures.
- A listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed and agreed upon.
- A schedule for the preparation, submittal, review, and acceptance of AHAs to preclude project delays.
- Deficiencies in the submitted APP

The functions of the Pre-construction Safety Conference may be incorporated into other planning meetings such as Customer safety training on operation and maintenance.

During the project closeout phase, the Site Safety and Health Officer trains **customers** on the safety aspects of operation and maintenance of the completed project.

The Site Safety and Health Officer ensures that all **employees** receive training relevant to their safety responsibilities including job hazards and activity hazards.

The Site Safety and Health Officer ensures that all **subcontractors** receive training on relevant elements of the Ludlow Construction Company Safety System, Project Accident Prevention Plan, and safety standards.

The Safety and Health Officer identifies the training needs of all personnel performing activities that affect safety. Training topics may include:

- The Ludlow Construction Company Safety System
- The Ludlow Construction Company Safety Policy
- Specific operating policies identified in the Safety Manual
- Specific safety standards cited in the Safety Manual, or project documents, or records
- Specific safety standard operating procedures (*OSHA, EM 385-1-1 etc.)*

- Customer operation and maintenance training
- Job hazard analysis
- Activity hazard analysis
- Safety communications

The Site Safety and Health Officer develops a Project Safety Training and Communications Plan that describes methods of communications among the customer, subcontractors, suppliers, and Ludlow Construction Company. The Project Safety Communications Plan includes:

- Distribution of the assigned responsibility and authority of the Project Manager, Site Safety and Health Officer, and Project Superintendent and the Project Organization Chart.
- Customer points of contact including engineers, architects, and safety assurance personnel.
- Subcontractors and supplier points of contact
- Project pre-construction meeting participants, date, and location
- Definable Feature of Work safety plan meeting participants, and nominal location.
- Weekly project communication meeting participants, and nominal day of week, time, and location
- Daily construction report distribution, frequency, and due date
- Monthly project status report distribution and due date
- Distribution of safety inspection and test records, and due date
- Nonconformance report distribution and customer approval authority
- Location of project safety records storage and point of contact for records access

The Site Safety and Health Officer indoctrinates each employee into the safety program goals, responsibilities, authority, policies, requirements, rules, and procedures.

Prior to commencement of construction activities, all construction personnel assigned to the project will have completed safety indoctrination training including:

- Requirements and responsibilities for accident prevention and maintaining safe and healthful work environments
- General safety and health policies and procedures and pertinent provisions of the Federal and State standards and regulations
- Employee and supervisor responsibilities for reporting all accidents
- Provisions for medical facilities and emergency response and procedures for obtaining medical treatment or emergency assistance
- Procedures for reporting and correcting unsafe conditions or practices
- Job hazards and the means to control/eliminate those hazards, including applicable activity hazard analysis.
- Specific training as required by Federal, State and Local regulations.

All site personnel will sign the acknowledgement page and have the signed page placed in their training files. The Site Safety and Health Officer has the responsibility of ensuring that personnel assigned to this project comply with these requirements.

# b. Requirements for Mandatory Training and Certifications

In addition to the required initial training, each employee will receive training that addresses the hazards that the employee may encounter when they carry out the activities they are expected to perform. The Activity Hazard Analysis identifies the hazard exposures and the training required.

The Site Safety and Health Officer certifies each employee that completes training. Employees must have a completion certificate before beginning the work activity.

Prior to starting work on a construction activity the Site Safety and Health Officer or Project Superintendent conducts a thorough review of applicable Activity Hazard Analysis with all affected personnel.

Prior to a person starting work in a job position, the Site Safety and Health Officer or Project Superintendent conducts a thorough review of job position hazard analysis.

At least two persons shall be certified as completing first aid and CPR Training while employees are on the jobsite. Anyone working alone shall be trained on how, and have the means, to communicate with first aid assistance in the event of an accident.

| Mandatory Training and Certifications | Applicable Personnel |
|---|---|
| Project Safety Indoctrination Training (Certificate of Completion) | All construction personnel prior to commencement of construction activities |
| Activity Hazard Analysis Training (Certificate of Completion for each **DFOW**) | All construction personnel prior to commencement of construction activities on a Definable Feature of Work. Features of Work are listed in a prior section. |
| Hazard Plan Training (Certificate of Completion for each Hazard Plan) | All construction personnel prior to exposure to the hazards identified in the plan. Hazard plans are listed in a following section of this plan. |

The Site Safety and Health Officer initiates corrective action training when any personnel demonstrates a lack of safety understanding or skill that increases safety or health risks to themselves or others. When training deficiencies are a contributing cause of a safety nonconformance, training is included in the corrective action plan as described other sections of this Accident Prevention Plan.

## (1) Visitor Training and Safety Controls

The Site Safety and Health Officer, Project Superintendent, or other competent person will escort for each visitor entering the jobsite. Before the visitor enters the jobsite the escort will:

- Brief the visitor on the hazards that the visitor may encounter

- Train the visitor on safety and health requirements relevant to the hazards the visitor may encounter
- Train the visitor on personal protective equipment requirements and their use (i.e., hardhat, foot protection, etc.)
- Maintain a visitor log including the date, visitor's name, purpose of the visit, training provided to the visitor, a list of the visitor's required PPE, signature of the visitor, and signature of the escort.

The Site Safety and Health Officer will maintain a stock of common personnel protective equipment (i.e., hard hats, eye protection, earplugs, reflective vests, etc.) for use by visitors.

While on the jobsite, the escort will:

- Assure that the visitor is wearing/using the required personal protective equipment (PPE)
- Assure that the visitor is adequately protected from safety hazards

## c. Procedures for Periodic Safety and Health Training

The Safety Communications Plan lists safety-related topics and how they will by communicated and reinforced through periodic training to project personnel.

The Project Superintendent ensures that weekly toolbox meetings reinforce critical safety topics for all available construction personnel.

Weekly toolbox safety meeting will be conducted weekly, nominally on the same time and day of the week. The day and time will be set at the project pre-construction safety conference. Each on-site worker will be required to attend. Attendance will be recorded. The Project Superintendent will be responsible for conducting these meetings.

All available project personnel attend a monthly safety meeting conducted by the Site Safety and Health Officer. Topics to be covered during such meetings may include hazardous materials, safety data sheets (**SDS**), safe lifting, safe driving, proper use of Personal Protective Equipment, safe work methods.

## d. Requirements for Emergency Response Training

The Site Safety and Health Officer will train all employees in emergency responses, including contacting emergency personnel. See Emergency Response Plan (*Appendix B pg. 136*), Procedures and Tests: Emergency Response Plan 9.b.i (*pg. 71*) and Emergency Contact List (*pg. 23*)

# Ludlow Construction Company, Inc.
# Training Plan

| Project ID | Project Name | Preparer | Date | |
|---|---|---|---|---|
| CONTRACT NO. W912WJ19C0002 | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT | | Arpil 1, 2019 | |

| Training Title/ID | Training Description | When Required (date, milestone or event) | Planned Participants (Job Position/Organization) | Related Notes |
|---|---|---|---|---|
| ACM & LEAD | N/A | | | |
| CRANE & RIGGING SAFETY | AWARENESS | Prior to start of Project | Ludlow Construction and DN Tanks | CRANE & RIGGING CERTIFICATIONS SITUATIONAL AWARENESS |
| MANUAL LIFTING | AWARENESS | Prior to start of Project | All personnel working onsite | MATERIAL HANDLING |
| HOUSEKEEPING AND GENERAL SAFETY | AWARENESS | Prior to start of Project | All personnel working onsite | EXCAVATION & WORKING IN AN OCCUPIED AREA |
| CONFINED SPACE WORK | AWARENESS | Prior to start of Project | Ludlow Construction and DN Tanks | RESCUE EQUIP/COMMS /VENTILATION |
| CONCRETE & MASONRY | AWARENESS | Prior to start of Project | United Concrete | (WATER CONTAINMENT) |
| LADDERS & SCAFFOLDING | AWARENESS | Prior to start of Project | All personnel working onsite | ACCESS FROM EXCAVATION |
| HAZARDOUS ENERGY, ELECTRICITY & LOTO | AWARENESS | Prior to start of Project | A&R Electric | ELECTRIC |
| PAINTS & SOLVENTS | AWARENESS | Prior to start of Project | Ludlow Construction, DN Tanks | VENTILATION & PPE |
| HAZARDOUS MATERIAL STORAGE & DISPOSAL | AWARENESS | Prior to start of Project | All personnel working onsite | SDS, NEEPA & HAZ MAT INVENTORY |
| DISCHARGES & REGULATED WASTES | N/A | Prior to start of Project | | |

| Training Title/ID | Training Description | When Required (date, milestone or event) | Planned Participants (Job Position/Organization) | Related Notes |
|---|---|---|---|---|
| HOT WORK: CUT / WELD / SOLDER / BRAZE | FIRE PREVENTION & INJURY PREVENTION | Prior to start of Project | Ludlow Construction, DN Tanks, A&R Electric | RIGGING / FIRE WATCHES SCREENS & SPATTER |
| WASTE MANAGEMENT | AWARENESS | Prior to start of Project | All personnel working onsite | COVER DUMPSTERS & QTY |
| PPE | AWARENESS | Prior to start of Project | All personnel working onsite | PER SSHO & SITE SPECIFIC |
| EXCAVATIONS | AWARENESS | Prior to start of Project | Ludlow Construction Co. | DEMO & MECHANIZED EQUIPMENT |

| Training Title/ID | Training Description | When Required (date, milestone or event) | Planned Participants (Job Position/Organization) | Related Notes |
|---|---|---|---|---|

## Ludlow Construction Company, Inc.
## Training Log

| Project ID | Project Name | | | | |
|---|---|---|---|---|---|
| CONTRACT NO. W912WJ19C0002 | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT | | | | |

| Training Title/ID | Training Date | Participant Name | Participant Signature | Trainer Signature Of Completion | Notes |
|---|---|---|---|---|---|
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# Ludlow Construction Company, Inc.
# Contractor Point Of Contact List

Version Arpil 1, 2019

| CONTRACT No. | Project Name | Preparer | Date | |
|---|---|---|---|---|
| CONTRACT NO. W912WJ19C0002 | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT | | Arpil 1, 2019 | |
| **Company** | **Name and Position** | **Contact Responsibilities** | **Phone Contact Numbers** | **Email** |
| A&R Electric Inc. | Americo Gloria | Project Manager | (203) 368-3912 | |
| Allied Testing Laboratories | Richard Bellucci | Project Manager | (413) 736-1846 | |
| DN Tanks | Stephen Puopolo | Project Manager | (781)224-5161 | |
| Knapp Engineering | Gregg Knapp | President | (203)758-3503 | |
| Ludlow Construction Company, Inc. | Jonathan Pio | Superintendent | (413) 313-2428 | Jonpio@ludlowconstruction.com |
| Ludlow Construction Company, Inc. | Michael Pio | Project Manager | (413)262-0237 | Mpio@ludlowconstruction.com |
| Ludlow Construction Company, Inc. | Scott Pio | President | (413)315-0447 | Spio@ludlowconstruction.com |
| United Concrete | Keith Goldberg | Project Manager | (203)678-7131 | |

# 7. SAFETY AND HEALTH INSPECTIONS

Ludlow Construction Company, Inc. will conduct a coordinated array of safety inspections and tests that will verify that work processes and results conform to this Accident Prevention Plan, contract requirements, and Ludlow Construction Company safety standards.

Inspections are necessary to verify that work processes and results conform to both contract requirements and Ludlow Construction Company safety standards.

Qualified personnel inspect every project throughout the construction process. Additional reviews validate the accuracy of the field safety inspections and ensure that the safety standards apply uniformly.

An inspection and test plan defines the safety inspections and tests required for a specific project.

Personnel may only inspect construction activities for which they are have been qualified by the Site Safety and Health Officer.

Should an accident occur or an inspection identifies a safety issue, we systematically contain the issue and quickly make corrections.

## (1) CONTROL THE CONTINUATION OF WORK

Our first action is to prevent further injuries or harm by clearly mark the area by tape, tag, or other easily observable signal to prevent entry to a hazardous area, or use of hazardous equipment and materials.

After the item is marked, the Site Safety and Health Officer or Project Superintendent determines if work can continue in the affected area:

CONTINUE WORK: When continuing work does not adversely affect safety, work may continue in the affected area while the disposition of the item is resolved. The Site Safety and Health Officer may place limitations on the continuation of work.

STOP WORK ORDER: When continuing work can adversely affect safety, work must stop in the affected area until the disposition of the item resolved. The Site Safety and Health Officer identifies the limits of the affected area. The Site Safety and Health Officer quickly and clearly marks the stop work area.

## (2) RECORDING OF NONCONFORMANCES

If observed safety nonconformances are not immediately corrected, the Site Safety and Health Officer, Superintendent, PM or other qualified person records the nonconformances on a nonconformance report. Nonconformances and their resolution are recorded on a Nonconformance Report form. A Safety Nonconformance Report form is included in this subsection (*pg. 63*).

The Site Safety and Health Officer shall assign a planned date by which the deficiencies will be corrected on the Safety Nonconformance Report Control Log (*pg. 63*). The date may be assigned for all items or individual items as necessary.

The Site Safety and Health Officer shall conduct a follow-up inspection to verify that all nonconforming items have been corrected.

### (3) Corrective Actions

We expedite a corrective action that brings the safety issue into conformance. Similar hazards are reinspected for similar nonconformances.

Fixing a safety problem is not sufficient. Ludlow Construction Company systematically prevents recurrences to improve safety. First enhanced controls and management monitoring are put into place to assure work proceeds without incident. Then using a structured problem solving process, we identify root causes and initiates solutions. Solutions may involve a combination of enhanced process controls, training, upgrading of personnel qualifications, improved processes, and/or the use of higher-grade materials. Follow-up ensures that a problem is completely resolved. If problems remain, the process is repeated.

## a. Inspections

### (1) Accident Investigation Inspections

Should and accident occur, Site Safety and Health Officer will conduct an Accident Investigation Inspection following the procedures identified in the Inspection section of this plan. **The Site Safety and Health Officer records results of the investigation and will include all investigation findings on the issues ESAMS Report to the GDA.**

### (2) Daily Safety Inspections

The Site Safety and Health Officer or Project Superintendent, both competent persons, will conduct daily site safety inspections every day that there is work activity on the jobsite. Any noted deficiencies will be identified on that day's Daily Report in the Resident Management System (RMS).

### (3) Definable Feature of Work Safety Inspections

The Project Superintendent will conduct a series of safety inspections for each Definable Feature of Work identified on **page 16** this APP:

a) In advance of work, a Preparatory Site Inspection
b) Immediately prior to work beginning, an Initial Job-Ready Safety Inspections
c) Material safety inspection and tests
d) As work continues, follow-up work in process safety inspections
e) At the completion of the Definable Feature of Work, a completion safety inspection Definable Feature of Work Completion Inspections

Material safety inspections and tests ensure that purchased materials meet purchase contract quantity and safety standards. The Project Superintendent inspects or ensures that a qualified inspector inspects materials prior to use for conformance to project safety standards.

The Project Superintendent ensures that each Definable Feature of Work that uses the source-inspected materials proceed only when the material has been accepted by the material safety inspection or test.

Work in process safety inspections continuously verify compliance project safety standards beginning at the start of a Definable Feature of Work, as work is conducted, and continues until the Definable Feature of Work is complete.

For each Definable Feature of Work, the Project Superintendent or a qualified inspector performs job-ready safety inspections to ensure that construction activities begin only when they should begin. Job-ready safety inspections verify that conditions conform to the project safety standards.

For each Definable Feature of Work, the Project Superintendent or a qualified inspector performs an initial work in process inspection when the first representative portion of a work activity is completed.

The Project Superintendent or a qualified inspector performs ongoing work in process safety inspections to ensure that construction activities continue to conform to project safety standards.

For each Definable Feature of Work, the Site Safety and Health Officer or a qualified inspector inspects the completion of each Definable Feature of Work to verify that the completed work conforms to project safety requirements.

Completion Safety inspections are performed for each Definable Feature of Work. Completion safety inspections are conducted before starting other construction activities that may interfere with an inspection.

After the Definable Feature of Work completion inspection, any outstanding punch item remaining is deemed a nonconformance. Standard nonconformance policies stated **in subsection 6 (*Deficiency Tracking, Controls, and Records*)** apply.

## (4) PROJECT CLOSEOUT INSPECTIONS

A functional test is performed on each functional system. A qualified inspector performs functional acceptance tests to verify that a system meets predetermined safety acceptance criteria including:

- The equipment and systems operate as intended
- The equipment and systems perform as intended
- Documentation for operation and maintenance is complete

Each functional test has a documented testing procedure that includes:

- Step-by-step work instructions for conducting the test
- Data recording requirements

- Acceptance criteria
- A determination of pass or fail

If the customer or external agency performs a final inspection, the Safety Control Manager, Project Superintendent, and Project Manager will participate in the inspection. The Site Safety and Health Officer records nonconforming items on a Final Punch List form and assigns a planned date by which the deficiencies will be corrected.

The Project Superintendent assigns a planned date by which the deficiencies will be corrected. The date may be assigned for all items or individual items as necessary. After corrections have been made, the Project Superintendent verifies the completion of each item.

After corrections have been made, the Site Safety and Health Officer will conduct a follow-up inspection and verify that all nonconforming items have been corrected to meet contract specifications. Any remaining deficiencies will be recorded and managed as nonconformances.

When the final inspection process is complete, the Site Safety and Health Officer or Superintendent shall notify the customer that the project is ready for the customer's follow-up verification. The customer is also notified of any remaining nonconformances and their planned resolution.

## (5) Inspection Records

The Site Safety and Health Officer will prepare an inspection form for each Definable Feature of Work. The Site Safety and Health Officer lists on the form checkpoints for heightened awareness.

The person responsible for the inspection will record Definable Feature of Work inspection results on the **Definable Feature of Work inspection form (*pg. 51*)**.

## (6) Deficiency Tracking, Controls, and Records

Should a nonconformance be identified by an inspection there is a systematic method to control the item, correct it, and ensure that project safety is not adversely impacted by the event.

A nonconformance is any item that does not meet project specifications or Ludlow Construction Company Safety System requirements.

**Deficiency Controls**

When the Site Safety and Health Officer, Project Superintendent, inspector, or customer identifies a nonconformance or an observation, the person(s) involved are immediately notified. If the item is a physical condition, the item is quickly and clearly marked by paint, tape, tag, or other easily observable signal to prevent inadvertent cover-up.

After the item is identified, the Project Superintendent determines if work can continue in the affected area:

- CONTINUE WORK: When continuing work does not adversely affect safety or hide the defect, work may continue in the affected area while the disposition of the item is resolved. The Project Superintendent may place limitations on the continuation of work.
- STOP WORK ORDER: When continuing work can adversely affect safety or hide the defect, work must stop in the affected area until the disposition of the item resolved. The Project Superintendent identifies the limits of the affected area. The Project Superintendent quickly and clearly marks the stop work area.

If the nonconformance or observed item by the Definable Feature of Work completion inspection, the Project Superintendent or inspector records nonconformances on a nonconformance report form as specified in **subsection 2 of this section** Recording of Nonconformances.

The Project Superintendent sends the nonconformance report to the Site Safety and Health Officer.

When the Site Safety and Health Officer receives a Nonconformance Report, he/she makes an assessment of the affect the reported nonconformance has on form, fit, and function. The Site Safety and Health Officer may assign a disposition of either:

- REPLACE: The nonconformance can be brought into conformance with the original specification requirements by replacing the nonconforming product or material with a conforming product or material.
- REPAIR: The nonconformance can be brought into conformance with the original requirements through re-machining, reassembly, reprocessing, reinstallation, or completion of the required operations.
- REWORK: The nonconformance can be made acceptable for its intended use, even though it is not restored to a condition that meets all specification requirements. The Site Safety and Health Officer may specify safety standards that apply to the completion of rework. Rework nonconformances must be approved by the customer.
- USE AS-IS: When the nonconforming item is satisfactory for its intended use. Any use as-is items that do not meet all specification requirements must be approved by the customer.

**Corrective and Preventive Actions**

Fixing problems found during safety inspections is not sufficient. Systematic prevention of recurrences is essential for improving safety.

Ludlow Construction Company makes changes to solve the problem. Solutions may involve a combination of enhanced process controls, training, upgraded personnel qualifications, improved processes, or use of higher-grade materials.

Follow-up ensures that a problem is completely resolved. If problems remain, the process is repeated.

The Project Superintendent verifies that corrective actions eliminate the nonconformance to the requirements of the original specifications or as instructed by the disposition of the nonconformance report, and then removes, obliterates, or covers the nonconformance marker.

Furthermore, the Project Superintendent ensures that previously completed work is reinspected for similar nonconformances and corrective actions are taken to avert future occurrences (**see subsection 3 of this section Corrective Actions**).

When a nonconformance is found, the Project Superintendent ensures that:

- Previously completed work is reinspected for similar nonconformances
- Corrective actions are taken to avert future occurrences

The Site Safety and Health Officer identifies requirements for corrective actions with respect to frequency, severity, and detectability of safety nonconformances items found during and after completion of construction activities.

When a solution requires changes to Ludlow Construction Company safety standards, the Site Safety and Health Officer makes modifications as necessary by making changes to:

- Material specifications
- Personnel qualifications
- Subcontractor qualifications
- Company standards
- Inspection processes

The Project Superintendent initiates corrective action training to address safety nonconformances. Personnel and subcontractors performing or inspecting work participate in the training.

A qualified Project Superintendent inspects corrective actions during regular safety inspections and records observations on the safety inspection form.

The Project Superintendent notifies affected subcontractors of selected preventive-action training requirements.

The Project Superintendent evaluates the effectiveness of the improvements. The Site Safety and Health Officer reviews improvement results recorded on safety inspection records and monthly field reviews. When the Site Safety and Health Officer determines that the improvement actions are effective, the item is no longer treated as a preventive action.

## b. External Inspections

External inspections may be conducted by the customer, OSHA, and other regulatory agencies.

When notified of an external inspection, the Site Safety and Health Officer will accompany external inspector on the safety inspection. When there is a hold point for an external inspection, the Site Safety and Health Officer will ensure that work in the area is stopped or proceeds in a controlled manner that does not interfere with the external inspection.

The Site Safety and Health Officer will immediately notify the customer and OSHA or other regulatory agency that were notified of an accident (see Accident Reporting Section 8 of this Accident Prevention Plan and provide them with an opportunity to accompany the Site Safety and Health Officer on follow-up or corrective action inspections. (The inspection will not be delayed due to non-availability of external parties.) The Site Safety and Health Officer will provide the external inspector with a copy of any citations or reports and any corrective action responses to the citation(s) or report(s).

Testing is not required on this project. If the need for testing is discovered by an Activity Hazard Analysis, the test will be performed only by approved, testing agencies, or qualified personnel. Credentials and qualifications of the testing each laboratory will be added as an amendment to the exhibits in this subsection.

# Ludlow Construction Company, Inc.
## Definable Feature of Work Inspection Form

**Version: Arpil 1, 2019**

Definable Feature of Work (Section#)

| **Project: Id#** CONTRACT NO. W912WJ19C0002 | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT | **Location/Area:** DURHAM MEADOWS | Subcontractor Company ID#: Name: |
|---|---|---|---|
| Reference Specifications: | | Reference drawings: | Crew ID/Name |

***Compliance Verification***

- ☐ Compliance with initial job-ready requirements
- ☐ Compliance with material inspection and tests
- ☐ Compliance with work in process first article inspection requirements
- ☐ Compliance with work in process inspection requirements
- ☐ Compliance with inspection and test plan

***Heightened Awareness Checkpoints***

- ☐
- ☐
- ☐
- ☐
- ☐

Production Notes:

Reported Nonconformances:

**Verification of Definable Feature of Work Completion (sign and date)**

| | |
|---|---|
| **Subcontractor** *Definable Feature of Work verified complete to specifications (sign and date)* | **Sign and date*:** |
| **Project Superintendent** *Score subcontractor performance and feedback notes* | **Safety:** 5 4 3 2 1 |
| | **On-Time:** 5 4 3 2 1 |
| | **Safety:** 5 4 3 2 1 |
| *Definable Feature of Work verified complete to specifications (sign and date)* | **Sign and date*:** |
| **Site Safety and Health Officer** *Score subcontractor performance and feedback notes* | **Safety:** 5 4 3 2 1 |
| *Definable Feature of Work verified complete to specifications (sign and date)* | **Sign and date*:** |

* On behalf of the contractor, I certify that this report is complete and correct and equipment and material used and work performed during this reporting period is in compliance with the contract drawings and specifications to the best of my knowledge except as noted in this report.

# Ludlow Construction Company, Inc.
# Monthly Safety Evaluation Checklist

Version Arpil 1, 2019

| | | | |
|---|---|---|---|
| FEAD/ROC C OFFICE | | DATE | |
| CONTRACTOR | Ludlow Construction Company | CONTRACT % COMPLETE | |
| CONTRACT TITLE | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT | QC MANAGER | Thomas Wilson |
| SUPERINTENDENT | Jonathan Pio | PERSON COMPLETING INSPECTION | |
| SITE SAFETY MGR | Forest Brown | FINAL OVERALL SCORE | |

**ALL QUESTIONS ANSWERED "NO" WILL BE ENTERED INTO THE SAFETY and OCCUPATIONAL HEALTH TRACKING SYSTEM FOR CORRECTION**

**Preparatory Phase/Planning**

| Yes | No | N/A | |
|---|---|---|---|
| ☐ | ☐ | ☐ | ACCEPTED ACCIDENT PREVENTION PLAN ON SITE and UPDATED TO REFLECT CURRENT MANAGEMENT? |
| ☐ | ☐ | ☐ | COMPETENT PERSON EMPLOYED AS SITE SAFETY and HEALTH OFFICER? (SSHO) |
| ☐ | ☐ | ☐ | SAFETY and HEALTH BULLETIN BOARD ERECTED IN AREA COMMONLY ACCESSED BY WORKERS? |
| ☐ | ☐ | ☐ | SAFETY and OCCUPATIONAL HEALTH DEFICIENCY TRACKING SYSTEM ESTABLISHED and UPDATED DAILY? |
| ☐ | ☐ | ☐ | QUALIFIED PERSON CONDUCTING/DOCUMENTING SAFETY INDOCTRINATION TRAINING FOR NEW EMPLOYEES? |
| ☐ | ☐ | ☐ | ACTIVITY HAZARD ANALYSIS (AHA) with COMPETENT PERSON IDENTIFIED and PROOF OF QUALIFICATIONS ATTACHED and ACCEPTED BY GOVERNMENT DESIGNATED AUTHORITY FOR EACH WORK ACTIVITY ON SITE? |
| ☐ | ☐ | ☐ | ACTIVITY HAZARD ANALYSIS REVIEWED DURING PREPARATION and INITIAL PHASE MEETING? |
| ☐ | ☐ | ☐ | ARE WEEKLY SAFETY MEETINGS FOR ALL WORKERS BEING HELD ON SITE and DOCUMENTED? |
| ☐ | ☐ | ☐ | ARE MONTHLY SAFETY FOR ALL SUPERVISORS ON THE PROJECT DOCUMENTED? |
| ☐ | ☐ | ☐ | HAZARD COMMUNICATION PROGRAM SUBMITTED and IMPLEMENTED IAW 29 CFR 1910.1200 or 29 CFR 1926.59? |
| ☐ | ☐ | ☐ | SDS FOR EACH HAZARDOUS SUBSTANCE MAINTAINED WITH SITE MAP ATTACHED? |
| ☐ | ☐ | ☐ | CURRENT ADDITION of EM 385-1-1 AVAILABLE ON SITE? |
| ☐ | ☐ | ☐ | PRIME CONTRACTOR ASSURING SUBCONTRACTOR COMPLIANCE WITH REQUIREMENTS OF EM-385-1-1? |
| | | | Other ☐ Extra Credit ☐ |

| Office Trailer | | | |
|---|---|---|---|
| **Yes** | **No** | **N/A** | |
| ☐ | ☐ | ☐ | OFFICE and STORAGE TRAILERS ANCHORED? |
| ☐ | ☐ | ☐ | EMERGENCY PHONE NUMBERS POSTED? |
| ☐ | ☐ | ☐ | PHONE AVAILABLE ON SITE? |
| ☐ | ☐ | ☐ | COPY OF CONTRACTOR SIGNIFICANT INCIDENT REPORT (CSIR) FORM ON-SITE? |
| ☐ | ☐ | ☐ | CONTRACTOR AWARE IMMEDIATE NOTIFICATION OF ALL INJURIES REQUIRED BY FEAD/ROICC OFFICE? |
| ☐ | ☐ | ☐ | EMERGENCY PLANS IN CASE OF FIRE OR OTHER EMERGENCY PREPARED IN WRITING and REVIEWED? |
| ☐ | ☐ | ☐ | DRINKING WATER WITH DISPOSABLE CUPS and A WASTE RECEPTACLE AVAILABLE? |
| ☐ | ☐ | ☐ | TOILET FACILITIES WITH WASHING FACILITIES AVAILABLE? |
| ☐ | ☐ | ☐ | MAP DELINEATING BEST ROUTE TO NEAREST MEDICAL FACILITY POSTED ON SAFETY BULLETIN BOARD? |
| ☐ | ☐ | ☐ | FIRST AID KIT, TYPE III, 16 UNITS, and ONE POCKET MOUTH PIECE OR CPR BARRIER PROVIDED and MAINTAINED WITH INVENTORY LOG AVAILABLE? |
| ☐ | ☐ | ☐ | SITE POSTED "HARD HAT AREA," "NOISE HAZARD," "CONSTRUCTION AREA," etc.? |
| ☐ | ☐ | ☐ | GARBAGE CANS and DUMPSTERS AVAILABLE? |
| ☐ | ☐ | ☐ | WORK AREAS INSPECTED DAILY FOR ADEQUATE HOUSEKEEPING and RECORDED ON DAILY INSPECTION REPORTS? |
| ☐ | ☐ | ☐ | TRAFFIC CONTROL AROUND SITE ADEQUATE? |
| | | | **Other ☐ Extra Credit ☐** |

| Fire Prevention | | | |
|---|---|---|---|
| **Yes** | **No** | **N/A** | |
| ☐ | ☐ | ☐ | WRITTEN FIRE PREVENTION PLAN ON SITE and USED TO BRIEF EMPLOYEES? |
| ☐ | ☐ | ☐ | FIRE EXTINGUISHERS AVAILABLE, FULLY CHARGED, EASILY VISIBLE WITHIN 75 FEET FOR LOW HAZARD AREAS? |
| ☐ | ☐ | ☐ | FIRE EXTINGUISHERS INSPECTED MONTHLY, RECORDED ON TAGS and INITIALED? |
| ☐ | ☐ | ☐ | FUEL STORED IN SAFETY CANS LABELED/LISTED and PAINTED RED WITH YELLOW BAND and CONTENTS INDICATED? |
| ☐ | ☐ | ☐ | ARE HOT WORK PERMITS BEING OBTAINED? |
| ☐ | ☐ | ☐ | ARE FIRE WATCHES PROVIDED? |
| | | | **Other ☐ Extra Credit ☐** |

| Scaffold Safety | | | |
|---|---|---|---|
| **Yes** | **No** | **N/A** | |
| ☐ | ☐ | ☐ | COMPETENT PERSON SUPERVISES ALL ERECTION, MOVING, DISMANTLING, OR, ALTERING OF ALL SCAFFOLDING? |
| ☐ | ☐ | ☐ | PLANKS OVERLAPPED NOT LESS THAN 6" OR MORE THAN 12" OVER END SUPPORTS WITH TOE BOARDS IN PLACE? |

| Yes | No | N/A | |
|---|---|---|---|
| ☐ | ☐ | ☐ | SCAFFOLD PINNED PROPERLY and ALL CROSS BRACING IN PLACE? |
| ☐ | ☐ | ☐ | SCAFFOLD HEIGHT 4 TIMES SMALLEST BASE DIMENSION IS SYSTEM SECURED TO STRUCTURE? |
| **Yes** | **No** | **N/A** | |
| ☐ | ☐ | ☐ | ALL GUARDRAILS ARE IN PLACE? |
| ☐ | ☐ | ☐ | FULL WORK PLATFORM OR DECKS AT EACH WORKING LEVEL WITH NO CRACKS/SPLITS? |
| ☐ | ☐ | ☐ | WORK PLATFORM OR DECK SECURELY FASTENED TO THE SCAFFOLD? |
| ☐ | ☐ | ☐ | SAFE ACCESS PROVIDED TO EACH WORKING LEVEL? |
| ☐ | ☐ | ☐ | SCAFFOLD and COMPONENTS NOT OVERLOADED? |
| ☐ | ☐ | ☐ | IS SCAFFOLD SYSTEM PLUMB and LEVEL? |
| ☐ | ☐ | ☐ | SUSPENDED SCAFFOLD SYSTEMS USING INDEPENDENT PERSONAL FALL ARREST SYSTEM? |
| ☐ | ☐ | ☐ | PERSONNEL PROHIBITED FROM RIDING ON MANUALLY PROPELLED SCAFFOLDS? |
| | | | **Other ☐ Extra Credit ☐** |
| **Fall Protection** | | | |
| **Yes** | **No** | **N/A** | |
| ☐ | ☐ | ☐ | ARE EMPLOYEES TRAINED FOR FALL PROTECTION SYSTEMS IN USE? |
| ☐ | ☐ | ☐ | HAS THE CONTRACTOR DESIGNATED A COMPETENT PERSON FOR FALL PROTECTION? |
| ☐ | ☐ | ☐ | FALL PROTECTION PPE PROVIDED FOR ALL WORKING IN AREAS WHERE THEY COULD FALL 6' OR MORE? |
| ☐ | ☐ | ☐ | IS FULL BODY HARNESS USED WHERE APPLICAPLE? |
| ☐ | ☐ | ☐ | ALL WORKERS ALOFT TIED OFF AT ALL TIMES TO STRUCTURAL ELEMENT CAPABLE OF SUPPORTING 5,000 LBS? |
| ☐ | ☐ | ☐ | HAVE STANDARD GUARDRAILS BEEN PROVIDED WHERE NEEDED? |
| ☐ | ☐ | ☐ | HAVE HORIZONTAL LIFE LINES BEEN DESIGNED and INSTALLED UNDER SUPERVISION OF A QUALIFIED PERSON? |
| ☐ | ☐ | ☐ | MARINE (VESSEL) DECKS 6 FEET OR MORE ABOVE OTHER SURFACES TYPE A OR TYPE B FALL PROTECTION PROVIDED? |
| | | | **Other ☐ Extra Credit ☐** |
| **Ladder Safety** | | | |
| **Yes** | **No** | **N/A** | |
| ☐ | ☐ | ☐ | LADDERS EXTEND 3' ABOVE LANDING PLATFORM and TIED TO STRUCTURE? |
| ☐ | ☐ | ☐ | LADDERS OVER 20 FOOT NOT USED ON PROJECT? |
| ☐ | ☐ | ☐ | ARE LADDERS USED WITH HAND TOOLS ONLY? |
| ☐ | ☐ | ☐ | ARE LADDER BASE DISTANCES FROM STRUCTURE 1/4 HEIGHT? |
| ☐ | ☐ | ☐ | ARE FLOOR OPENINGS EITHER COVERED OR SURROUNDED BY A GUARDRAIL? |

| Yes | No | N/A | |
|---|---|---|---|
| ☐ | ☐ | ☐ | ELECTRICIANS NOT USING CONDUCTIVE LADDERS? |
| ☐ | ☐ | ☐ | STAIRWAYS PROVIDED ON ALL STRUCTURES OVER 20' DURING CONSTRUCTION/WITH GUARDRAIL? |
| ☐ | ☐ | ☐ | PORTABLE STEP LADDERS OVER 20' NOT USED ON THE SITE? |
| **Yes** | **No** | **N/A** | |
| ☐ | ☐ | ☐ | ARE LADDERS PROPERLY USED? |
| | | | **Other ☐ Extra Credit ☐** |

| **Excavations** | | | |
|---|---|---|---|
| Yes | No | N/A | |
| ☐ | ☐ | ☐ | DIGGING PERMITS OBTAINED WHEN REQUIRED? |
| ☐ | ☐ | ☐ | COMPETENT PERSON INSPECTED and DOCUMENTED EXCAVATION DAILY? |
| ☐ | ☐ | ☐ | HIGH VISIBILITY APPAREL WORN BY ALL WORKERS EXPOSED TO VEHICLE TRAFFIC OR WORKING AROUND EQUIPMENT |
| ☐ | ☐ | ☐ | EXCAVATOR, BACKHOE OPERATING MANUAL FOR HYDRAULIC EQUIPMENT and ATTACHMENTS ON-SITE? |
| ☐ | ☐ | ☐ | EXCACATOR EQUIPMENT USED AS HOISTING EQUIPMENT ON CONTRACTS AWARDED SINCE JUNE 2005 FOLLOW NEW EM-385 SECTION 16.N.01 REQUIREMENTS BELOW |
| ☐ | ☐ | ☐ | A. WRITTEN PROOF OF QUALIFICATION OF EQUIPMENT OPERATORS, RIGGERS INVOLVED IN HOISTING, TRANSPORTING OPERATIONS |
| ☐ | ☐ | ☐ | B. OPERATIONAL TEST PERFORMED WITH EQUIPMENT? |
| ☐ | ☐ | ☐ | C. MANUFACTURERS OPERATING MANUAL WITH EQUIPMENT? |
| ☐ | ☐ | ☐ | D. MANUFACTURERS LOAD RATING CHART? |
| ☐ | ☐ | ☐ | E. PROPER USE OF RIGGING, INCLUDING POSITIVE LATCHING DEVICES? |
| ☐ | ☐ | ☐ | F. INSPECTION OF RIGGING |
| ☐ | ☐ | ☐ | G. COMMUNICATION BETWEEN WORKERS INVOLVED? |
| ☐ | ☐ | ☐ | H. USING TAG LINES? |
| ☐ | ☐ | ☐ | I. BARRICADE SWING RADIUS OF EQUIPMENT and LOAD? |
| ☐ | ☐ | ☐ | J. SURFACE BENEATH EQUIPMENT STABLE? |
| ☐ | ☐ | ☐ | OVER 4' DEEP MUST HAVE A LADDER WITHIN 25' and TWO MEANS OF EGRESS? |
| ☐ | ☐ | ☐ | HAS PROPER SLOPE OR TRENCH BOX/SHORING BEEN PROVIDED? |
| ☐ | ☐ | ☐ | IS WATER CONTROLLED/REMOVED? |
| ☐ | ☐ | ☐ | IS EXCAVATED MATERIAL AT LEAST 2' BACK FROM TRENCH EDGE? |
| ☐ | ☐ | ☐ | BARRICADED, ETC., TO PREVENT WORKERS and PUBLIC FROM FALLING INTO TRENCH/HOLE? |
| ☐ | ☐ | ☐ | IN LOCATIONS OF KNOWN OR SUSPECTED CONTAMINATION, IS EXCAVATION ATMOSPHERE MONITORED? |

| | | | |
|---|---|---|---|
| | | | **Other ☐ Extra Credit ☐** |
| **Electrical** | | | |
| **Yes** | **No** | **N/A** | |
| ☐ | ☐ | ☐ | **HAS A SKETCH OF TEMPORARY POWER DISTRIBUTION BEEN SUBMITTED /ACCEPTED BY GDA?** |
| ☐ | ☐ | ☐ | **ELECTRICAL WORK PERFORMED BY QUALIFIED PERSONNEL WITH VERIFIABLE CREDENTIALS?** |
| ☐ | ☐ | ☐ | **ARE ARC FLASH REQUIREMENTS KNOWN and ADHERED TO?** |
| ☐ | ☐ | ☐ | **PROTECTIVE/TEMPORARY GROUNDS CONNECTED ON EQUIPMENT TO BE WORKED ON?** |
| ☐ | ☐ | ☐ | **ARE TEMPORARY POWER PANEL and RECEPTACLES PROTECTED FROM WEATHER?** |
| ☐ | ☐ | ☐ | **GFCI'S IN USE FOR SITE TOOLS - APPLIES TO EXISTING OUTLETS IN RENOVATION PROJECTS AS WELL?** |
| ☐ | ☐ | ☐ | **TEMPORARY LIGHTS INSULATED FROM SUPPORTS PROPERLY WITH ALL LAMPS WORKING and GUARDED?** |
| ☐ | ☐ | ☐ | **OVERHEAD POWER LINES IN AREA, OPERATIONS PROHIBITED UNLESS MAINTAINING AT LEAST 10' DISTANCE OR ISOLATION?** |
| ☐ | ☐ | ☐ | **IS LOCKOUT/TAGOUT PROGRAM IN EFFECT?** |
| ☐ | ☐ | ☐ | **VERTICAL CLEARANCE OF TEMPORARY WIRING LESS THEN 600 VOLTS AT LEAST 10 FEET MAINTAINED?** |
| ☐ | ☐ | ☐ | **ALL FLEXIBLE CORDS INSPECTED AT LEAST DAILY? DOCUMENTED?** |
| ☐ | ☐ | ☐ | **FLEXIBLE CORDS NOT SPLICED EXCEPT HARD SERVICE CORDS # 12 OR LARGER WITH MOLDED OR VULCANIZED SPLICES BY QUALIFIED ELECTRICIAN?** |
| | | | **Other ☐ Extra Credit ☐** |
| **Cranes** | | | |
| **Yes** | **No** | **N/A** | |
| ☐ | ☐ | ☐ | **IS CRANE OPERATOR QUALIFIED IAW EM 385-1-1, APP. G, and IS CRANE CERTIFICATION POSTED IN CAB?** |
| ☐ | ☐ | ☐ | **ARE APPENDIX H DAILY START UP INSPECTIONS PERFORMED BY OPERATOR and SUBMITTED WITH DRI?** |
| ☐ | ☐ | ☐ | **HAS PERIODIC INSPECTION BEEN PERFORMED PRIOR TO USE ON SITE IAW EM-385-1-1, APP.H?** |
| ☐ | ☐ | ☐ | **IS CRANE EQUIPPED WITH ANTI TWO-BLOCK DEVICE IF REQUIRED?** |
| ☐ | ☐ | ☐ | **IS THE CRANE LEVEL and ON FIRM GROUND and OUTRIGGERS IN USE WITH APPROPRIATE CRIBBING?** |
| ☐ | ☐ | ☐ | **IF NEAR ELECTRIC POWER SOURCES, ARE RULES FOLLOWED FOR CLEARANCE/ISOLATION IN OPERATING ZONE? 10 FOOT MINIMUM REQUIRED** |
| ☐ | ☐ | ☐ | **IS CRANE SIDE LOADING PROHIBITED?** |
| ☐ | ☐ | ☐ | **ARE RIGGING CABLES and SLINGS INSPECTED BY A COMPETENT PERSON BEFORE EACH SHIFT?** |
| **Yes** | **No** | **N/A** | |
| ☐ | ☐ | ☐ | **ARE WORKERS PROTECTED FROM THE CRANE SWING RADIUS and PREVENTED FROM PASSING UNDER THE LOAD?** |
| | | | **Other ☐ Extra Credit ☐** |

| Confined Space | | | |
|---|---|---|---|
| Yes | No | N/A | |
| ☐ | ☐ | ☐ | HAS ENTRY PLAN IAW 29 CFR 1910.146 and EM-385 BEEN SUBMITTED and ACCEPTED? |
| ☐ | ☐ | ☐ | IS COMPETENT PERSON, IN WRITING, IDENTIFIED? |
| ☐ | ☐ | ☐ | IS ATMOSPHERE BEING MONITORED? |
| ☐ | ☐ | ☐ | IS SPACE BEING VENTILATED? |
| ☐ | ☐ | ☐ | ARE ENTRANTS, ATTENDANTS and ENTRY SUPERVISOR PROPERLY TRAINED? |
| ☐ | ☐ | ☐ | IS RESCUE/RETRIEVAL SYSTEM IN PLACE FOR PERMIT REQUIRED CONFINED PLACES? |
| ☐ | ☐ | ☐ | ARE ENTRY PERMITS POSTED AT POINT OF ENTRY and SIGNED BY ENTRY SUPERVISOR? |
| ☐ | ☐ | ☐ | IS POINT OF ENTRY POSTED "DANGER CONFINED SPACE"? |
| ☐ | ☐ | ☐ | HAS BLANKING OR LOCKING OUT OF SYSTEMS TAKEN PLACE? |
| | | | Other ☐ Extra Credit ☐ |
| **Roofing** | | | |
| Yes | No | N/A | |
| ☐ | ☐ | ☐ | HAS STRUCTURAL ANALYSIS OF THE ROOF BEEN CONDUCTED BY A QUALIFIED PERSON? |
| ☐ | ☐ | ☐ | HAS COMPETENT PERSON COMPLETED A DAILY INSPECTION OF EACH JOB SITE? |
| ☐ | ☐ | ☐ | HAS COMPETENT PERSON DEVELOPED A FALL PROTECTION PLAN, SUBMITTED/ACCEPTED BY GDA? |
| ☐ | ☐ | ☐ | ARE KETTLES AT LEAST 25 FEET AWAY FROM BUILDINGS? |
| ☐ | ☐ | ☐ | IS KETTLE ATTENDANT WEARING PROPER PPE AT ALL TIMES? |
| ☐ | ☐ | ☐ | ARE TWO FIRE EXTINGUISHERS AT THE KETTLE? |
| ☐ | ☐ | ☐ | ARE SKYLIGHTS and ROOF PENETRATIONS COVERED OR BARRICADED APPROPRIATELY? |
| ☐ | ☐ | ☐ | HAS THE ROOF BEEN EVALUATED FOR ITS ABILITY TO SUPPORT THE INTENDED CONSTRUCTION LOADS? |
| ☐ | ☐ | ☐ | ARE WARNING LINES ON LOW SLOPED ROOFS IN PLACE and PROPERLY INSTALLED/MAINTAINED? |
| ☐ | ☐ | ☐ | FUEL CYLINDER A MINIMUM OF 10' FROM OPEN FLAME? |
| | | | Other ☐ Extra Credit ☐ |

| Equipment | | | |
|---|---|---|---|
| Yes | No | N/A | |
| ☐ | ☐ | ☐ | ALL MACHINERY OR EQUIPMENT INSPECTED DAILY, WHEN IN USE, BY COMPETENT PERSONS? |
| Yes | No | N/A | |
| ☐ | ☐ | ☐ | ARE OPERATORS TRAINED and AUTHORIZED TO OPERATE POWERED INDUSTRIAL TRUCKS, LIFT TRUCKS, and SIMILAR EQUIPMENT? |
| ☐ | ☐ | ☐ | MOBILE EQUIPMENT EQUIPPED WITH BACKUP ALARMS? ROLLOVER CAGES/ MOVING PARTS ADEQUATELY GUARDED? |
| ☐ | ☐ | ☐ | ARE EQUIPMENT OPERATIONS MAINTAINING SAFE CLEARANCE FROM ELECTRICAL POWER LINES? |

| Yes | No | N/A | |
|---|---|---|---|
| ☐ | ☐ | ☐ | MODIFICATIONS MEET SAFETY RATING IAW MANUFACTURER (I.E., LIFTING PERSONNEL WITH FORKLIFT)? |
| ☐ | ☐ | ☐ | ARE SAFETY LASHINGS PROVIDED FOR HIGH PRESSURE HOSE CONNECTIONS, I.E., AIR COMPRESSORS? |
| ☐ | ☐ | ☐ | ARE WORKERS CLEAR OF BLIND SPOTS ASSOCIATED WITH MOBILE CONSTRUCTION EQUIPMENT? |
| ☐ | ☐ | ☐ | ARE DAILY WALK AROUND INSPECTIONS OF AERIAL LIFTS PERFORMED and DOCUMENTED BY QUALIFIED OPERATORS? |
| ☐ | ☐ | ☐ | DO AERIAL LIFTS HAVE BASKET/PLATFORM WITH GUARDRAIL? |
| ☐ | ☐ | ☐ | WORKERS NOT EXTENDING OVER GUARDRAIL OF AERIAL LIFTS? |
| ☐ | ☐ | ☐ | ARE ARTICULATING BOOM PLATFORMS (JLG TYPE) USED WITH FULL BODY HARNESS ATTACHED TO PROPER ATTACHMENT POINTS ON BOOM OR BASKET? |
| ☐ | ☐ | ☐ | ARE DUMP TRUCK CHECKLISTS BEING USED and COPIES KEPT ON SITE? |
| | | | **Other ☐ Extra Credit ☐** |
| **Demolition** | | | |
| **Yes** | **No** | **N/A** | |
| ☐ | ☐ | ☐ | HAS DEMOLITION PLAN, BASED ON ENGINEERING, LEAD, and ASBESTOS SURVEY BY A REGISTERED PROFESSIONAL ENGINEER BEEN ACCEPTED? |
| ☐ | ☐ | ☐ | WASTE NOT BEING DROPPED > 6' UNLESS IN AN ENCLOSED CHUTE and AREA SECURED FROM TRAFFIC? |
| ☐ | ☐ | ☐ | FOR BUILDING DEMOLITION, HAS NOTIFICATION BEEN MADE TO STATE HAVING JURISDICTION? |
| ☐ | ☐ | ☐ | ARE NAILS REMOVED FROM SCRAP LUMBER/MATERIALS? |
| ☐ | ☐ | ☐ | FRAGMENTATION OF GLASS CONTROLLED? |
| ☐ | ☐ | ☐ | MATERIAL CHUTES AT AN ANGLE GREATER THAN 45º FROM THE HORIZONTAL ENCLOSED? |
| | | | **Other ☐ Extra Credit ☐** |

# Ludlow Construction Company, Inc.
# Safety Nonconformance Report

Version Arpil 1, 2019

| Nonconformance Report Control ID | Project Number | Project Name |
|---|---|---|
| | CONTRACT NO. W912WJ19C0002 | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT |

| Preparer Signature/ Submit Date | Site Safety and Health Officer Signature / Disposition Date |
|---|---|
| | |

| | |
|---|---|
| Description of the requirement or specification | |
| Description of the nonconformance, location, affected area, and marking | |
| Disposition | |
| Corrective Actions | ☐ **Corrective actions completed Name/Date:_____**<br>**Customer acceptance of corrective actions required? Yes ☐ No ☐**<br>**Name/Date:_____** |
| Preventive Actions | |
| | ☐ **Preventive actions completed Name/Date:_____** |

# Ludlow Construction Company, *Inc.*
# *Nonconformance* Report Control Log

Version Arpil 1, 2019

| Project Number | Project Name | Preparer | Date |
|---|---|---|---|
| CONTRACT NO. W912WJ19C0002 | **DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT** | | |

| Nonconformance Report ID # | Description of Nonconformance | Report Date | Disposition Decision Date | Corrective Action Completion | |
|---|---|---|---|---|---|
| | | | | Initial | Date |
| | | | | | |
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# 8. ACCIDENT REPORTING

## a. EXPOSURE DATA

The Site Safety and Health Officer will submit Monthly Man-hour Exposure Reports to the Contracting Officer no later than the 5th workday of each month. The report encompasses on-site work including all hourly and salaried employees. The report will include all subcontractors working on this project.

Exposure data will be reported on the Man-Hour Exposure Reports form included on **page 69 of this subsection.**

## b. ACCIDENT INVESTIGATION REPORTS AND LOGS

### (1) ACCIDENT REPORTS

All accidents occurring incidentally to the project is investigated, reported, and analyzed. The Site Safety and Health Officer will report all accidents and injuries no matter how slight. The Site Safety and Health Officer will notify the Contracting Officer as soon as practical, but not later than 24 hours, after any accident. The accident notification will include: contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known; and brief description of accident (to include type of construction equipment used, PPE used, etc.).

**The Site Safety and Health Officer will notify the GDA as soon as practical, but not later than four hours, after any accident that**

- **Property damage equal to or greater than $5,000**
- **Days Away Injuries**
- **Days Away Illnesses**
- **Restricted/Transfer Injuries**

***Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.***

**The Site Safety and Health Officer will notify the GDA *immediately* when there is:**

- **A fatal injury/illness**
- **A permanent totally disabling injury/illness**
- **A permanent partial disabling injury/illness**
- **The hospitalization of three or more people resulting from a single occurrence**
- **$500,000 or greater accidental property damage**
- **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**
- **USACE aircraft destroyed or missing**

***LUDLOW shall notify OSHA in accordance with 29 CFR 1904.39 within 8-hours when and employee is fatally injured or 1 or more persons are hospitalized as inpatients as a result of a single occurrence.***

**In addition LUDLOW shall immediately report to the GDA any mishap occurring in any of the following high hazard areas:**

- **Electrical – to include Arc Flash, electrical shock, etc.**
- **Uncontrolled Release of Hazardous Energy (includes electrical and non-electrical)**
- **Load Handling Equipment (LHE or Rigging**
- **Fall-from-Height (any level other than same surface), and**
- **Underwater Diving Operations**

The Site Safety and Health Officer prepares an accident report on **page 64 Safety Nonconformance Report.**

Accidents will be reported on OSHA Form 300A Injury and Illness Incident Report **included in Section 3 Statement of Safety and Health Policy, Goals, and Objectives subsection b pg. 23**

### (2) Log of Work-related Accidents and Injuries

All work-related accidents and injuries occurring incidentally to this project, no matter how slight, will be recorded on the OSHA 300 Log of Work-related Accidents.

All work-related accidents and injuries occurring incidentally to this project, no matter how slight, will be recorded on the OSHA 300A Log of Work-related Accidents included as an exhibit in this subsection.

### (3) Accident Investigation

Should and accident occur, the Site Safety and Health Officer will thoroughly investigate the accident. The Site Safety and Health Officer will conduct an Accident Investigation Inspection following the procedures identified in the Inspection section of this plan.

### (4) Corrective Actions

Corrective Actions will be taken following the procedures identified in **Section 7 subsection 3** of this plan. The Site Safety and Health Officer follows up on each corrective actions and records findings in an Accident Investigation Report.

## c. Immediate Action Notification

**The Site Safety and Health Officer will notify the GDA *immediately* when there is:**

- **A fatal injury/illness**
- **A permanent totally disabling injury/illness**
- **A permanent partial disabling injury/illness**
- **The hospitalization of three or more people resulting from a single occurrence**
- **$500,000 or greater accidental property damage**

- **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**
- **USACE aircraft destroyed or missing**

**In addition LUDLOW shall immediately report to the GDA any mishap occurring in any of the following high hazard areas:**

- **Electrical – to include Arc Flash, electrical shock, etc.**
- **Uncontrolled Release of Hazardous Energy (includes electrical and non-electrical)**
- **Load Handling Equipment (LHE or Rigging**
- **Fall-from-Height (any level other than same surface), and**
- **Underwater Diving Operations**

# Ludlow Construction Company, Inc.
# Man-hour Exposure Reports

Version March 31, 2013

| project Number | project Name | DFOW / Location | Month |
|---|---|---|---|
| CONTRACT NO. W912WJ19C0002 | DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT | | |

| Site Safety and Health Officer Approval (Signature and Date): | |
|---|---|
| | |

| ID/Code | Name of Organization | Prime / Subcontractor | Exposure Hours for Month | Exposure Hours for Year | Total Exposure Hours to Date |
|---|---|---|---|---|---|
| | | | | | |
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# 9. PLANS (PROGRAMS, PROCEDURES) REQUIRED BY THE SAFETY MANUAL

## (1) PROJECT RISK ASSESSMENT

The Site Safety and Health Officer performs a project risk assessment to identify project hazards. The Site Safety and Health Officer records findings on the Project Risk Assessment form included as an exhibit in this subsection.

## (2) PROJECT HAZARD ANALYSIS

The Site Safety and Health Officer, SSHO, prepares a hazard analysis for project hazards identified in the Project Hazard Risk Assessment **(*pg. 66*)**.

The project hazard analysis is recorded on the AHA form included **in Appendix C Accident Hazard Analysis Form**

## (3) IDENTIFY APPLICABLE SAFETY RISK MANAGEMENT PLANS

Based on the hazard analysis, the Site Safety and Health Officer identifies which risk management plans are necessary to control the hazard. The Safety Manger records required risk management plans from the project hazard analyses on the Plans, Programs, and Procedures in the form included as an exhibit in this subsection.

Each plan applicable to the start of this project is included **in Appendix B of** this Accident Prevention Plan; **(Section 11, Supporting Safety Manual and Appendix)**. When a plan is not applicable to the start of the project, but needed for a plan develops, the plan will be prepared and included as an **addendum** to **Appendix B** of this APP.

## (4) LUDLOW CONSTRUCTION COMPANY SAFETY POLICIES AND PROCEDURES

Policies and procedures that specify requirements of the Ludlow Construction Company Safety System are documented by the Ludlow Construction Company Safety Manual Version date: March 31, 2013.

The documents are included as an addendum to this safety plan.

## (5) PROJECT SAFETY RECORDS AND DOCUMENTATION PLAN

The Site Safety and Health Officer defines any safety records that will be maintained during the planning and execution of the project in addition to those appearing in other sections of this APP.

# Project Risk Assessment

| Contract Name and Number: **DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT CONTRACT NO. W912WJ19C0002** | Location: |
|---|---|
| Contractor Inspector: | Date: |

| Risk/Hazard | Detail | Present |
|---|---|---|
| Occ. Health Exp. | PCB, Lead, Asbestos | ☐ |
| | UXO | ☐ |
| | Airborne Contaminants (dust, mists, fumes) | ☐ |
| | Bio. Haz./Blood borne P | |
| | Chemical Hazards | ☐ |
| Process Safety/ Haz. Com | Work is on or adjacent to operations involving listed highly hazardous chemicals | ☐ |
| | Haz. Com/**SDS** | ☐ |
| Confined Space | Permit Required | ☐ |
| | Entry Supv. | ☐ |
| | Atmos. Test./Alarm | ☐ |
| | Rescue | ☐ |
| Energy Control | LOTO/Isolation | ☐ |
| | Inspection Proc. | ☐ |
| Hand/Power Tools | Heads/Handles | ☐ |
| | Cords/Plugs/Recept. | ☐ |
| | GFCI | ☐ |
| | Guards/Hoses | ☐ |
| | Powder Actuated | ☐ |
| Cranes-Mobile, Bridge, Tower, Derricks/Hoists Aerial Platforms, Powered Industrial Trucks, Aerial Lifts Scaffolds | Rigging, Hooks, Shackles Load Capacity Hand/Radio Signals Cert. Operators Inspection/Maint. Guardrails, C.Bracing Platforms, Ladders | ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ |

| Risk/Hazard | Detail | Present |
|---|---|---|
| Ladders/Stairs | Cleats, Rungs | ☐ |
| | Tied Off | ☐ |
| Utility Disruption | U/G Locates | ☐ |
| | O/H Distribution | ☐ |
| Signs, Signals, Barricades | Traffic Control | ☐ |
| | MUTCD/Flagmen | ☐ |
| | Signs/Tags | ☐ |
| | | ☐ |
| Underground/ USTs | Caissons/Cofferdams | ☐ |
| | Tunnels/Shafts | ☐ |
| | Trench/Excavation | ☐ |
| | UST Removal | ☐ |
| Hot Work | Torching, Welding, | ☐ |
| | Soldering, Brazing | ☐ |
| | Hot Work Permit | ☐ |
| PPE | Hard Hats | ☐ |
| | Safety Glasses | ☐ |
| | Hearing Protection | ☐ |
| | Respirators/SCBA | ☐ |
| | Protective clothing | ☐ |
| | Fall Protection | ☐ |
| Common Hazards | Housekeeping | ☐ |
| | Falling Objects | ☐ |
| | Protruding Objects | ☐ |
| | Illumination | ☐ |
| | Sanitation | ☐ |
| Special Hazards/ Waste | Handling, removal or site storage | ☐ |
| | Debris/rubbish | ☐ |
| Fire Protection/ Life Safety | Extinguishers | ☐ |
| | Evac. Routes | ☐ |

**Notes:**

# Ludlow Construction Company, Inc.
# PLANS, PROGRAMS, and PROCEDURES
## REQUIRED BY EM 385-1-1 2008

| | |
|---|---|
| Contract Name and Number:<br>**DURHAM MEADOWS WATERLINE, MIDDLETOWN AND DURHAM CT**<br>**CONTRACT NO. W912WJ19C0002** | Contractor/Subcontractor:<br>Ludlow Construction Company |
| Government Inspector: | Location: |
| Contractor Inspector: | Date: |

| *NOTE: The following plans should be on site and accessible to employees. The expected answer should be yes to all applicable plans. Be prepared to provide a plan or an explanation.* | Yes | No | Notes |
|---|---|---|---|
| a. Layout Plans (04.A.01) | | X | n/a (Located in the Project Work Plan) |
| b. Emergency Response Plans | | | |
| i. Procedures and Tests (01.E.01) | X | | Emergency Response Plan 1.1.2 9.b.i |
| ii. Spill Plans (01.E.01, 06.A.02) | X | | Spill Plan 9.b.ii **(Appendix B Section 13.2)** |
| iii. Firefighting Plan (01.E.01, Section 19) | X | | (**Appendix B Section 13.3**) |
| iv. Posting Of Emergency Telephone Numbers (01.E.05) | X | | (included within this APP) **see page 45** |
| v. Man Overboard/Abandon Ship (Section19.A.04) | | X | n/a |
| vi. Medical Support. (Section 03.A.02 03.D) | X | | Medical Support 9.vi; **Contact list page 45** |
| c. Prevention Of Alcohol and Drug Abuse (01.C.02) | X | | Alcohol & Drug Abuse Prevention; 9.c **(Appendix B Section 13.4)** |
| d. Site Sanitation Plan (Section 02) | X | | Site Sanitation; 9.d **(Appendix B Section 13.5)** |
| e. Access and Haul Road Plan (4.B) | | X | Access and Haul Road Plan **(Appendix B Section)** |
| f. Respiratory Protection Plan (05.G) | | X | n/a |
| g. Health Hazard Control Program (06.A) | X | | Health Hazard Control Plan; 1.1.6 9.g **(Appendix B Section 13.6)** |
| h. Hazard Communication Program (06.B.01) | X | | (**Appendix B Section 13.7**) |
| i. Process Safety Management Plan (06.B.04) | | X | n/a |
| j. Lead Abatement Plan (06.B.05 & Specifications) | | X | n/a |
| k. Asbestos Abatement Plan (06.B.05 & Specifications) | | X | n/a |
| l. Radiation Safety Program (06.E.03.A) | | X | n/a |
| m. Abrasive Blasting (06.H.01) | | X | n/a |
| n. Heat/Cold Stress Monitoring Plan (06.I.02) | X | | Heat/Stress Monitoring Plan; 9.n (**Appendix B Section 13.8**) |

| | | | | |
|---|---|---|---|---|
| **o.** | Crystalline Silica Monitoring Plan (Assessment) (06.M**)** | | X | n/a |
| p. | Night Operations Lighting Plan (07.A.08) | | X | n/a |
| q. | Fire Prevention Plan (09.A) | X | | **(Appendix B Section 13.3)** |
| r. | Wild Land Fire Management Plan (09.K) | | X | n/a |
| s. | Hazardous Energy Control Plan (12.A.01) | X | | **(Appendix B Section 13.12)** |
| t. | Critical Lift Plan (16.H) | | X | n/a |
| u. | Contingency Plan For Severe Weather (19.A.03) | X | | **(Appendix B Section 13.8)** |
| v. | Float Plan (19.F.04) | | X | n/a |
| w. | Site-Specific Fall Protection & Prevention Plan (21.C) | X | | **(Appendix B Section 13.9)** |
| x. | Demolition Plan (Engineering Survey) (23.A.01) | | X | n/a |
| y. | Excavation/Trenching Plan (25.A.01) | x | | **(Appendix B Section 13.13)** |
| z. | Emergency Rescue (Tunneling) (26.A.) | | X | n/a |
| aa. | Underground Construction Fire Prevention and Protection Plan (26.D.01) | | X | n/a |
| bb. | Compressed Air Plan (26.I.01) | | X | n/a |
| cc. | Formwork and Shoring Erection and Removal Plans (27.C) | | X | n/a |
| dd. | Precast Concrete Plan (27.D) | | X | n/a |
| ee. | Lift Slab Plans (27.E) | | X | n/a |
| ff. | Steel Erection Plan (27.F.01) | | X | n/a |
| gg. | Site Safety and Health Plan For HTRW Work (28.B) | | X | n/a |
| hh. | Blasting Safety Plan (29.A.01) | | X | n/a |
| ii. | Diving Plan (30.A.13) | | X | n/a |
| jj. | Confined Space Program (34 A) | X | | **(Appendix B Section 13.11)** |

### 1.1.1 9. a. Layout Plans N/A

### 1.1.2 9. b. Emergency Response Plans

#### *9. b.i. Procedures and Tests: Emergency Response Plan*

The Emergency Response Plan addresses emergency situations that may arise at jobsite locations and which may threaten human health and safety and/or damage customer or Ludlow assets. Management is responsible for implementing the Emergency Response Plan. The Emergency Response Plan will meet the following objectives:

1. Provide a means of notifying employees, customers and local authorities of an emergency situation.

2. Provide a safe and orderly method of evacuation of employees and customers from the work area.

3. Account for all employees who occupied the work area at the time of evacuation, should one occur.

4. Provide cooperation with all government authorities and agencies.

5. Provide a means to train employees and subcontractors to react to emergency situations.

6. Provide a means to document events and provide assistance in any future investigation.

7. Site security shall take the form of signage and physical barriers. Barriers and signage shall be positioned at all possible entry points to the project site.

**Emergency Coordinator and Deputy Coordinator:**

**Emergency Coordinator: Forrest Brown, SSHO;**
**Deputy Coordinators: Michael Pio, Project Manager**

The SSHO(s) & Superintendent(s) shall coordinate responses to internal and outside government agencies. No other Ludlow Construction Company employees are authorized to assume emergency authority without written permission.

**Escape Procedures and Routes**

1. Buildings: When working inside buildings, the Safety Officer will post a planned escape route for exiting the building. The escape route will be reviewed with each employee and subcontractor working within the building and designed assembly area will be identified.

2. Site Work Areas: When working on open work sites a designed assembly area will be identified for all site work employees to assemble should an emergency occur. The assembly area will be the jobsite trailer unless another area is designated as more appropriate.

***Emergency Evacuation:***

***The job site superintendent and the authorized representative of each subcontractor shall conduct an accounting of all workers. Each subcontractor representative shall report to the Ludlow Construction Company Superintendent, who will report to the Ludlow Construction Company Safety Officer. If a worker is not accounted for - the Safety Officer shall notify the appropriate authorities.***

**Communication Means:**

Cell phones or Two-Way Radios will be used as a means for communication during emergencies. The project superintendent will be responsible for making any necessary emergency calls and starting emergency procedures.

**Training for Emergency Response:**

The Safety Officer is responsible for implementing the emergency response program and may conduct training during:

1. Weekly Tool Box Meetings
2. Monthly Safety Meetings
3. Special Emergency training meetings
4. Coordinated tests or training with local authorities

***9. b.ii. Spill Plans:***

In the event of a hazardous spill Ludlow Construction Company personnel, or subcontractor personnel, will insure that immediate action is taken to control the spill, taking into account personal safety. Consistent with these actions, it is **critical to report spills immediately.**

The first person noticing the spill will notify his or her supervisor, if the supervisor cannot be found immediately, and then contact the Fire Department at emergency 911. Have the following information ready:

1. Name of person reporting the spill.

2. Location of the spill.

3. Number of persons injured.

4. Substance spilled. (If known)

5. Amount of spillage. (Best estimate)

6. Rate of release.

7. Time spill occurred.

8. Extent of which spill has traveled. (How far it has run)

9. Any other pertinent information. (Any electrical lines, drain lines, occupied buildings, etc.)

**REMAIN CALM:** Take action if possible to contain / clean-up the spill, remember personal safety comes first.

***Do not attempt to clean up hazardous material spills unless the person has completed a 40 hour hazardous material (HAZMAT/HAZWOPPER) course. EPA has personnel certified and experienced in these clean-up operations. Seek their assistance if a spill does occur.**

***9.b.iii. Firefighting Plan (attached as appendix B 13.3 Fire Prevention Plan to this APP)***

***9.b.iv. Posting of Emergency Telephone Numbers (page 45 of this APP)***

Emergency Phone Numbers shall be conspicuously posted at the job site.

***9.b.v. Man Overboard/Abandon Ship Plan n/a***

### *9.b.vi. Medical Support*

Prior to the start of work, Ludlow Construction will make arrangements to provide prompt medical attention to injured employees. Ludlow Construction will conspicuously post Emergency Response Contact Information for local Emergency Response Personnel and local Medical Facilities. Two or more employees each shift shall be qualified to administer First Aid and CPR. Ludlow Construction shall provide at least one, (1), first aid kit on site.

### 1.1.3 9.c. Plan for Prevention of Alcohol and Drug Abuse

All Ludlow Construction Company, Inc. subcontractor and supplier personnel shall be held to a "Zero Tolerance Policy" subject to immediate termination with no opportunity for rehire on the project in regards to the possession, use, or being under the influence of alcoholic beverages, narcotics or non-prescribed drugs while on a project jobsite.

### *9.d. Site Sanitation*

Ludlow Construction Company shall ensure Good Housekeeping and safe work areas are maintained throughout the project duration. Adequate supplies of potable water shall be provided for drinking and sanitation. Fully equipped portable lavatories shall be provided at each work site. Portable lavatories shall be routinely serviced and cleaned. Covered construction debris Dumpsters shall be provided, serviced and emptied as necessary.

### 1.1.4 9.e. Access and Haul Road Plan n/a

### 1.1.5 9.f Respiratory Protection Plan N/A

***To be provided by the subcontractor if necessary***

### *1.1.6* 9.g Health Hazard Control Program*:*

**Activity Hazard Recognition:** Ludlow Construction strives to develop a culture of safety. The first step of successful Activity Hazard Analysis is the critical recognition of hazards within the work site, both before work starts and during work activities. A well implemented Safety Program addresses workplace hazards and trains employees to recognize identified hazards and unidentified hazards. Risk assessment and mitigation is greatly enhanced when employees recognize potential hazards and embrace established safe work practices.

Most hazards can be classified into the following 8 categories:

1) Hazards that Catch:
   -Belts and Pulleys
   -Rotating Shafts

-Rollers

2) Hazards upon Contact:
-Hot Surface Areas
-Energized Electrical Components
-Sharp Objects
-Active Cutting and/or Grinding Objects/Surfaces
-Chemicals: Skin absorbable and Inhalation hazard

3) Hazards that Strike or Falls:
-Overhead Lifts
-Overhead work with loose debris, equipment and material
-Chains, Cable, rope or straps under tension of heavy loads
-Vehicles or moving equipment

4) Hazards of height – producing falling potential
-Non-Secured guard rails, open gates
-Unsecured openings in working platforms and scaffoldings
-Inadequate tie off points – strength, location, inappropriate connect

5) Hazards of Slipping and Tripping
-Uneven walking surface
-Slick surfaces produced by ice, oil, water or other lubricant
-Loose trash or debris on walking surface
-Objects projecting within walking areas

6) Hazards from Physical Abuse
-Lifting heavy loads incorrectly
-Working without proper clothing (sun-burns and frost bit)
-Noise

7) Hazards from First Aid
-Blood borne Pathogens

8) Hazards from Confined Space
-Vapors and Gases
-Physical dangers
-Oxygen Deficiency

Activity Hazards identified during the initial planning of work by the Superintendent and SSHO shall become part of the scope of work. The analysis shall address risks and hazards inherent within the scope of work and shall establish methods and inspections to ensure work completion in a safe manner. The SSHO shall conduct Preparatory Meetings with the Government, Subcontractors and Customers to review the Activity Hazard Analysis (AHA) and establish procedures for Safe completion of the work. The SSHO shall discuss Activity Hazard Analysis, AHA, with each Subcontractor prior to beginning any new Definable Feature of Work and anytime a new employee joins the workforce.

*1.1.7* **9.h. Hazard Communication Program** *(attached as **appendix B 13.7** Hazardous Communication Program to this APP)*

*1.1.8* **9.i. Process Safety Management Plan** *N/A*

*1.1.9* **9.j. Lead Abatement Plan** *N/A*

*1.1.10* **9.k. Asbestos Abatement Plan** *N/A*

*1.1.11* **9.l. Radiation Safety Program** *N/A*

*1.1.12* **9.m. Abrasive Blasting** *N/A*

*1.1.13* **9.n. Heat/Cold Stress Monitoring Plan***:* *(attached as **appendix B 13.8** Severe Weather Plan to this APP)*

Ludlow Construction Company monitors worker exposure to weather conditions such as heat, cold, wind, rain and humidity. Ludlow workers wear weather appropriate protective clothing and are afforded opportunities to drink plenty of water to avoid dehydration. Weather exposure awareness is discussed with workers during each AHA briefing of Job Steps and General Safety Requirements.

*1.1.14* **9.o. Crystalline Silica Monitoring Plan** *N/A*

*1.1.15* **9.p. Night Operations Lighting Plan***:* *N/A*

*1.1.16* **9.q Fire Prevention Plan** *(attached as* ***appendix B 13.3*** *Fire Prevention Plan to this APP)*

*1.1.17* **9.r. Wild Land Fire Management Plan** *N/A*

*1.1.18* **9.s. Hazardous Energy Control Plan** *(attached as* ***appendix B 13.12*** *Hazardous Energy Control Plan (Lock Out/Tag Out) to this APP)*

*1.1.19* **9.t. Critical Lift Plan** *N/A*

*1.1.20* **9.u. Weather Contingency Plan** *(attached as* ***appendix B 13.8*** *Severe Weather Plan to this APP)*

*1.1.21* **9.v. Float Plan** *N/A*

*1.1.22* **9.w. Fall Protection Plan** *(attached as an* ***appendix B 13.9*** *Fall Protection and Prevention Plan to this APP)*

*1.1.23* **9.x. Demolition Plan** *N/A*

Work spaces shall be thoroughly inspected to identify potential electrical, mechanical, chemical hazards and other dangers. Demolition debris shall be removed from the workspace daily and good housekeeping maintained. Ludlow Construction's SSHO and Superintendents shall limit access to demolition areas. Physical barriers and signage shall be positioned at all possible entry points to demolition areas.

*1.1.24* **9.y. Excavation/Trenching Plan** *(attached as an **appendix B 13.13**)*

*1.1.25* **9.z. Emergency Rescue (Tunneling)** *N/A*

*1.1.26* **9.aa. Underground Construction Fire Prevention and Protection Plan**
*N/A*

*1.1.27* **9.bb. Compressed Air Plan**
*N/A*

*1.1.28* **9.cc. Formwork and Shoring Erection and Removal Plans**
*N/A*

*1.1.29* **9.dd. Precast Concrete Plan**
*N/A*

*1.1.30* **9.ee. Lift Slab Plans**
*N/A*

*1.1.31* **9.ff. Steel Erection Plan** *N/A*

**1.1.32** **9.gg. Site Safety and Health Plan For HTRW Work**
**N/A**

*1.1.33* **9.hh. Blasting Safety Plan**
*N/A*

*1.1.34* **9.ii. Diving Plan** *N/A*

*1.1.35* **9.jj. Confined Space Program** *(attached as **appendix B 13.11** )*

# 10. Risk Management Processes

## a. Definable Feature of Work Activity Hazard Analysis

As the project proceeds, the Site Safety and Health Officer shall prepare an Activity Hazard Analysis (AHA) for each Definable Feature of Work. AHAs will be prepared using the current AHA form and shall be presented and discussed at the Preparatory Phase Meeting prior to starting the Definable Feature of Work.

**NOTE: A pdf version of the current AHA form is included in Appendix C Accident Hazard Analysis Form**

# 11. SUPPORTING SAFETY MANUAL AND APPENDIX

# Ludlow Construction Company, Inc.

## Safety System Manual

### Operating Policies of the
### Ludlow Construction Company Safety System

# LUDLOW CONSTRUCTION COMPANY, INC. SAFETY POLICY

Ludlow Construction Company, Inc. is committed to safe and healthful workplace for all employees.

Our goal is to achieve the highest standard of safety throughout all phases of our operations and to ensure that all employees work safely on jobsites free of avoidable hazardous. When hazards are unavoidable, we take a proactive approach to prevent injuries. Furthermore, we are ready to respond quickly and effectively to any accidents to minimize the extent of injuries, and to prevent similar accidents.

It is the policy of Ludlow Construction Company to abide by all of the safety standards of the Corps of Engineers, including those outlined in EM 385-1-1 Safety and Health Requirements Manual, OSHA regulations, and described in this Accident Prevention Plan.

Public and personal safety shall be a top priority during the course of work under this contract. All employees shall be trained and equipped to work in a safe and healthful manner, and shall comply with all safety and security requirements.

In carrying out our commitment to safety:

- Every employee is indoctrinated into the Ludlow Construction Company Safety System through training of the Ludlow Construction Company Safety System, Safety Policies, and procedures.
- Each project has an Accident Prevention Plan that addresses site-specific conditions and hazards. We prepare an activity hazard analysis for every phase of construction.
- We systematically reinforce safety during the project through ongoing training and heightened awareness of hazards.
- Every employee has the responsibility and authority to stop work should they discover an unsafe condition. Employees will not be reprimanded for stopping work.
- We closely monitor safety through every phase of construction. Should problems be found, we correct them and take action to prevent recurrences. A system of incentives and disciplinary action reinforces adherence to safe work practices.

# LUDLOW CONSTRUCTION COMPANY, INC. SAFETY PERFORMANCE GOALS AND OBJECTIVES

Our primary safety goal is based on the philosophy that all occupational injuries and illnesses can be prevented and that a 'Zero Accident and Injury' goal is achievable.

We strive for the safest possible conditions to protect and preserve people, property and the environment. On each construction site, the Project Superintendent will be directly accountable for the safety performance on the construction project. Quite simply, the company's project safety and loss goals are:

- Zero injuries, illnesses
- Zero permanent disabilities
- Zero fatalities
- Zero safety and health violations
- Prevention of any major fires, vehicle accidents, or property damage/losses
- No environmental accidents

To achieve zero accidents and injuries our objective is to use a sound approach to prevent injuries and deploy it effectively. Our approach uses the Accident Prevention Plan and the Activity Hazard Analysis to plan what policies, procedures, and actions need to be instituted to assure safety. And then, we fully deploy those plans and have inspections and controls in place to assure that the plans are followed. Our secondary goal is zero safety nonconformances as measured by our inspections and audits, or observations by external organizations.

# NONCOMPLIANCE POLICY

All Ludlow Construction Company, Inc. subcontractor and supplier personnel shall be held to a “Zero Tolerance Policy” of immediate termination with no opportunity for rehire on the project in regards to the following offenses:

- Noncompliance with the requirements of this Accident Prevention Plan
- Noncompliance with the Ludlow Construction Company Safety Policies
- Fighting on the jobsite
- Possession of firearms or other dangerous weapons or devices
- Dishonesty or fraud, including falsification of security, personnel or other records
- Possession, use, or being under the influence of alcoholic beverages, narcotics or non-prescribed drugs while on a project jobsite
- Violence, intimidation, or threats of violence to supervisory personnel, security officers, or fellow workers
- Theft of property
- Willfully damaging or mutilating materials, tools, equipment, or personal property of another employee
- Intentional violation of a safety rule, policy, or procedure
- Removal or destruction of any tags or markings on plant components
- Violation of equipment lock out / tag out (LOTO) procedures
- Violation of mandatory 100% fall protection / continual tie-off procedures.
- Use of electronic communications while operating any motorized equipment is prohibited (cell phones, smart phones, computers, music players, radios, communication radios)
- Unauthorized entry into a red barrier/banner tape area

# KEY ELEMENTS OF THE SAFETY SYSTEM

Key elements of the Ludlow Construction Company Safety System include:

**Safety Management and Responsibilities**. Ludlow Construction Company, Inc. fully integrates its safety management system into the organizational structure and performance management systems for each project. We:

- Maintain a documented safety system consisting of a safety manual with policies and procedures.
- Have well-defined safety responsibilities for every employee with specific safety responsibilities for key job positions.
- Tightly control exceptions to the safety system so company standards are applied uniformly to every project
- Systematically maintain safety system documents and records.

**Three Phases of Safety Controls**. Ludlow Construction Company, Inc. uses as system of three phases of control for each Definable Feature of Work:

- Preparatory Phase: In advance of the work, we conduct preparatory phase planning which includes inspecting the jobsite before work begins and conducting a meeting to review details, specifications, expectations, and items for heightened awareness.
- Initial Phase: When work is ready to start, we conduct an initial phase safety inspection that ensures that the necessary site conditions, materials, equipment, and personnel are in place and ready for work to begin. When work begins, we verify that the initial work meets specifications.
- Follow-up Phase: As work proceeds we perform follow-up safety inspections to ensure that work proceeds according to specifications until the Definable Feature of Work is complete.

**Qualified Employees**. Ludlow Construction Company, Inc. ensures that only trained, knowledgeable, capable employees' carryout the planning, execution, and control of our projects. We:

- Identify employee safety qualification requirements including licensing requirements, training qualifications, responsibilities, and authority for each job position.
- Train field employees on safety standards and procedures for their job position.
- Train field employees on safety standards and procedures for the activities they perform.
- Validate employee safety capabilities before assigning them to a job with safety responsibilities.
- Review ongoing employee qualifications and evaluate safety practices and performance as part of the employee performance management process.

**Project Accident Prevention Plan.** Ludlow Construction Company, Inc. prepares a plan that specifies how Ludlow Construction Company applies its Safety System to each project. We:

- Perform a project risk assessment that identifies hazards and clearly identify requirements for safety plans, policies, and controls to assure safety.
- Identify each project Definable Feature of Work subject to safety controls.

- Perform an Activity Hazard Analysis (AHA) for every Definable Feature of Work that recommends controls and training that address identified safety risks.
- Plan safety training required to assure all personnel understand safety risks and requirements of the project based on the project Risk Assessments and AHAs.
- Identify required safety inspections and tests at key milestones during construction.
- Plan safety reporting and communications through meetings, reporting requirements, and points of contact.

**Contract Safety Specifications.** Ludlow Construction Company, Inc. ensures that the information in customer contracts clearly defines customer safety expectations. We:

- Ensure that technical specifications and drawing clearly define customer expectations.
- Have a formal submittal system that further defines customer selections, agreed upon details, and clarifications as the project proceeds.
- Integrate all customer contract requirements into the Project Accident Prevention Plan.
- Plan project safety records and documents that we will provide to the customer during the project.

**Project-Specific Safety Standards**. Ludlow Construction Company, Inc. clearly defines safety standards and specifications that apply to each project. We:

- Identify all relevant building codes and industry standards.
- Specify safety and certification requirements for materials and equipment that affect safety.
- Identify special requirements calibration of safety measuring devices.
- Supplement the contract and published standards with Ludlow Construction Company safety standards as required to reduce safety risks and assure safety results.

**Qualified Subcontractors and Suppliers**. Ludlow Construction Company, Inc. purchases only from subcontractors and suppliers who consistently meet Ludlow Construction Company standards for safety. We:

- Clearly define subcontractor and supplier qualification requirements including licensing requirements, compliance with specific safety standards, safety responsibilities, qualification of personnel and safety improvement processes.
- Verify ongoing subcontractors' and suppliers' safety performance.

**Construction Process Safety Controls**. Ludlow Construction Company tightly controls the construction process to ensure safety results. We:

- Have a pre-construction meeting to communicate project safety goals and expectations.
- Conduct preparatory meetings in advance of each scheduled work construction task to communicate safety requirement details and coordinate construction activities.
- Enforce safety policies that monitor work conditions before and during work so that safety results are assured.

**Safety Inspections and Tests**. Ludlow Construction Company safety inspection processes ensure that all construction activities comply with the documented safety standards and specifications. We:

- Conduct a series of safety inspections for each construction task: in preparation for the task; before work begins; at first article completion; while work is in process; and at completion.
- Inspect all materials before use.
- Record the result of each safety inspection and test.

**Control of Nonconformances**. Ludlow Construction Company, Inc. nonconformance control processes ensure that we prevent all nonconformances from cover-up, inadvertent use, and corrected. We:

- Mark the nonconformance item to clearly identify it for correction.
- Correct nonconformances in a timely manner.
- Validate corrections.
- Require customer approval before accepting any nonconforming items.

**Prevention of Nonconformances**. Ludlow Construction Company, Inc. prevents nonconformances from recurring and improves company-wide safety performance. We:

- Track nonconformance data found during safety inspections and warranty repairs.
- Identify and prioritize nonconformance items for future prevention.
- Address nonconformance causes systematically by: updating standards and specifications; improving process and employee capabilities; setting new requirements for subcontractors and suppliers; and enhancing the effectiveness of field and third party safety inspections.
- Train employees, subcontractors, and suppliers on methods and procedures that prevent nonconformances.
- Validate actions taken to prevent nonconformances and their effectiveness.

**Safety System Audits**. Ludlow Construction Company, Inc. audits the safety system to assure it is operating effectively. We:

- Audit the operation of the safety system on each project for conformance to the Project Accident Prevention Plan and the Ludlow Construction Company Safety System requirements.
- Conduct annual company-wide audits to evaluate effectiveness of the Ludlow Construction Company Safety System and improve its operation.

# PROJECT SAFETY MANAGEMENT

After Ludlow Construction Company, Inc. is awarded a contract to carry out a construction project, the President forms a project team consisting of a Site Safety and Health Officer, Project Manager, and Project Superintendent.

First, the Site Safety and Health Officer performs a project risk assessment and determines safety risks that exist, and the safety policies, planning, and training necessary to reduce and control those risks.

The Site Safety and Health Officer also determines which job positions apply to the project and prepares a Job Position Hazard Analysis (PHA) that recommends controls and training that address identified safety risks.

The Site Safety and Health Officer evaluates personnel, subcontractors, materials, and suppliers, and ensures that only those that are safe and qualified are included on the project. Training is provided to ensure that all personnel involved in the project understand their safety responsibilities and authorities.

The Site Safety and Health Officer then details how the safety is controlled throughout the construction process through a safety inspection and test plan. Ludlow Construction Company operating policies assure compliance to the project safety requirements.

As the project proceeds and prior to starting each Definable Feature of Work, the Site Safety and Health Officer performs an Activity Hazard Analysis (AHA) that recommends controls and training that address specific risks of the upcoming phase of work. The Project Superintendent then coordinates the AHA with a site inspection, applicable safety standards, and communicates them through a preparatory meeting with all interested parties. The Project Superintendent amends safety checklists with items for heightened awareness based on the concerns of all parties.

The Subcontractors and Project Superintendent use safety inspection forms to monitor execution of the construction process through a series of safety inspections before, during, and at the completion of each construction task. Laboratory and functional tests are performed to assure safety.

Should safety nonconformances occur, they are systematically controlled and corrected. Improvements are made to prevent recurrences.

Should an accident occur, immediate action is taken to help the victim and prevent further trauma to the victim and other personnel. Then the accident is immediately communicated to the customer and followed up by an accident report communicating details of the event. Timely actions are taken to prevent recurrences.

Throughout the project there are standard operating procedures and forms for creating, maintaining, and controlling safety documents and records.

Throughout the project, the Site Safety and Health Officer performs on-site safety audits to ensure that the Ludlow Construction Company Safety System is operating effectively.

# 1. SAFETY SYSTEM MANAGEMENT AND RESPONSIBILITIES

*SYSTEM OF PERSONAL QUALITY ACCOUNTABILITY*

## 1.1. OVERVIEW

Responsibilities for safety are specified not only for compliance with policies and procedures but also so that decisions are based on principles that ensure safety.

Ludlow Construction Company, Inc. documents safety responsibilities to ensure that expected behaviors are communicated throughout the company rather than left to discretionary interpretation.

## 1.2. LUDLOW CONSTRUCTION COMPANY SAFETY POLICY

Safety is everyone's responsibility. The President holds everyone in the organization personally accountable for adhering to the Ludlow Construction Company Safety System policies and procedures.

The Ludlow Construction Company Safety Policy describes the Ludlow Construction Company commitment to safety and reinforces compliance with the Safety System.

The President communicates the Safety Statement message throughout the company so that all employees understand their respective safety responsibilities.

The President reviews the Ludlow Construction Company Safety Statement with all employees at least annually.

The President distributes a copy of the Ludlow Construction Company Safety Statement to all employees and posts it in all offices.

## 1.3. SAFETY RESPONSIBILITIES

### 1.3.1. EMPLOYEE SAFETY RESPONSIBILITIES

All employees have safety responsibilities that include:

- Fully implementing and complying with all provisions of the Ludlow Construction Company Safety Manual.
- Meeting or exceeding all applicable regulations, codes, industry safety standards, and manufacturer specifications as well as meeting or exceeding our customer's contract and individual requirements.

Employees must assume primary responsible for their own safety because no other person can fulfill this role. Employees must make every initiative to protect their own safety and that of their fellow workers.

Every employee has specific safety responsibilities to:

- NOT work in surroundings or under conditions that are unsafe or dangerous to his or her health.
- Comply with applicable safety and occupational health requirements, wear prescribed safety and health equipment, report unsafe conditions/activities, prevent avoidable accidents, and work in a safe manner.
- Understand the hazards before beginning an activity.
- NOT performing any activity is dangerous or unsafe.

- Ensure that that work is performed complies with Ludlow Construction Company safety standards, the project APP, and AHAs.
- Use personal protective equipment (PPE) when as required by this Accident Prevention Plan.
- Report to the Project Superintendent or Site Safety and Health Officer what may be a hazardous condition; unsafe work practice or behavior; defective machine, tool, vehicle, facility or equipment in the workplace.

Every employee has the authority to:

- Stop work when continuing work may adversely affect safety
- Prevent the use of materials that may adversely affect safety
- Suspend work and/or supply of materials as deemed necessary to assure safety results

Failure to perform the above responsibilities duties will result in dismissal.

### 1.3.2. PRESIDENT SAFETY RESPONSIBILITIES

While everyone is responsible for safety, the President is the one person in the company ultimately responsible for safety. Regardless of other duties, safety responsibilities of the President include:

- Ensuring that each employee understands his or her safety responsibilities as well as Ludlow Construction Company safety policies
- Establishing company safety policies and objectives.
- Conducting management reviews of the Ludlow Construction Company Safety System.
- Ensuring the availability of necessary resources and information for effective operation of the Safety System
- Demonstrating commitment to the Ludlow Construction Company Safety System and its integrity
- Ensuring achievement of Ludlow Construction Company safety objectives
- Continuously improving the Safety System

### 1.3.3. SITE SAFETY AND HEALTH OFFICER RESPONSIBILITIES

The Project Site Safety and Health Officer is responsible for ensuring the overall effectiveness of the Safety System for a specific project. Regardless of other duties, the Site Safety and Health Officer is responsible to:

- Conduct mishap investigations and complete required reports. Maintain the OSHA Form 300 and Daily Production reports for prime and sub-contractors.
- Maintain applicable safety reference material on the job site.
- Attend the pre-construction conference, pre-work meetings including preparatory inspection meeting, and periodic in-progress meetings.
- Implement and enforce accepted APPS and AHAs.
- 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.
- Ensure sub-contractor compliance with safety and health requirements.
- Fully implement all provisions of the Ludlow Construction Company Safety System and related documents.
- Manage the operation of the Ludlow Construction Company Safety System
- Implement and manage all phases of safety control
- Ensure company-wide effectiveness of the Safety System
- Ensure that the Safety System is established and implemented by persons doing work that impacts safety
- Ensure company-wide conformance to Safety System requirements

- Act as Ludlow Construction Company liaison with parties outside the company on matters relating to safety
- Report to senior management on performance of the Safety System, including needed improvements
- Review and approval of all Safety System documents
- Review and approval of all Safety System records
- Review and approve of safety-related contract submittals
- Manage all project inspection and safety control activities
- Identify existing and predictable hazards

The Site Safety and Health Officer has the authority to:

- Stop work when continuing work may adversely affect safety or cover up a defect
- Prevent the use of materials that may adversely affect safety or cover up a defect
- To direct the removal and replacement of any non-conforming work or material by Ludlow Construction Company, any subcontractor, or any supplier.
- Suspend work and/or supply of materials by any staff member, subcontractor personnel, or supplier as deemed necessary to assure safety results.

### 1.3.4. SUPERINTENDENT SAFETY RESPONSIBILITIES

The President appoints one or more Project Superintendents for each project. Every Project Superintendent must have completed a 30-hour OSHA construction safety class or equivalent within the last 5 years.

A Project Superintendent has specific safety responsibilities for:

- Ensure that that work performed complies with Ludlow Construction Company safety standards, the project APP, and AHAs.
- Ensure that subcontractors begin work only when conditions will not adversely affect safety
- Conduct safety inspections, tests, and recording findings
- Accurately assessing subcontractor safety performance

The Project Superintendent has the authority to:

- Stop work when continuing work may adversely affect safety
- Prevent the use of materials that may adversely affect safety
- Suspend work and/or supply of materials as deemed necessary to assure safety results

Failure to perform the above responsibilities duties will result in dismissal.

### 1.3.5. PROJECT MANAGER SAFETY RESPONSIBILITIES

The Project Manager is the one person responsible for management of a specific project. Regardless of other duties, the Project Manager is responsible for:

- 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.
- Demonstrate commitment to the Ludlow Construction Company Safety System and its integrity
- Ensure achievement of project safety objectives
- Provide adequate resources for effective operation of the Safety System on the project
- Ensure that each project employee understands his or her safety responsibilities as well as Ludlow Construction Company safety policies

The Project Manager has authority to:

- Stop work when continuing work adversely affects safety
- Prevent the use of materials that would adversely affect safety
- Suspend work and/or supply of materials by any staff member, subcontractor personnel, or supplier as deemed necessary to assure safety results.

Failure to perform the above responsibilities duties will result in dismissal.

### 1.3.6. Purchasing and Estimating Manager Safety Responsibilities

The Purchasing and Estimating Manager ensures that purchases conform to customer contract requirements and Ludlow Construction Company safety standards.

The Purchasing and Estimating Manager has authority to:

- Stop work when continuing work may adversely affect safety or cover up a defect
- Prevent the use of materials that may adversely affect safety
- Direct the removal or replacement of any non-conforming work or material
- Suspend work and/or supply of materials as deemed necessary to assure safety result

## 1.4. Safety System Performance Measures

Company-wide safety system performance measures evaluate the effectiveness of the Safety System. The following indicators are the primary measures of safety performance:

- Injuries
- Illnesses
- Permanent disabilities
- Fatalities
- Safety and health violations
- Environmental accidents

At least annually, Presidents evaluate Ludlow Construction Company safety performance and set improvement goals.

## 1.5. Exceptions

Exceptions to the Ludlow Construction Company Safety System and customer contract requirements are tightly controlled:

- Exceptions to compliance to contract specifications are approved only by the customer and the Site Safety and Health Officer.
- Exceptions to the Ludlow Construction Company Safety System not specified by contract requirements are approved only by President or the Site Safety and Health Officer.

Exceptions are recorded in memoranda, change orders (Section 3.3.4 Change Order), or otherwise clearly documented.

# 2. PROJECT ACCIDENT PREVENTION PLAN

## 2.1. OVERVIEW

After Ludlow Construction Company is awarded a contract to carry out a construction project, the President forms a project team consisting of a Site Safety and Health Officer, Project Manager, and Project Superintendent.

First, the Site Safety and Health Officer develops a set of project specifications that align project requirements with customer specifications and requirements, regulations, industry safety standards, product instructions, and Ludlow Construction Company safety standards.

The Site Safety and Health Officer evaluates personnel, subcontractors, materials, and suppliers, and ensures that only those that are capable and qualified are included on the project. Training is provided to ensure that all personnel involved in the project understand their safety responsibilities and authorities.

The Site Safety and Health Officer then details how the safety is controlled throughout the construction process through a safety inspection and test plan that specifies requirements and pass/fail criteria for safety inspections and tests. Ludlow Construction Company operating policies assure compliance to the project specifications.

As the project proceeds and prior to starting each construction task, the Project Superintendent coordinates detailed requirements and resources, site conditions, and communicates them through a meeting with all interested parties. The Project Superintendent amends inspection specific checklists with items for heightened awareness based on the concerns of all parties.

The Subcontractors and Project Superintendent use the safety inspection forms to monitor execution of the construction process through a series of safety inspections before, during, and at the completion of each construction task. Laboratory and functional tests are performed to assure performance results.

Should nonconformances occur, they are systematically controlled and corrected. Improvements are made to prevent recurrences.

Throughout the project there are standard operating procedures and forms for creating, maintaining, and controlling safety documents and records.

Throughout the project, the Site Safety and Health Officer performs on-site safety audits to ensure that the Ludlow Construction Company Safety System is operating effectively.

## 2.2. ACCIDENT PREVENTION PLAN PREPARATION

Before project construction begins, the Site Safety and Health Officer prepares an Accident Prevention Plan for the project.

The Site Safety and Health Officer submits the APP to the customer for approval. Work on the project may not proceed until the customer approves the APP.

## 2.3. SIGNATURE SHEET

The Site Safety and Health Officer prepares a signature sheet with signatures and phone numbers of:

- Approval of the plan preparer
- Approval by the President
- Concurrence by the Project Manager and Project Superintendent
- The Site Safety and Health Officer will include the following background information in the Accident Prevention Plan:
- Contractor: Ludlow Construction Company, Inc.
- Contract number
- Project name
- Project description
- Project location

## 2.4. Background Information

### 2.4.1. Identification of Safety Controlled Definable Feature of Work

The Site Safety and Health Officer includes a list of each applicable Definable Feature of Work as specified in Safety Manual section 4.5 Identification of Safety Controlled Definable Feature of Work as a part of the APP.

### 2.4.2. Project License and Qualification Requirements

The Site Safety and Health Officer includes a list of company license and qualification credentials required by contract specifications and government regulators as specified in Safety Manual section 4.3.1 Company Safety License and Credential Requirements and 4.3.2 Personnel Safety License, Credential, and Qualification Requirements.

## 2.5. Statement of Safety and Health Policy

The Site Safety and Health Officer will include a copy of the Ludlow Construction Company Safety and Health Policy in the Accident Prevention Plan.

The Site Safety and Health Officer will identify safety performance measures as specified in Safety Manual section 1.4 Safety System Performance Measures and set a project goal of zero incidents for each.

## 2.6. Responsibilities and Lines Of Authorities

The Site Safety and Health Officer will verify the safety capabilities and credentials of key project personnel and include the following items in the Accident Prevention Plan:

- Appointment of Key Project Personnel form
- Project Organization Chart

### 2.6.1. Project Safety Organization Chart

The President defines the organization chart for a specific project. The organizational chart includes job titles, names of assigned personnel, and organizational and administrative interfaces with the customer.

### 2.6.2. Appointment of Key Project Personnel

The President appoints to each project:

- A Site Safety and Health Officer with the job safety responsibilities and authority described in section 1.3.3 Site Safety and Health Officer Responsibilities.
- A Project Manager with the job safety responsibilities and authority described in section 1.3.5 Project Manager Safety Responsibilities.
- Superintendent with the job safety responsibilities and authority described in section 1.3.4 Superintendent Safety Responsibilities.

### 2.6.3. Personnel Qualification Assessments

The Site Safety and Health Officer evaluates employee qualifications to ensure that they are capable of completely carrying out their assigned safety responsibilities. The evaluation includes:

- Licenses, credentials, and experience as specified in Safety Manual section 4.3.2 Personnel Safety License, Credential, and Qualification Requirements
- Knowledge of Company safety standards
- Knowledge of job safety responsibilities and authority
- Demonstrated skills and knowledge
- Demonstrated ability
- Demonstrated results

The Site Safety and Health Officer also evaluates independent contractor personnel on the same safety standards that apply to employees.

## 2.7. Training

### 2.7.1. Project Safety Training and Communications Plan

The Site Safety and Health Officer ensures that all employees receive training relevant to their safety responsibilities including job hazards and activity hazards.

The Site Safety and Health Officer ensures that all subcontractors receive training on relevant elements of the Ludlow Construction Company Safety System, Project Accident Prevention Plan, and safety standards.

The Safety Manger identifies the training needs of all personnel performing activities that affect safety. Training topics may include:

- The Ludlow Construction Company Safety System
- The Ludlow Construction Company Safety Policy
- Specific operating policies identified in the Safety Manual
- Specific safety standards cited in the Safety Manual, or project documents, or records
- Specific safety standard operating procedures
- Customer operation and maintenance training
- Activity hazard analysis

- Safety communications

The Site Safety and Health Officer develops a Project Safety Training and Communications Plan that describes methods of communications among the customer, subcontractors, suppliers, and Ludlow Construction Company. The Project Safety Communications Plan includes:

- Distribution of the assigned responsibility and authority of the Project Manager, Site Safety and Health Officer, and Project Superintendent and the Project Organization Chart.
- Customer points of contact including engineers, architects, and safety assurance personnel.
- Subcontractors and supplier points of contact
- Project pre-construction meeting participants, date, and location
- Definable Feature of Work safety plan meeting participants, and nominal location.
- Weekly project communication meeting participants, and nominal day of week, time, and location
- Daily construction report distribution, frequency, and due date
- Monthly project status report distribution and due date
- Distribution of safety inspection and test records, and due date
- Nonconformance report distribution and customer approval authority
- Location of project safety records storage and point of contact for records access

### 2.7.2. SAFETY INDOCTRINATION TRAINING

The Site Safety and Health Officer indoctrinates each employee into the safety program goals, responsibilities, authority, policies, requirements, rules, and procedures.

Prior to commencement of construction activities, all construction personnel assigned to the project will have completed safety indoctrination training including:

- Requirements and responsibilities for accident prevention and maintaining safe and healthful work environments
- General safety and health policies and procedures and pertinent provisions of the Federal and State standards and regulations
- Employee and supervisor responsibilities for reporting all accidents
- Provisions for medical facilities and emergency response and procedures for obtaining medical treatment or emergency assistance
- Procedures for reporting and correcting unsafe conditions or practices
- Job hazards and the means to control/eliminate those hazards, including applicable activity hazard analysis.
- Specific training as required by Federal, State and Local regulations.

All site personnel will sign the acknowledgement page and have the signed page placed in their training files. The Site Safety and Health Officer has the responsibility of ensuring that personnel assigned to this project comply with these requirements.

### 2.7.3. EMERGENCY RESPONSE TRAINING

The Site Safety and Health Officer will train all employees in emergency responses, including contacting emergency personnel.

### 2.7.4. Hazard-Specific Training

In addition to the required initial training, each employee will receive training that addresses the hazards that the employee may encounter when they carry out the activities they are expected to perform. The Activity Hazard Analysis identifies the hazard exposures and the training required.

The Site Safety and Health Officer certifies each employee that completes training. Employees must have a completion certificate before beginning the work activity.

### 2.7.5. Activity Hazard Training

Prior to starting work on a construction activity the Site Safety and Health Officer or Project Superintendent conducts a thorough review of applicable Activity Hazard Analysis with all affected personnel.

### 2.7.6. Job Position Hazard Training

Prior to a person starting work in a job position, the Site Safety and Health Officer or Project Superintendent conducts a thorough review of job position hazard analysis.

### 2.7.7. First Aid and CPR Training

At least two persons shall be certified as completing first aid and CPR Training while employees are on the jobsite. Anyone working alone shall be trained on how, and have the means, to communicate with first aid assistance in the event of an accident.

### 2.7.8. Weekly "Tool Box" Safety Meetings

The Project Superintendent ensures that weekly toolbox meetings reinforce critical safety topics for all available construction personnel.

Weekly toolbox safety meeting will be conducted weekly, nominally on the same time and day of the week. The day and time will be set at the project pre-construction safety conference. Each on-site worker will be required to attend. Attendance will be recorded. The Project Superintendent will be responsible for conducting these meetings.

### 2.7.9. Monthly Safety Meetings

All available project personnel attend a monthly safety meeting conducted by the Site Safety and Health Officer. Topics to be covered during such meetings may include hazardous materials, safety data sheets (**SDS**), safe lifting, safe driving, proper use of Personal Protective Equipment, safe work methods.

### 2.7.10. Pre-construction Safety Conference

The Site Safety and Health Officer conducts a meeting with the Project Manager, Project Superintendent, and other key management and safety personnel. Topics to discuss include:

- Details of the APP and how they will be incorporated plans, programs, and procedures.
- A listing of anticipated AHAs that will be developed and implemented during the performance of the contract. This list of proposed AHAs will be reviewed and agreed upon.
- A schedule for the preparation, submittal, review, and acceptance of AHAs to preclude project delays.
- Deficiencies in the submitted APP

The functions of the Pre-construction Safety Conference may be incorporated into other planning meetings.
Customer safety training on operation and maintenance

During the project closeout phase, the Site Safety and Health Officer trains customers on the safety aspects of operation and maintenance of the completed project.

### 2.7.11. VISITOR TRAINING

The Site Safety and Health Officer, Project Superintendent, or other competent person will escort for each visitor entering the jobsite. Before the visitor enters the jobsite the escort will:

- Brief the visitor on the hazards that the visitor may encounter
- Train the visitor on safety and health requirements relevant to the hazards the visitor may encounter
- Train the visitor on personal protective equipment requirements and their use (i.e., hardhat, foot protection, etc.)
- Maintain a visitor log including the date, visitor's name, purpose of the visit, training provided to the visitor, a list of the visitor's required PPE, signature of the visitor, and signature of the escort.

The Site Safety and Health Officer will maintain a stock of common personnel protective equipment (i.e., hard hats, eye protection, earplugs, reflective vests, etc.) for use by visitors.

While on the jobsite, the escort will:

- Assure that the visitor is wearing/using the required personal protective equipment (PPE)
- Assure that the visitor is adequately protected from safety hazards

### 2.7.12. RECORDS OF SAFETY TRAINING AND MEETINGS

Minutes will be taken at all safety meetings showing contract title, signatures of attendees and a list of topics discussed. The minutes will be attached to daily report.

## 2.8. SAFETY AND HEALTH INSPECTIONS

The Site Safety and Health Officer prepares safety inspection and test plans for a project that identifies:

- Each required safety inspection and or test (as specified in section 7.3)
- Inspection and test specifications for each required safety inspection or test (as specified in section 7.5)
- Hold points for customer safety inspection (as specified in Section 7.4)
- Specification requirements for each safety inspection and test (as specified in Section 7.5)

The Site Safety and Health Officer or Project Manager prepares project safety inspection and test plans. Work steps for maintaining safety inspection and test plan records are specified in Standard Operating Procedure 7.6 Safety Inspection and Test Records.

## 2.9. ACCIDENT REPORTING

### 2.9.1. ACCIDENT REPORTING

The Site Safety and Health Officer provides a method for reporting project accidents to the customer as specified in Safety Manual section 8.2 Accident Reporting.

The Site Safety and Health Officer will include an accident reporting form as specified in Standard Operating Procedure 8.2 Accident Reporting.

### 2.9.2. MAN-HOUR EXPOSURE REPORTING

The Site Safety and Health Officer provides a method for reporting man-hour exposure to the customer as specified in Safety Manual section 6.8 Man-hour Exposure Report.

The Site Safety and Health Officer will include Man-hour exposure reporting forms as specified in Standard Operating Procedure 6.8 Man-hour Exposure Report.

### 2.9.3. PROJECT SAFETY RECORDS PLAN

The Site Safety and Health Officer lists safety–related standard operating procedures that will be used to maintain project safety records.

#### *2.9.3.1. REQUIRED CREDENTIALS*

The Site Safety and Health Officer defines safety-related credentials for each project Definable Feature of Work that affects safety including required:

- Organization and personnel licenses
- Personnel training
- Organization and personnel certifications
- Organization and personnel experience

# 3. CONTRACT SAFETY SPECIFICATIONS

DEFINE CUSTOMER SAFETY EXPECTATIONS

## 3.1. OVERVIEW

Fulfilling customer contract expectations is a primary objective of the Ludlow Construction Company Safety System. To ensure that customer expectations will be fulfilled, Ludlow Construction Company clearly defines the requirements for each contract before it is approved.

The Project Manager ensures that the information in customer contracts clearly defines customer expectations and that the necessary details are provided to set requirements for construction.

## 3.2. CONTRACT TECHNICAL SPECIFICATIONS

The Project Manager obtains contract technical specifications from the customer.

For each specific contract, The Site Safety and Health Officer identifies supplemental technical specifications on the Project Accident Prevention Plan when they are not otherwise specified by the contract or the approved drawings.

Superintendents have jobsite access to contract technical specifications for the construction activities they supervise.

All Ludlow Construction Company activities comply with the contract technical specifications.

## 3.3. CONTRACT SAFETY SUBMITTALS

The Project Manager prepares submittals that provide additional details of how Ludlow Construction Company plans to carry out key aspects of the customer contract, contract technical specifications, and contract drawings.

The Site Safety and Health Officer must review all safety submittals for compliance with the requirements of the Ludlow Construction Company Safety System. The Site Safety and Health Officer must sign approval of each contract submittal.

Ludlow Construction Company extends compliance to contract specifications to all customer-approved submittals. All Ludlow Construction Company activities comply with customer-approved submittals.

### 3.3.1. CONTRACT SUBMITTAL SCHEDULE

The Project Manager identifies safety submittals that apply to a specific contract and when they should be submitted, including:

- Contract requirement reference (if applicable)
- Submittal type

- Description
- Due date for submission to customer by Ludlow Construction Company
- Due date for approval by the customer. Due dates may be a number of days after a project plan milestone.
- Approval date

### 3.3.2. Customer Submittal Approval

The Project Manager obtains the signature of an authorized customer representative on the submittal form.

Ludlow Construction Company extends contract specifications to include customer-approved submittals.

Work in the affected area of a pending submittal requirement does not start until the customer approves the submittal.

### 3.3.3. Request for Information (RFI) Submittals

The Project Manager submits a request for additional information to the customer when errors are found or when required information is not contained in the contract, contract technical specifications, or contract drawings.

Should any number of contract technical specifications or contract drawings result in conflicting requirements, the Site Safety and Health Officer submits a request for information to the customer to select the standard that applies.

Ludlow Construction Company extends contract specifications to include customer requests for information.

### 3.3.4. Change Order Submittals

Contracts requirements or contract technical specifications may require a change after the contract is awarded. The Project Manager submits the change order to the customer for approval, including any contract price adjustments.

When a customer approves a change order, the customer signs the submission return.

Ludlow Construction Company extends contract specifications to include approved change orders.

## 3.4. Contract Safety Review and Approval

The President conducts customer contract reviews to ensure that:

- Customer requirements and specifications are complete
- Customer requirements and specifications are compatible with the relevant regulations, Ludlow Construction Company safety standards, and Safety System requirements
- Ludlow Construction Company has the capability to deliver the completed project in the time allotted

Before construction begins, the President makes sure that all contract requirements are clearly understood, all discrepancies are resolved, and all requirements are agreed upon. Once these requirements are met, the President signs the contract.

# 4. PROJECT-SPECIFIC SAFETY STANDARDS

*APPLICABLE REGULATIONS, INDUSTRY, and COMPANY STANDARDS*

## 4.1. OVERVIEW

Ludlow Construction Company personnel and subcontractors are accountable for compliance to safety standards-based written specifications.

To achieve expectations reliably and consistently, specifications are clearly spelled out not only for results but also for processes. Specifications apply to materials, work steps, qualified personnel and subcontractors, safe work rules, and environmental work conditions.

Standards ensure that materials, methods, and results are specified rather than left to discretionary practices.

## 4.2. REGULATORY CODES AND INDUSTRY STANDARDS

All Ludlow Construction Company activities must comply with the relevant regulations. The Site Safety and Health Officer identifies regulatory requirements applicable to the jurisdictions served, including:

- Applicable Federal regulations
- Applicable State regulations
- Applicable building codes and local addenda to building codes
- Applicable Fire Code
- Applicable Fuel and Gas Code
- Applicable Mechanical Code
- Applicable Plumbing Code
- Additional regulations specified by the customer contract

The Site Safety and Health Officer identifies regulatory requirements that apply to a specific project on the Project Accident Prevention Plan.

The Project Superintendent had jobsite access to relevant codes and government regulations.

### 4.2.1. INDUSTRY SAFETY STANDARDS

All Ludlow Construction Company activities comply with generally accepted practices and industry safety standards.

The Site Safety and Health Officer identifies supplemental requirements for industry safety standards that apply to a specific project on the Project Accident Prevention Plan when it is not otherwise specified by the contract, contract technical specifications, or approved drawings.

#### *4.2.1.1. LUDLOW CONSTRUCTION COMPANY PROJECT LICENSE AND QUALIFICATION REQUIREMENTS*

The Site Safety and Health Officer identifies company license and qualification credentials required by contract specifications and government regulators. The Site Safety and Health Officer obtains records, certificates, and license records that provide verification of Ludlow Construction Company credentials.

## 4.3. Safety License and Credential Requirements

### 4.3.1. Company Safety License and Credential Requirements

The Site Safety and Health Officer identifies requirements for company licenses, credentials, and certifications related to project safety.

### 4.3.2. Personnel Safety License, Credential, and Qualification Requirements

The Site Safety and Health Officer defines safety-related credentials for each project job position that affects safety including:

- Required licenses
- Required training
- Required certifications
- Required experience

## 4.4. Project Risk Assessment

The Site Safety and Health Officer assesses and identifies project safety risks in preparation for planning safety risk mitigation and prevention.

## 4.5. Identification of Safety Controlled Definable Feature of Work

The Site Safety and Health Officer identifies each Definable Feature of Work that is a phase of construction that requires separate safety controls to assure and control safety results. Each **DFOW** triggers a set of requirements for activity hazard analysis, safety inspection, and testing.

## 4.6. Job Position Hazard Analysis

Considering the Definable Feature of Work identified in Safety Manual section 4.5 Identification of Safety Controlled Definable Feature of Work, the Site Safety and Health Officer identifies job positions that apply to the project, assesses and identifies project safety risks for each, and plans reduction and prevention of those risks.

A job position hazard analysis (PHA) is prepared as warranted by the hazards associated with the position's activities. The Site Safety and Health Officer shall determine the need for analysis of each position within his or her area of responsibility.

The Site Safety and Health Officer will train each employee on the PHA related to the job positions(s) performed by the employee and upon completing the training award a certificate of completion. An employee must have a valid certificate before performing work of the job position.

## 4.7. Activity Hazard Analysis

For each Definable Feature of Work the Site Safety and Health Officer identifies, assesses, and identifies project safety risks for each activity, and plans reduction and prevention of those risks.

## 4.8. Identification of Applicable Safety Risk Management Plans

Based on the assessment, the Site Safety and Health Officer selects which plans, programs, and procedures apply to the project.

## 4.9. Material and Equipment Specifications

The Site Safety and Health Officer ensures that all types of materials and equipment that affect safety are identified and controlled.

The Site Safety and Health Officer evaluates the expected use of materials and equipment and identifies types of materials and equipment that may affect project safety.

The Site Safety and Health Officer ensures that purchase orders for listed materials and equipment include the relevant specifications as specified in section 5.7 Purchase Order Requirements.

Only approved materials are used in the construction process.

## 4.10. Ludlow Construction Company Safety Standards

Ludlow Construction Company safety standards supplement contract requirements when they are necessary to ensure safety.

The Site Safety and Health Officer identifies supplemental requirements for Ludlow Construction Company Safety standards that apply to a specific project on the Project Accident Prevention Plan.

When Ludlow Construction Company safety standards differ from industry standards or product manufacturer instructions, the Site Safety and Health Officer justifies that the company standard reliably achieves safety results and then documents the justification.

All Ludlow Construction Company activities conform to the company safety standards.

## 4.11. Application of Multiple Sources of Specifications

Should multiple sources of specifications apply to a Definable Feature of Work, the higher level of specification applies. When there are equal levels of specifications that conflict, the specifications are applied in this order:

1. Submittals approved by the customer
2. Contract technical specifications
3. Contract drawings
4. Government regulations that exceed requirements of items below
5. Ludlow Construction Company safety specifications, including subcontract specifications
6. Ludlow Construction Company Safety Manual
7. Product installation instructions
8. Industry safety standards
9. Generally accepted practices

Should multiple sources of conflicting specifications apply to a project, the Site Safety and Health Officer defines the safety standards that apply to the specific project on the Project Accident Prevention Plan.

# 5. PROJECT PURCHASING

*SPECIFY and VERIFY SUPPLIER and SUBCONTRACTOR SAFETY CAPABILITIES*

## 5.1. OVERVIEW

Ludlow Construction Company verifies the qualifications of subcontractors and suppliers to ensure that they are capable of completely carrying out their assigned safety responsibilities. Safety requirements are defined, verified, and documented before they are approved for a project.

## 5.2. SUBCONTRACTOR AND SUPPLIER SAFETY REQUIREMENTS

The Ludlow Construction Company safety responsibilities encompass all project activities including those of subcontractors. Ludlow Construction Company does not transfer any safety responsibilities to any subcontractor.

Ludlow Construction Company extends the safety system to subcontractors by holding each subcontractor responsible for complying with the Ludlow Construction Company Safety System requirements. Requirements of the Ludlow Construction Company Safety System include this Accident Prevention Plan, Activity Hazard Analyses, site specific hazard plans, safety policies, procedures, the requirements of EM 385-1, rules, standards, safe work practices, as well as federal/state/OSHA requirements and other pertinent safety and health regulations.

For the purpose of enhancing deployment of the Ludlow Construction Company Safety System in subcontractor organizations Site Safety and Health Officer ensures that each subcontractor:

- Assigns all employees and personnel with the all the safety qualification requirements, responsibilities and authority as Ludlow Construction Company employees.
- Complies with the training requirements.
- At the time of mobilization, provides a list of the Supervisors names and contact numbers. This list shall be kept current and provide phone numbers where the Supervisors can be reached 24 hours a day, 7 days a week for emergency purposes.
- Receives a site specific operational and safety brief before starting work at the site.

The subcontractor many not delegate project-related safety responsibilities to any other organization.

When there is a specific limited task with limited safety risks and exposures, only the Site Safety and Health Officer may exempt subcontractor personnel from safety policies, procedures, and reporting. The Site Safety and Health Officer records any safety-related exemptions on the Project Subcontractor and Supply List.

### 5.2.1. SUBCONTRACTOR PERSONNEL, RESPONSIBILITIES, AND LINES OF AUTHORITIES

The Site Safety and Health Officer will ensure that each subcontractor:

- Appoints a safety manager with all the responsibilities and authority as the Ludlow Construction Company Site Safety and Health Officer including the responsibility to stop unsafe work and the authority to do so. The subcontractor's safety manager must be on site at all times that subcontractor personnel are on the jobsite.
- Appoints a supervisor or superintendent with all the safety qualification requirements, responsibilities and authority as the Ludlow Construction Company Project Superintendent including the responsibility to stop unsafe work and the authority to do so.

### 5.2.2. SUB-SUBCONTRACTING

Every sub-subcontractor works directly under the subcontractor's safety system. The subcontractor many not delegate project-related safety management responsibilities to any other organization.

### 5.2.3. SUBCONTRACTOR TRAINING

Subcontractors will meet the requirements of this Accident Prevention Plan.

Each subcontractor must comply with the training requirements of section 6 of this Accident Prevention Plan. The Site Safety and Health Officer may approve subcontractor to perform their own training when the training is equivalent to Ludlow Construction Company training.

Subcontractors will receive a site specific operational and safety brief before starting work at the site.

### 5.2.4. SAFETY AND HEALTH INSPECTIONS

Subcontractors will meet the requirements of Section 7 Safety and Health Inspections of this Accident Prevention Plan.

The Site Safety and Health Officer will approve subcontractor to perform inspections equivalent to the Ludlow Construction Company inspections.

### 5.2.5. REPORTING

Subcontractors will meet the requirements of Section 8 of this Accident Prevention Plan.

Each subcontractor must comply with the reporting section 8 of this Accident Prevention Plan. The Site Safety and Health Officer will receive the reports and incorporate the information in Ludlow Construction Company reporting.

### 5.2.6. SUBCONTRACTOR SAFETY PLANS, POLICIES AND PROCEDURES APPROVAL

Subcontractors will meet the requirements of safety policies and procedures of this Accident Prevention Plan.

The Site Safety and Health Officer may approve a subcontractor to use a safety plan, policy or procedures that is equivalent to a Ludlow Construction Company policy or procedure. The subcontractor must submit the documents for written approval prior to use.

### 5.2.7. SUBCONTRACTOR SAFETY RESPONSIBILITIES

Subcontractors will meet the requirements of this Accident Prevention Plan.

Contractors that perform work are responsible for ensuring that their personnel comply with Ludlow Construction Company Safety System and the project Accident Prevention Plan including safety policies, rules, standards and safe work procedures, as well as federal/state/OSHA requirements and other pertinent safety and health regulations.

## 5.3. SUBCONTRACTOR NONCOMPLIANCE POLICY

The Site Safety and Health Officer will terminate any subcontractor who does not conform to the requirements of this Accident Prevention Plan.

The Site Safety and Health Officer has the authority to reinstate a subcontractor only after all deficiencies have been corrected. The subcontractor may not continue work with known safety nonconformances.

The Site Safety and Health Officer also has the authority to reinstate a subcontractor provided all subcontractor personnel on the project work directly under the Ludlow Construction Company Safety System.

## 5.4. INDEPENDENT LABORATORY CREDENTIAL REQUIREMENTS

Independent laboratories performing tests or inspections have additional requirements for purchase order specifications including certification by a nationally recognized testing accreditation organization as appropriate for the scope of the safety inspection or test:

- NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
- NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.
- The American Association of State Highway and Transportation Officials (AASHTO)
- International Accreditation Services, Inc. (IAS)
- U. S. Army Corps of Engineers Materials Testing Center (MTC)
- American Association for Laboratory Accreditation (A2LA) program

## 5.5. QUALIFICATION OF SUPPLIERS, SUBCONTRACTORS, AND DEPARTMENTS

The Site Safety and Health Officer qualifies supplier, subcontractor, and construction work department capabilities to ensure that the organization is capable of completely carrying out their assigned safety responsibilities before approving and signing the contract, purchase order, or work order.

Subcontractors and suppliers must meet all Safety System requirements by either 1) working under the Ludlow Construction Company Safety System or 2) operating their own safety program as long as it meets Ludlow Construction Company Safety System requirements.

#### *5.5.1.1. REQUIRED CREDENTIALS*

The Site Safety and Health Officer defines safety-related credentials for each project Definable Feature of Work that affects safety including required:

- Organization and personnel licenses
- Personnel training
- Organization and personnel certifications
- Organization and personnel experience

#### *5.5.1.2. Required Capabilities*

- Senior person designated as Site Safety and Health Officer
- Knowledge of Company safety standards
- Demonstrated capability to complete work to Company safety standards
- Demonstrated skills and knowledge
- Demonstrated experience
- Demonstrated results
- Effective self-inspection process
- Access to codes, standards and product instructions
- Equipment availability
- Production capacity
- Demonstrated results

For critical components, the Site Safety and Health Officer determines if a source safety inspection is necessary to validate supplier safety and delivery capabilities.

#### *5.5.1.3. Supplier, Subcontractor, and Construction Department Qualification Assessments*

When the subcontractor qualification assessment identifies minor nonconformances to the subcontract requirements, the Site Safety and Health Officer may approve a provisional subcontract. The provisional subcontract supplements the subcontract with requirements for actions that address correction of the nonconformances. All nonconformances must be corrected before work in the affected area begins.

### 5.6. Project Subcontractor and Supply List

For each item on the Project Subcontractor and Supply List, the Project Manager identifies the selected supplier(s). Each selected supplier must be previously qualified as specified in section 5.5 Qualification of Suppliers, Subcontractors, and Departments.

The selected suppliers are listed on the Project Subcontractor and Supply List. Work steps for recording sources of supply are specified in Standard Operating Procedure 5.5 Qualification of Suppliers, Subcontractors, and Departments.

### 5.7. Purchase Order Requirements

The Project Manager ensures that materials, equipment and services are purchased only from the supplier listed on the Project Subcontractor and Supply List.

The Project Manager holds subcontractors and suppliers to the same safety standards that must be met by Ludlow Construction Company. The Project Manager ensures that subcontracts and purchase orders clearly specify safety standard expectations including:

- Conformance to the Ludlow Construction Company Safety System or the subcontractor's own safety program as long as it meets Ludlow Construction Company Safety System requirements.
- Conformance to contract specifications (Section 3 Contract Safety Specifications)
- Conformance to project safety standards (Section 4 Project-Specific Safety Standards)
- Safety Management practices including
    - Performance of self-inspections
    - Control of safety non-conformances and responsive corrections
    - Prevention of non-conformances
    - Controls that ensure completion of post-construction service work
    - Participation in safety training
- Preparation of submittals
- Participation in project planning meetings
- Participation in Definable Feature of Work planning meetings
- Handling, storage, packaging, and delivery, as applicable
- Product or material identification for traceability

## 5.8. PROJECT PURCHASE ORDER APPROVALS

The Project Manager ensures that contracts and purchase orders are issued only to qualified subcontractors and suppliers. The Project Manager must review, approve, and sign each purchase order.

The supplier or subcontractor must agree to the purchase order terms and specifications, and then sign the contract or purchase order.

# 6. CONSTRUCTION PROCESS CONTROLS

*How work is carried out*

## 6.1. OVERVIEW

A construction process plan defines how project work is to be done and approved for the overall project. The construction process plan is communicated to all key personnel, subcontractors and suppliers in a pre-construction meeting. As the project proceeds, Definable Feature of Work plans provide additional details of how each individual Definable Feature of Work is carried out. **DFOW** planning meetings are used to communicate expectations of the **DFOW** plan to key personnel responsible for carrying out the Definable Feature of Work.

## 6.2. PRE-CONSTRUCTION AND SAFETY CONTROL COORDINATION MEETING

- Key requirements of the project
- The Project Accident Prevention Plan
- Required safety inspections and tests
- The project submittal schedule
- Safety policies and heightened awareness of critical safety standards
- Project organization chart and job safety responsibilities
- Methods of communication and contact information
- Location of project documents and records

## 6.3. PREPARATORY PROJECT SAFETY PLANNING

### 6.3.1. DEFINABLE FEATURE OF WORK REQUIREMENTS REVIEW

In preparation for the start of an upcoming Definable Feature of Work, the Project Superintendent reviews an integrated and coordinated set of documents that collectively define safety standards for the Definable Feature of Work including:

- Objectives and acceptance criteria of the **DFOW**
- Safety standards that apply to the **DFOW**
- Work instructions, process steps, and product installation instructions that apply to the **DFOW**
- Submittals
- Tools and equipment necessary to perform the work
- License, certification, or other qualification requirements of personnel assigned to work
- Required safety records of the process and resulting product
- The subcontractor contracted to perform the work, if applicable
- Customer contract requirements
- Required safety inspections and tests
- Location of safety system records and documents

### 6.3.2. PREPARATORY SITE INSPECTION

The Project Superintendent also performs a safety inspection of the work area and assesses:

- Completion of required prior work
- Verify field measurements
- Availability and receiving safety inspection status of required materials
- Equipment safety inspection status
- Nonconformances to the requirements for the **DFOW** to begin
- Potential problems

### 6.3.3. Definable Feature of Work Preparatory Safety Planning Meetings

Prior to the start of a Definable Feature of Work, the Project Superintendent conducts a meeting with key company, subcontractor personnel responsible for carrying out, supervising, or inspecting the work, and interested customer representatives.

During the meeting, the Project Superintendent communicates the **DFOW** safety standards and reinforces heightened awareness for critical requirements. Topics for a **DFOW** safety plan meeting include:

- **DFOW** safety standards as identified in section 6.3.1
- Findings of the **DFOW** preparatory safety inspection in section 6.3.2
- Conflicts that need resolution
- Required safety documents and a verification of availability to personnel carrying out, supervising, or inspecting the **DFOW**
- Record keeping requirements and the availability of necessary forms
- Review methods and sequences of installation
- Special details and conditions
- Heightened awareness of critical safety standards
- Safety risks
- **DFOW** safety inspection form

## 6.4. Weekly Safety Planning and Coordination Meetings

The Project Superintendent conducts a meeting with key company, supplier, and subcontractor personnel responsible for carrying out, supervising, or inspecting the work, and interested customer representatives.

The meeting is held on a nominal weekly schedule. During the meeting, the Project Superintendent facilitates coordination among the participants, communication among the participants, and reinforces heightened awareness for critical requirements.

The Project Superintendent maintains a record of the meeting event on the Daily Safety Control Report (see section 6.6 Daily Safety Control Report ).

## 6.5. Process Control Safety Standards

### 6.5.1. Job-ready Start Work Safety Standards

Work on a Definable Feature of Work starts only when conditions do not prevent compliance with government regulations, contract technical specifications, industry safety standards, or product installation instructions or otherwise adversely impact safety.

The Site Safety and Health Officer identifies supplemental start-work requirements that apply to a specific project when they are necessary to assure safety results.

### 6.5.2. WORK IN PROCESS SAFETY STANDARDS

Work proceeds only when conditions do not prevent compliance with government regulations, contract technical specifications, industry safety standards, or product installation instructions or otherwise adversely impact safety.

The Site Safety and Health Officer identifies supplemental work in process requirements that apply to a specific project when they are necessary to assure safety results.

### 6.5.3. CONTROLLED USE OF MATERIALS

The Project Manager ensures that contracts and purchase orders are awarded only to subcontractors and suppliers qualified to perform the Definable Feature of Work and/or supply materials as required for the specific project.

Only approved materials are used in the construction process. Only approved materials are specified in purchase and/or subcontracts.

Materials that are defective, deteriorated, damaged, or not approved are not used. The Project Superintendent clearly marks such materials for non-use or otherwise holds them aside.

When customer-supplied materials are lost, damaged, or otherwise found unsuitable for use, the Project Superintendent reports such findings to the customer.

When subcontractor–supplied materials are damaged or otherwise found unsuitable for use, the Project Superintendent reports such findings to the subcontractor.

The Project Manager ensures that contracts and purchase orders are awarded only to subcontractors and suppliers qualified to perform the Definable Feature of Work and/or supply materials as required for the specific project.

The Project Superintendent ensures that construction uses only materials specified in the contract technical specifications, contract drawings, and approved submittals. Substitutions are made only by agreement of the customer and documented by a change order (see section 2.1.3.6).

#### *6.5.3.1. CONTROLLED PRODUCT USE AND INSTALLATION*

Ludlow Construction Company activities conform to manufacturers' product use and installation instructions that apply to the construction process.

When installing a product, the Project Superintendent has access to all applicable product installation instructions.

## 6.6. Daily Safety Control Report

When a daily safety report is required by the Safety Manual section 2.8 Safety and Health Inspections, the Project Superintendent records a summary of daily construction activities. The report will include:

- Schedule of activities completed
- General description of construction activities in progress
- Problems encountered, actions taken, problems, and delays
- Meetings held, participants, and decisions made
- Subcontractor and Company Crews on site
- Visitors and purpose of visit
- General remarks
- Improvement ideas
- Weather conditions

## 6.7. Monthly Safety Report

When a monthly safety report is required by the Safety Manual section, the Project Superintendent records a monthly status report. The report includes:

- A summary of work completed and work in progress
- Outstanding issues
- Issues resolved during the reporting period
- Outstanding potential change orders
- Project status with current project costs and estimated completion date
- A cost analysis summarizing actual costs to date and estimated future costs
- Project pictures as appropriate

## 6.8. Man-hour Exposure Report

When a man-hour exposure report is required by the Safety Manual Project Safety Records Plan, the Site Safety and Health Officer records a monthly status report as specified in Standard Operating Procedure 8.a Exposure Data Man-hour Exposure Report.

# 7. INSPECTIONS AND TESTS

*ASSURE COMPLIANCE*

## 7.1. OVERVIEW

Inspections are necessary to verify that work processes and results conform to both contract requirements and Ludlow Construction Company safety standards.

Qualified personnel inspect every project throughout the construction process. Additional reviews validate the accuracy of the field safety inspections and ensure that the safety standards apply uniformly.

An inspection and test plan defines the safety inspections and tests required for a specific project.

Personnel may only inspect construction activities for which they are have been qualified by the Site Safety and Health Officer.

## 7.2. INSPECTION AND TEST ACCEPTANCE CRITERIA

Inspections assess conformance of materials or work for each Definable Feature of Work to project safety standards including applicable:

- Contract technical specification
- Contract drawings
- Approved shop drawings
- Approved product submittals
- Approved submittals
- Ludlow Construction Company safety standards

The material or completed Definable Feature of Work is accepted only when it meets all project safety standards.

### 7.2.1. INSPECTION AND TEST STATUS

The status of each safety inspection or test is clearly marked by paint, tape, tag, or other easily observable signal to ensure that only accepted equipment, material or work that has passed the required safety inspections and tests is accepted.

## 7.3. REQUIRED SAFETY INSPECTIONS AND TESTS

A series of safety inspections are required for each Definable Feature of Work.

A Definable Feature of Work may be executed multiple times in a project, in which case a series of safety inspections are required for each execution of the Definable Feature of Work. Each safety inspection is identified on the safety inspection and test plan referenced in section 2.8 Safety and Health Inspections.

The Site Safety and Health Officer ensures that safety inspections and tests that apply to a specific project are clearly identified. Inspections and tests for a project include:

- Customer required safety inspections and tests as specified by the contract, contract technical specifications, contract drawings, and approved submittals.
- Inspection of each Definable Feature of Work identified in section 2.4.1 Identification of Safety Controlled Definable Feature of Work. Inspections of each Definable Feature of Work includes:
  - Preparatory Site Inspection (Section 6.3.2)
  - Material safety inspection and tests (Section 7.3.1)
  - Work in process safety inspections (Section 7.3.3)
  - Hold points for customer safety inspection (Section 7.4)
- Additional safety inspections and tests necessary to assure safety results.
- A project closeout safety inspection (Section 7.7)

### 7.3.1. DAILY SAFETY INSPECTIONS

The Site Safety and Health Officer or Project Superintendent, both competent persons, will conduct daily site safety inspections every day that there is work activity on the jobsite. Any noted deficiencies will be identified on that day's Daily Report shown as an exhibit in this subsection.

### 7.3.2. MATERIAL INSPECTIONS AND TESTS

Material safety inspections and tests ensure that purchased materials meet purchase contract quantity and safety standards. The Project Superintendent inspects or ensures that a qualified inspector inspects materials prior to use for conformance to project safety standards.

The Project Superintendent ensures that each Definable Feature of Work that uses the source-inspected materials proceed only when the material has been accepted by the material safety inspection or test.

#### *7.3.2.1. SOURCE SAFETY INSPECTIONS*

Source safety inspections are required when safety characteristics cannot or will not be verified during subsequent processing. The Site Safety and Health Officer determines if a source inspection is necessary to validate supplier safety before materials are delivered to the project jobsite.

The Project Superintendent ensures that each Definable Feature of Work that use the source inspected materials proceed only the material has been accepted by the source inspection.

### 7.3.3. WORK IN PROCESS SAFETY INSPECTIONS

Work in process safety inspections continuously verify compliance project safety standards beginning at the start of a Definable Feature of Work, as work is conducted, and continues until the Definable Feature of Work is complete.

#### *7.3.3.1. Initial Job-Ready Safety Inspections*

For each Definable Feature of Work, the Project Superintendent or a qualified inspector performs job-ready safety inspections to ensure that construction activities begin only when they should begin. Job-ready safety inspections verify that conditions conform to the project safety standards.

#### *7.3.3.2. Initial Work in process Safety Inspection*

For each Definable Feature of Work, the Project Superintendent or a qualified inspector performs an initial work in process inspection when the first representative portion of a work activity is completed.

#### *7.3.3.3. Follow-up Work in Process Safety Inspections*

The Project Superintendent or a qualified inspector performs ongoing work in process safety inspections to ensure that construction activities continue to conform to project safety standards.

### 7.3.4. Definable Feature of Work Completion Inspections

For each Definable Feature of Work, the Site Safety and Health Officer or a qualified inspector inspects the completion of each Definable Feature of Work to verify that the completed work conforms to project safety requirements.

Completion Safety inspections are performed for each Definable Feature of Work. Completion safety inspections are conducted before starting other construction activities that may interfere with an inspection.

After the Definable Feature of Work completion inspection, any outstanding punch item remaining is deemed a nonconformance. Standard nonconformance policies stated in section 8.5.3 Nonconformance Report apply.

### 7.3.5. Hazard and Environmental Tests

Tests for hazards, hazardous chemicals, and environmental tests are performed as required by the Activity Hazard Analysis (section 4.7Activity Hazard Analysis). Tests are performed only by approved subcontractors, testing agencies, or qualified personnel.

## 7.4. Hold Points for Customer Safety Inspection

The Project Superintendent stops work related work when reaching a hold point specified on the inspection and test plan. The Project Superintendent ensures that work proceeds only with customer approval.

## 7.5. Safety Inspection and Test Specifications

Specifications for each inspection or test are clearly understood before the inspection or test is performed including:

- Items to be inspected/tested
- Inspections/Tests to be performed
- Testing schedule frequency
- Specification references including contract drawing identification number and version, if applicable, and/or contract technical specification number and version, if applicable
- Performing party
- Witness parties
- Certificates required
- Checklists/procedures
- Reference safety standards

## 7.6. Safety Inspection and Test Records

### 7.6.1. Definable Feature of Work Safety Inspection Records

The Site Safety and Health Officer will prepare an inspection form for each Definable Feature of Work. The Site Safety and Health Officer lists on the form checkpoints for heightened awareness.

The person responsible for the inspection will record Definable Feature of Work inspection results on the **Definable Feature of Work inspection form**.

### 7.6.2. Test Records

Test result data will include as appropriate:

- Reference to the inspection and test plan item
- Description or title of the inspection activity
- Drawing identification number and version, if applicable
- Technical specification number and version, if applicable
- Location of the inspection activity
- Acceptance criteria
- Nonconformances
- Validation that nonconformances are corrected, reinspected or retested, and confirmed to meet Safety System requirements
- Any open items to be completed at a later date
- Inspector's name and signature indicating compliance with all requirements of the Safety System
- Safety rating scores as appropriate
- Date of inspection or test
- Certificate, if applicable
- Conspicuous statement of final result as either "CONFORMS" or "DOES NOT CONFORM"

## 7.7. Project Completion and Closeout Inspection

If the customer performs a final inspection, the Safety Control Manager, Project Superintendent, and Project Manager will participate in the inspection. The Site Safety and Health Officer records nonconforming items on a Final Punch List form and assigns a planned date by which the deficiencies will be corrected.

The Project Superintendent assigns a planned date by which the deficiencies will be corrected. The date may be assigned for all items or individual items as necessary. After corrections have been made, the Project Superintendent verifies the completion of each item.

After corrections have been made, the Site Safety and Health Officer will conduct a follow-up inspection and verify that all nonconforming items have been corrected to meet contract specifications. Any remaining deficiencies will be recorded and managed as nonconformances.

When the final customer inspection process is complete, the Site Safety and Health Officer then notifies the customer that the project is ready for the customer's follow-up verification. The customer is also notified of any remaining nonconformances and their planned resolution.

# 8. ACCIDENT REPORTING, NONCONFORMANCES AND CORRECTIVE ACTIONS

## 8.1. OVERVIEW

Should a nonconformance be identified by an inspection there is a systematic method to control the item, correct it, and ensure that project safety is not adversely impacted by the event.

A nonconformance is any item that does not meet project specifications or Ludlow Construction Company Safety System requirements.

## 8.2. ACCIDENT REPORTING

All accidents occurring incidentally to the project is investigated, reported, and analyzed. The Site Safety and Health Officer will report all accidents and injuries no matter how slight. The Site Safety and Health Officer will notify the Contracting Officer as soon as practical, but not later than 24 hours, after any accident. The accident notification will include: contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known; and brief description of accident (to include type of construction equipment used, PPE used, etc.).

The Site Safety and Health Officer will notify the GDA as soon as practical, but not later than four hours, after any accident that

- **Property damage equal to or greater than $5,000**
- **Days Away Injuries**
- **Days Away Illnesses**
- **Restricted/Transfer Injuries**

Preserve the conditions and evidence on the accident site until the Government investigation team arrives on-site and Government investigation is conducted.

The Site Safety and Health Officer will notify the GDA immediately when there is:

- **A fatal injury/illness**
- **A permanent totally disabling injury/illness**
- **A permanent partial disabling injury/illness**
- **The hospitalization of three or more people resulting from a single occurrence**
- **$500,000 or greater accidental property damage**
- **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**
- **USACE aircraft destroyed or missing**

**In addition Ludlow shall immediately report to the GDA any mishap occurring in any of the following high hazard areas:**

- **Electrical – to include Arc Flash, electrical shock, etc.**
- **Uncontrolled Release of Hazardous Energy (includes electrical and non-electrical)**
- **Load Handling Equipment (LHE) or Rigging**
- **Fall-from-Height (any level other than same surface), and**
- **Underwater Diving Operations**

The Site Safety and Health Officer prepares an accident report as specified in Standard Operating Procedure 8.2 Accident Reporting.

### 8.3. Immediate Action Notification

The Site Safety and Health Officer will notify the customer immediately when there is:

- **A fatal injury/illness**
- **A permanent totally disabling injury/illness**
- **A permanent partial disabling injury/illness**
- **The hospitalization of three or more people resulting from a single occurrence**
- **$500,000 or greater accidental property damage**
- **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**
- **USACE aircraft destroyed or missing**

**In addition Ludlow shall immediately report to the GDA any mishap occurring in any of the following high hazard areas:**

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- **Uncontrolled Release of Hazardous Energy (includes electrical and non-electrical)**
- **Load Handling Equipment (LHE) or Rigging**
- **Fall-from-Height (any level other than same surface), and**
- **Underwater Diving Operations**

Accidents are reported using the Accident Investigation Report form on the following pages. The Site Safety and Health Officer prepares the Accident Investigation Report.

### 8.4. Log of Work-related Accidents and Injuries

All work-related accidents and injuries occurring incidentally to this project, no matter how slight, will be recorded on the OSHA 300A Log of Work-related Accidents.

### 8.5. Nonconformances

#### 8.5.1. Marking of Nonconformances and Observations

When the Site Safety and Health Officer, Project Superintendent, inspector, or customer identifies a nonconformance or an observation, the person(s) involved are immediately notified. If the item is a physical condition, the item is quickly and clearly marked by paint, tape, tag, or other easily observable signal to prevent inadvertent cover-up.

#### 8.5.2. Control the Continuation of Work

After the item is identified, the Project Superintendent determines if work can continue in the affected area:

- CONTINUE WORK: When continuing work does not adversely affect safety or hide the defect, work may continue in the affected area while the disposition of the item is resolved. The Project Superintendent may place limitations on the continuation of work.
- STOP WORK ORDER: When continuing work can adversely affect safety or hide the defect, work must stop in the affected area until the disposition of the item resolved. The Project Superintendent identifies the limits of the affected area. The Project Superintendent quickly and clearly marks the stop work area.

### 8.5.3. NONCONFORMANCE REPORT

#### *8.5.3.1. RECORDING OF NONCONFORMANCES*

If the nonconformance or observed item by the Definable Feature of Work completion inspection, the Project Superintendent or inspector records nonconformances on a nonconformance report form as specified in Standard Operating Procedure 8.5.3.1Recording of Nonconformances.

1. Identify clearly what the problem was or is, include who, what, why, and when.
2. Raise the nonconformance against the system, and not a person and include the location and evidence needed.
3. Investigate the problem by asking why of the process, the method, and the system
4. Use familiar terminology that all personnel will understand.
5. Finish the nonconformance report with wat changes/corrective actions will be made, and how the process will be monitored.

The Project Superintendent sends the nonconformance report to the Site Safety and Health Officer.

#### *8.5.3.2. SITE SAFETY AND HEALTH OFFICER DISPOSITION OF NONCONFORMANCE REPORTS*

When the Site Safety and Health Officer receives a Nonconformance Report, he/she makes an assessment of the affect the reported nonconformance has on form, fit, and function. The Site Safety and Health Officer may assign a disposition of either:

- REPLACE: The nonconformance can be brought into conformance with the original specification requirements by replacing the nonconforming product or material with a conforming product or material.
- REPAIR: The nonconformance can be brought into conformance with the original requirements through re-machining, reassembly, reprocessing, reinstallation, or completion of the required operations.
- REWORK: The nonconformance can be made acceptable for its intended use, even though it is not restored to a condition that meets all specification requirements. The Site Safety and Health Officer may specify safety standards that apply to the completion of rework. Rework nonconformances must be approved by the customer.
- USE AS-IS: When the nonconforming item is satisfactory for its intended use. Any use as-is items that do not meet all specification requirements must be approved by the customer.

### 8.5.4. CORRECTION OF NONCONFORMANCES

The Project Superintendent verifies that corrective actions eliminate the nonconformance to the requirements of the original specifications or as instructed by the disposition of the nonconformance report, and then removes, obliterates, or covers the nonconformance marker.

Furthermore, the Project Superintendent ensures that previously completed work is reinspected for similar nonconformances and corrective actions are taken to avert future occurrences (see section 8.6 Corrective Actions).

## 8.6. Corrective Actions

### 8.6.1. Control of Corrective Actions

When a nonconformance is found, the Project Superintendent ensures that:

- Previously completed work is reinspected for similar nonconformances
- Corrective actions are taken to avert future occurrences

The Site Safety and Health Officer identifies requirements for corrective actions with respect to frequency, severity, and detectability of safety nonconformances items found during and after completion of construction activities.

When a solution requires changes to Ludlow Construction Company safety standards, the Site Safety and Health Officer makes modifications as necessary by making changes to:

- Material specifications
- Personnel qualifications
- Subcontractor qualifications
- Company standards
- Inspection processes

### 8.6.2. Corrective Action Training

The Project Superintendent initiates corrective action training to address safety nonconformances. Personnel and subcontractors performing or inspecting work participate in the training.

A qualified Project Superintendent inspects corrective actions during regular safety inspections and records observations on the safety inspection form.

The Project Superintendent notifies affected subcontractors of selected preventive-action training requirements.

The Project Superintendent evaluates the effectiveness of the improvements. The Site Safety and Health Officer reviews improvement results recorded on safety inspection records and monthly field reviews. When the Site Safety and Health Officer determines that the improvement actions are effective, the item is no longer treated as a preventive action.

# 9. PREVENTIVE ACTIONS

*PREVENT NONCONFORMANCES*

## 9.1. OVERVIEW

Fixing problems found during safety inspections is not sufficient. Systematic prevention of recurrences is essential for improving safety.

Ludlow Construction Company makes changes to solve the problem. Solutions may involve a combination of enhanced process controls, training, upgraded personnel qualifications, improved processes, or use of higher-grade materials.

Follow-up ensures that a problem is completely resolved. If problems remain, the process is repeated.

## 9.2. IDENTIFY PREVENTIVE ACTIONS FOR IMPROVEMENT

The Site Safety and Health Officer identifies preventive action improvement priorities with respect to frequency, severity, and detectability of safety correction items found during and after completion of construction activities. The Site Safety and Health Officer also reviews company safety performance and customer feedback.

More specifically, the Site Safety and Health Officer assesses:

- Customer corrective items
- Superintendent safety inspection results
- Code official inspection results
- Post-construction service
- Management field reviews
- Annual system review
- Customer satisfaction surveys

The Site Safety and Health Officer documents safety items requiring preventive action improvement.

The Site Safety and Health Officer leads the company in finding solutions to address the causes of problems.

When a solution requires changes to Ludlow Construction Company safety standards, the Site Safety and Health Officer makes modifications as necessary by making changes to:

- Material specifications
- Personnel qualifications
- Subcontractor qualifications
- Company safety standards
- Inspection processes

### 9.3. TRAIN PREVENTIVE ACTIONS FOR IMPROVEMENT

The Site Safety and Health Officer initiates preventive action training to address safety improvement items. Personnel and subcontractors performing or inspecting work participate in the training.

Heightened awareness during safety inspections verifies and documents compliance with the preventive action improvement items. A qualified Project Superintendent inspects hotspots during regular safety inspections and records observations on the safety inspection form.

The Site Safety and Health Officer notifies affected subcontractors of selected preventive action training requirements.

The Site Safety and Health Officer evaluates the effectiveness of the improvements. The Site Safety and Health Officer reviews improvement results recorded on safety inspection records and monthly field reviews. When the Site Safety and Health Officer determines that the improvement actions are effective, the item is no longer treated as a preventive action.

# 10. SAFETY SYSTEM AUDITS

*Audits and Improvement*

## 10.1. OVERVIEW

Audits ensure that the elements of the Ludlow Construction Company Safety System are functioning as intended.

## 10.2. PROJECT SAFETY SYSTEM AUDIT

The Site Safety and Health Officer conducts monthly project Safety System audits that verify proper operation of the Safety System on a project. At least monthly, the Site Safety and Health Officer audits:

- Safety system framework
- Safety system management and responsibilities
- Customer contract specifications
- Project-specific safety standards
- Project purchasing
- Construction process control plans
- Inspections and tests
- Nonconformances and corrective actions
- Preventive actions
- Safety records and documents

The Site Safety and Health Officer takes corrective actions to ensure compliance with Safety System requirements. The effectiveness of changes is then evaluated and documented.

Requirements for managing audit nonconformances are addressed in section 8.5 Nonconformances.

## 10.3. COMPANY-WIDE SAFETY SYSTEM AUDIT

At least annually, the President audits the suitability and effectiveness of the Ludlow Construction Company Safety System.

The audit assesses:

- Ludlow Construction Company safety improvement activities
- Customer performance evaluations and satisfaction measurement results
- Safety performance measures
- Monthly field reviews
- Internal and external Safety Audit results
- Process performance and product conformance results
- Preventive and corrective action status
- Follow up on actions from previous Management Reviews

- Other changes (i.e. business climate, scope of work changes, etc.) that could affect the Safety System

Changes are initiated to improve Safety System performance. The President documents Safety System changes in the Ludlow Construction Company Safety Assurance Manual, initiates needed improvements, and assesses their effectiveness.

# 11. RECORD AND DOCUMENT CONTROLS

## 11.1. OVERVIEW

Ludlow Construction Company ensures that safety related documents and records are created, complete, and stored properly.

## 11.2. SAFETY MANUAL

The President maintains the Ludlow Construction Company Safety Manual that documents Ludlow Construction Company safety policies. Each policy identifies the titles of personnel responsible.

The President ensures that the Safety Manual and documents related to a work task are accessible to personnel performing the work.

The President maintains, improves, and updates the manual as necessary. At least annually, the President determines if updated versions of safety standards and product installation instructions are available. If so, the President updates the Safety System documentation accordingly.

## 11.3. SAFETY SYSTEM POLICY AND PROCEDURE REQUIREMENTS

The President prepares procedures when documented work steps are necessary for establishing, implementing, and maintaining the Ludlow Construction Company Safety System. Only procedures approved by the President are a requirement of the Ludlow Construction Company Safety System.

Written procedures are required for the use of forms to record safety data.

Each procedure must contain the following elements:

- Purpose
- Scope
- Definitions
- Responsible person(s)
- References
- Procedure steps that describe sequential processes to be followed to accomplish safety objectives

## 11.4. RECORDS CONTROL

The Site Safety and Health Officer verifies records for conformance to the Safety System Requirements and approves all Safety System records.

Documentation demonstrating conformance with and operation of the Safety System is retrievable for at least five years. The Site Safety and Health Officer verifies records for conformance to the Safety System Requirements.

### 11.4.1. Safety System Records Control

The Site Safety and Health Officer verifies the completeness, accuracy, and retention of project-specific Safety System records including:

- Annual reviews
- Safety improvement records

### 11.4.2. Project Records Control

The Site Safety and Health Officer verifies the completeness, accuracy, and retention of project-specific Safety System records including:

- Project safety system audits
- Inspection and test records
- Field reviews
- Calibration certificates
- Daily log reports
- Incident reports
- Redline drawings
- Qualified personnel approvals
- Qualified subcontractor approvals
- Safety improvement records
- Project Safety records specified by customer contract, or contract technical specifications

The Site Safety and Health Officer assigns record control responsibilities and document location that apply to a specific project.

## 11.5. Document Control

The President ensures that records of the distribution of Safety System documents are kept. When new versions are distributed, obsolete versions are destroyed or controlled to prevent inadvertent use.

### 11.5.1. Document Control of System Documents

The President controls documents related to the Ludlow Construction Company Safety System including:

- Safety System Manual
- Safety System Procedures
- Project Management Procedures (including interface and coordination with Customers and regulatory agencies with jurisdiction over jobsites)
- Government regulations
- Industry safety standards
- Procurement specifications

### 11.5.2. Document Control of Project Documents

The Project Manager controls documents related to specific customer contracts including:

- Customer contracts
- Contract technical specifications
- Contract drawings
- Shop drawing submittals and approvals
- Product data submittals and approvals
- Allowances and unit price submittals and approvals
- Requests for information and customer responses
- Subcontracts
- Inspection and test plans

# 12. APPENDIX A

## 12.1. DEFINITIONS OF TERMS

Acceptance - The process of deciding, through inspection, whether to accept or reject a product.

Audit – An audit determines if the safety system is performing as documented and whether the safety system is implemented. An audit consists of a systematic and objective examination to determine whether safety management activities and associated results comply with planned arrangements, and whether these arrangements are implemented effectively and suitably to achieve set objectives.

Certification - Statements by inspectors, officials, engineers, or product manufacturers attesting that product, system or material meets stated specification requirements.

Conformance – An item meets the requirements of relevant specifications, contracts or regulations; also the state of meeting the requirements.

Contract Project Accident Prevention Plan – See Project Accident Prevention Plan.

Corrective Action – a specific action to resolve a known condition or conditions, which adversely affect safety. Corrective Action must addresses remedial action to correct the known discrepancy whereas preventive action prevents reoccurrence based on the identified root cause.

Definable Feature of Work – See Task.

Design Data - Calculations, mix designs, analyses or other data pertaining to a part of work.

Disposition – A plan describing the manner in which a nonconformance is to be resolved.

Experienced - When used with an entity or individual, "experienced" means having successfully completed work similar in nature, size, and extent.

Inspection and Test Plan – A record of requirements, frequency and responsibilities for activities such as measuring, examining, testing and gauging one or more characteristics of a product or service, and comparing the results with specified requirements to determine conformity to the Contract Specification. Inspections and tests are detailed in the applicable procedures and results recorded on forms appended to these procedures.

Inspection - The act of examining, measuring, or testing to determine the degree of compliance with requirements.

Mock-up Sample – an assembly or portions of an assembly constructed on the project site that establishes standards by which the ensuring work can be judged. Mockups are constructed to verify selections made under sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples.

Nonconformance – Non-fulfillment of a specification which affects form, fit or function and renders the safety of an item or service unacceptable or indeterminate in regard to meeting all relevant specifications. Examples of

nonconformance include: physical defects, test failures, incorrect or inadequate documentation or deviation from prescribed processing, inspection or test procedures.

Non-conformance Report – A record of the identification, and resolution of a nonconformance.

Product Data - Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions and brochures illustrating size, physical appearance and other characteristics of materials, systems or equipment for some portion of the work.

Observation – Feedback provided to work crews for the purposes of heightened awareness of an item that, if not addressed before a completion inspection, may result in a nonconformance.

Product Samples - Physical examples of materials, equipment or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged. Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project

Project Accident Prevention Plan - A document setting out the specific safety objectives, practices, resources and sequence of activities relevant to a particular contract or project.

Records - Documentary evidence of the specification of individual items, standards of work, and compliance with the Safety Management System requirements.

Reject – A disposition of a nonconformance for an item unsuitable for its intended purpose and economically or physically incapable of being reworked or repaired.

Repair – A disposition of a nonconformance for an item acceptable for its intended use even though it is not restored to a condition which meets all specification requirements.

Rework – A disposition of a nonconformance for an item that can be brought into conformance with the original requirements through re-machining, reassembling, reprocessing, reinstallation, or completion of the required operations.

Safety Assurance - Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

Safety Audit - A formal review/investigation to determine whether the safety characteristics of a product or service meet the defined safety criteria.

Safety Control – the performance of tasks which ensure that construction is performed according to plans and specifications

Safety Manual – Documents consisting of Ludlow Construction Company policies for safety management methods instituted as a company. Standard operating procedures supplement the safety manual policies with work steps. This manual is copy right 2010CaldreriaSafety. Forms are also part of this manual with step-by-step instructions.

Shop Drawings - Drawings, diagrams and schedules specifically prepared to illustrate some portion of the work; diagrams and instructions from a manufacturer or fabricator for use in producing the product and as aids to integrate the product or system into the project. Shop drawings show how multiple systems and interdisciplinary work will be coordinated

Standard Operating Procedure - A document that details the purpose and scope of an activity, and specifies how it is to be carried out. The output from a procedure provides objective evidence (in the form of records) of the compliance to the safety system requirements.

Subcontractor - A company, organization or individual providing a service or product, which may include, labor, plant, materials or other facilities or resources

Task – A Definable Feature of Work. A task which is separate and distinct from other tasks and has separate control requirements. A task could be identified by different trades or disciplines, or it could be separate phases of work by the same trade. At minimum, each section of the specifications is a task, however, there are frequently more than one definable feature under a particular section.

Test Report - Report signed by authorized official of testing laboratory that a material, product or system identical to the material, product or system to be provided has been tested in accord with specified requirements.

Use-As-Is – A disposition of a nonconformance for an item that will satisfy its intended use, even though it does not meet all design/functional requirements.

Verify - The process of confirming the soundness or effectiveness.

# 13. APPENDIX B PROJECT PLANS & PROGRAMS

## 13.1. EMERGENCY RESPONSE PLAN

# Ludlow Construction Company, Inc.

## Emergency Response Plan

**The Emergency Response Plan addresses emergency situations that may arise at jobsite locations and which may threaten human health and safety and/or damage customer or Ludlow assets. Management is responsible for implementing the Emergency Response Plan. The Emergency Response Plan will meet the following objectives:**

1. Provide a means of notifying employees, customers and local authorities of an emergency situation.

2. Provide a safe and orderly method of evacuation of employees and customers from the work area.

3. Account for all employees who occupied the work area at the time of evacuation, should one occur.

4. Provide cooperation with all government authorities and agencies.

5. Provide a means to train employees and subcontractors to react to emergency situations.

6. Provide a means to document events and provide assistance in any future investigation.

7. Site security shall take the form of signage and physical barriers. Barriers and signage shall be positioned at all possible entry points to the project site.

**Emergency Coordinator and Deputy Coordinator:**

**Emergency Coordinator: Forrest Brown, SSHO**

**Deputy Emergency Coordinator: Michael Pio, Project Manager**

The SSHO(s) & Superintendent(s) shall coordinate responses to internal and outside government agencies. No other Ludlow Construction Company employees are authorized to assume emergency authority without written permission.

**Escape Procedures and Routes**

1. Buildings: When working inside buildings, the Safety Officer will post a planned escape route for exiting the building. The escape route will be reviewed with each employee and subcontractor working within the building and designed assembly area will be identified. Pre-determined escape routes and assembly areas may be used if revised and accepted by the Ludlow Site Safety and Health Officer.

2. Site Work Areas: When working on open work sites outside of the Building 2 work area, a designed assembly area will be identified for all site work employees to assemble should an emergency occur. **The assembly area will be the jobsite laydown area unless another area is designated as more appropriate.**

**Emergency Evacuation:**

The job site superintendent and the authorized representative of each subcontractor shall conduct an accounting of all workers. Each subcontractor representative shall report to the Ludlow Construction Company Superintendent, who will report to the Ludlow Construction Company Safety Officer. If a worker is not accounted for - the Safety Officer shall notify the appropriate authorities. Reports from subcontractor representatives shall be checked against the projects daily sign-in sheet to ensure everyone is present and accounted for.

**Communication Means:**
Cell phones or Two-Way Radios will be used as a means for communication during emergencies. The project superintendent will be responsible for making any necessary emergency calls and starting emergency procedures.

**Training for Emergency Response:**
The Site Safety and Health Officer is responsible for implementing the emergency response program and may conduct training during:

1. Weekly Tool Box Meetings
2. Monthly Safety Meetings
3. Special Emergency training meetings
4. Coordinated tests or training with local authorities

**Fire Plan:**
When fire is discovered:

1. Activate the nearest fire alarm (if installed)
2. Notify the local Fire Department (number located on posted Emergency Contact List)
3. If the fire alarm is not available, notify the Site Safety and Health Officer (number located on poste Emergency Contact List)

Fight the fire ONLY if:

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

Upon being notified about the fire emergency, occupants must:

1. Leave the building using the designated escape routes.
2. Assist all physically challenged employees in emergency evacuation.
3. Assemble in the designated area (Specified by Site Safety and Health Officer):
4. Remain outside until the competent authority (Site Safety and Health Officer, Project Superintendent, or designee) announces that it is safe to reenter.

Site Safety and Health Officer or most senior Project Management on site must:

1. Disconnect utilities and equipment directly related to the project unless doing so jeopardizes his/her safety.
2. Notify utility companies with service in or around the area ***(see pg. 45 for utility emergency contact number or the posted emergency contact sheet posted on the job site)***.
3. Coordinate an orderly evacuation of personnel.
4. Perform an accurate head count of personnel reported to the designated area.
5. Determine a rescue method to locate missing personnel.
6. Provide the Fire Department personnel with the necessary information about the facility.

**Accident Plan:**

All accidents occurring incidentally to the project is investigated, reported, and analyzed. The Site Safety and Health Officer will report all accidents and injuries no matter how slight. The Site Safety and Health Officer will notify the owner as soon as practical, but not later than 24 hours, after any accident.

If an accident occurs:

1. Notify local emergency medical professionals by dialing 911 (depending on severity of injury **see pg. 45 emergency contact list**)
2. Notify the Site Safety and Health Officer of what has occurred and current measures taken.
3. Injured person(s) should not be moved (except during extreme cases) and no emergency response service professional is available.
4. A detailed map of the nearest emergency facility will be posted on site with emergency contact numbers (in the event injured person(s) must be transported by onsite personnel)

Accident notification will include:

1. Contractors Name
2. Contract Title
3. Type of Contract
4. Name of Activity
5. Installation or location accident occurred
6. Date and time of accident
7. Name(s) of personnel injured
8. Extent of property damage, if any
9. Extent of injury, if known
10. Brief description of accident (include type of equipment used, PPE used, etc.)

The Site Safety and Health Officer will notify the owner as soon as practical, but not later than four hours, after any accident that

1. Meets the definition of Recordable Injuries or Illnesses or High Visibility Accidents
2. Property damage equal to or greater than $5,000

The Site Safety and Health Officer will notify the USACOE Representative immediately when there is:

1. A fatal injury
2. A permanent total disability
3. A permanent partial disability
4. The hospitalization of three or more people resulting from a single occurrence
5. Property damage of $500,000 or more

*The Site Safety and Health Officer prepares an accident report as specified in Standard Operating Procedure 8.2 Accident Reporting. Accidents will be reported on OSHA Form 300A Injury and Illness Incident Report.*

**ACCIDENT INVESTIGATION**

Should and accident occur, the Site Safety and Health Officer will thoroughly investigate the accident. The Site Safety and Health Officer will conduct an Accident Investigation Inspection following the procedures identified in the Inspection section of this plan. The Site Safety and Health Officer records results of the investigation on the Accident Investigation Report

**CORRECTIVE ACTIONS**

Corrective Actions will be taken following the procedures identified in the Inspection section of this plan. The Site Safety and Health Officer follows up on each corrective actions and records findings on the Accident Investigation Report.

**Power Failure:**

In the event of power loss to a facility certain precautionary measures should be taken depending on the l location and environment of the facility:

1. Unnecessary electrical equipment and appliances should be turned off in the event that power restoration would surge causing damage to equipment or restart unexpectedly when power is returned.
2. Leave the building using the designated escape routes.
3. Assist all physically challenged employees in emergency evacuation.
4. SSHO and Supervisors will perform an accurate head count of personnel reported to the designated area.
5. SSHO will determine a rescue method to locate missing personnel.
6. Notify local utilities after exiting (numbers will be posted on Emergency Contact list)
7. Assemble in the designated area (Specified by Site Safety and Health Officer)
8. Remain outside until the competent authority (Site Safety and Health Officer, Project Superintendent, or designee) announces that it is safe to reenter.

Upon Restoration of heat and power:

1. Electronic equipment should be brought up to ambient temperatures before energizing to prevent condensate from forming on circuitry.
2. Ensure no unauthorized personnel are in the work area.
3. Check all tools and equipment to ensure no damage has occurred due to power outage.

**Supplied Air System Failure:**

Upon failure of supplied air system:

1. Notify Site Safety and Health officer immediately of the air system failure
2. Prior to system failure, personnel should be wearing the PPE deemed acceptable to perform the Definable Feature of Work.
3. Exit the containment workspace until supplied air system is repaired.
4. Seal off containment when not in use.
5. Check area around containment to ensure it has not become contaminated.
6. No personnel shall exit the containment until going through proper decontamination shower process.

**Spill Plans:**

In the event of a hazardous spill Ludlow Construction Company personnel, or subcontractor personnel, will insure that immediate action is taken to control the spill, taking into account personal safety. Consistent with these actions, it is critical to report spills immediately. The first person noticing the spill will notify his or her supervisor, if the supervisor cannot be found immediately, and then contact the Fire Department at emergency 911. Have the following information ready:

1. Name of person reporting the spill.

2. Location of the spill.

3. Number of persons injured.

4. Substance spilled. (If known)

5. Amount of spillage. (Best estimate)

6. Rate of release.

7. Time spill occurred.

8. Extent of which spill has traveled. (How far it has run)

9. Any other pertinent information. (Any electrical lines, drain lines, occupied buildings, etc.)

**REMAIN CALM: Take action if possible to contain / clean-up the spill, remember personal safety comes first.**

***Do not attempt to clean up hazardous material spills unless the person has completed a 40 hour hazardous material (HAZMAT/HAZWOPPER) course. Contact the Emergency Environmental Company from the posted Emergency Contact List from page 40 of this plan.**

## 13.2. BLOOD BORNE PATHOGEN PLAN

# Ludlow Construction Company, Inc.

## Blood Borne Pathogen Plan

**OBJECTIVE**

The objective of the Ludlow Construction Company Blood borne Pathogen Exposure Control Plan is to comply with the Occupational Safety and Health Administration's (OSHA) Blood borne Pathogens Standard, 29 CFR 1910.1030, EM 385-1-1 03.A.05. Additionally this plan will assist to eliminate or minimize employee occupational exposure to blood, certain other body fluids, or other potentially infectious materials as defined below:

A. Blood means human blood, human blood components, and products made from human blood.

B. Bodily fluids means semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any bodily fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids.

C. Other potentially infectious materials means any unfixed tissue or organ

**BACKGROUND**

OSHA requires employers to identify situations and job classifications in which employees may be exposed to blood or other potentially infectious materials, and to provide protection to these employees in the form of engineering controls, personal protective equipment, training, and risk reduction.

**ASSIGNMENT OF RESPONSIBILITY**

A. Program Administrator

The SSHO Forrest Brown shall manage the Blood borne Pathogen Exposure Control Plan for Ludlow Construction, and maintain all records pertaining to the plan.

B. Management

All subcontractors working on site will provide adequate controls and equipment that (i.e. PPE), when used properly, will minimize or eliminate risk of occupational exposure to blood or other potentially infectious materials. The SSHO will ensure proper adherence to this plan through periodic audits.

C. Subcontractor Supervisors

Supervisors shall themselves follow and ensure that their employees are trained in and use proper work practices, universal precautions, the use of personal protective equipment, and proper cleanup and disposal techniques. Supervisors are responsible for reporting any and all exposures to the SSHO immediately.

D. Employees

Employees are responsible for employing proper work practices, universal precautions, personal protective equipment and cleanup/disposal techniques as described in this plan. Employees are also responsible for reporting all exposure incidents to their immediate supervisor as soon as an exposure occurs.

E. Contractors

All subcontractor employees shall be responsible for complying with this plan, and shall be provided the training described herein by the SSHO.

**EXPOSURE DETERMINATION**

All job classifications and locations in which employees may be expected to incur occupational exposure to blood or other potentially infections materials, based on the nature of the job or collateral duties, regardless of frequency, shall be identified and evaluated by the SSHO. This list shall be updated as job classifications or work situations change. Exposure determination shall be made without regard to the use of personal protective equipment **(employees are considered to be exposed even if they wear personal protective equipment)**.

F. Category I

Job classifications in which employees are exposed to blood or other potentially infectious materials on a regular basis, and in which such exposures are considered normal course of work, fall into Category I. The SSHO shall maintain a list of these types of jobs and the locations in which the work will be performed.

G. Category II

Job classifications in which employees may have an occasional exposure to blood or other potentially infectious materials, and in which such exposures occur only during certain tasks or procedures that are collateral to the normal job duties, fall into Category II. The SSHO shall maintain a list of these types of jobs and the locations in which the work may be performed.

These lists shall be updated as job classifications or work situations change.

**IMPLEMENTATION SCHEDULE AND METHODOLOGY**

H. Compliance Methods

1. Universal precautions

Universal precautions shall be used on all Ludlow Construction job sites to prevent contact with blood or other potentially infectious materials. All blood or other potentially infectious materials shall be considered infectious, regardless of the perceived status of the source individual.

2. Engineering Controls

Engineering and work practice controls shall be used to minimize or eliminate exposure to employees and subcontractor personnel by all Ludlow Construction. Where occupational exposure remains after institution of these controls, personal protective equipment shall also be used.

3. Hand Washing Facilities

   Hand washing facilities shall be made available and readily accessible to all onsite personnel who may incur exposure to blood or other potentially infectious materials. Where hand washing facilities are not feasible, Ludlow Construction will provide an antiseptic cleanser in conjunction with clean cloth/paper towels or antiseptic towelettes.

   When these alternatives are used, onsite personnel shall wash their hands with soap and running water as soon as feasible.

4. Work Area Restrictions

   In work areas where there is a reasonable risk of exposure to blood or other potentially infectious materials, employees shall not eat, drink, apply cosmetics or lip balm, smoke, or handle contact lenses. Food and beverages shall not be kept in refrigerators, freezers, shelves, cabinets, or on counter tops or bench tops where blood or other potentially infectious materials may be present.

Mouth pipetting or suctioning of blood or other potentially infectious materials is prohibited.

All processes and procedures shall be conducted in a matter that will minimize splashing, spraying, splattering, and generation of droplets of blood or other potentially infectious materials.

5. Contaminated Equipment

   The SSHO and subcontractor supervisors shall ensure that equipment that has become contaminated with blood or other potentially infectious materials is examined prior to servicing or shipping. Contaminated equipment shall be decontaminated, unless decontamination is not feasible. Contaminated equipment shall be tagged and labeled as such.

6. Personal Protective Equipment (PPE)

   a. PPE Provision

      The SSHO shall ensure that the provisions regarding personal protective equipment described in the AHAs for DFW (Definable Feature of Work) are met and maintained.

      Personal protective equipment shall be chosen based on the anticipated exposure to blood or other potentially infectious materials. Protective equipment shall be considered appropriate only if it does not permit blood or other potentially infectious materials to pass through or reach an employees' clothing, skin, eyes, mouth, or other

mucous membranes under normal and proper conditions of use and for the duration of time that the equipment will be used.

b. PPE Use

The SSHO and subcontractor on site supervisors shall ensure that employees use appropriate PPE. In cases where an employee temporarily and briefly declines to use PPE because, in the employee's professional judgement, its use may prevent delivery of healthcare or pose an increased hazard to the safety of the worker or co-worker, then the supervisor shall investigate and document the situation to determine whether changes can be instituted to prevent such occurrences.

c. PPE Accessibility

The SSHO shall ensure that appropriate PPE in the necessary sizes is readily accessible at the work site or is issued at no cost to employees. Hypoallergenic gloves, glove liners, powderless gloves, or other similar alternatives shall be readily accessible to those employees who are allergic to the gloves normally provided.

d. Types of PPE

i. Gloves

Disposable gloves are not to be washed or decontaminated for re-sue, and are to be replaced as soon as possible when they become contaminated. Gloves that become torn or punctured (or their ability to function as a barrier is otherwise compromised) shall be replaced immediately or as soon as feasible.

Utility gloves may be decontaminated for re-use if the integrity of the glove is uncompromised. Utility gloves shall be disposed of properly if they are cracked, peeling, torn, punctured, or they exhibit other signs of deterioration or inability to function as a barrier without compromise.

ii. Eye and Face Protection

Masks worn in combination with eye protection devices (such as goggles or glasses with solid side shield, or chin-length face shields) are required when the occurrence of splashes, splatters, or droplets of blood or other potentially infectious materials can reasonably be anticipated to contaminate an employee's eye, nose, or mouth.

iii. Other PPE

Additional protective clothing shall be worn in instances when gross contamination can reasonably be expected. The following situations require additional protective clothing

I. Housekeeping

The job site shall be cleaned and decontaminated regularly and as needed in the event of a gross contamination. All contaminated work surfaces, bins, pails, cans, and similar receptacles shall be inspected and decontaminated regularly.

J. Regulated Waste Disposal

Disposal of all regulated waste shall be in accordance with applicable federal, state, and local regulations.

1. Other Regulated Waste

Other regulated waste shall be placed in containers that are closeable, constructed to contain all contents, and will prevent leakage of fluids during handling, storage, transportation, or shipping.

All waste containers shall be labeled or color-coded and closed prior to removal to prevent spillage or protrusion of contents during handling, storage, transport, or shipping.

**Training**

The SSHO shall ensure that training is provided during the preparatory meeting phase for all definable features of work covered in this contract. Training shall be repeated every 12 months, or when there are any changes to tasks or procedures affecting an employee's occupational exposure. Training shall be tailored to the education level of the affected employees, and offered during the normal work shift. Training shall be interactive and shall include:

K. review of 29 CFR 1910.1030, OSHA's Blood borne Pathogen Standard and the EM 385 1-1 03.A.05 Standard;

L. a discussion of the epidemiology and symptoms of blood borne diseases;

M. an explanation of the modes of transmission of blood borne pathogens;

N. an explanation of Cambridge Marine Construction's Blood borne Pathogen Exposure Control Plan, and how employees can access a copy of the plan;

O. a description and recognition of tasks that may involve exposure;

P. an explanation of the use and limitations of the methods employed by Cambridge Marine Construction to reduce exposure (such as engineering controls, work practices, and personal protective equipment);

Q. information about the types, use, location, removal, handling, decontamination, and disposal of personal protective equipment;

R. an explanation of the basis of selection of personal protective equipment;

S. instruction on the appropriate actions to take and persons to contact in an emergency involving blood or other potentially infectious materials;

T. an explanation of the procedures to follow if an exposure incident occurs, including the method of reporting and medical follow up;

The SSHO shall review this Blood borne Exposure Control Plan for effectiveness at least annually and as needed to incorporate changes to the standard or changes in the work place.

## 13.3. SPILL PREVENTION PLAN

# Ludlow Construction Company, Inc.

## Spill Prevention Plan

**Spill Prevention, Containment and Control Plan**

**1.0 INTRODUCTION**

This Spill Prevention, Containment and Control Plan (Spill Plan) describes planning, prevention and control measures to minimize impacts resulting from spills of fuels, petroleum products, or other regulated substances as a result of construction. These measures will be implemented by personnel working on Ludlow Construction Company's (Ludlow) projects.

**2.1 PLANNING AND PREVENTION**

Ludlow requires its subcontractors to implement proper planning and preventative measures to minimize the likelihood of spills, and to quickly and successfully clean up a spill should one occur. Ludlow has developed this Spill Plan to set forth minimum standards for handling and storing regulated substances and cleaning up spills. Potential sources of construction-related spills include machinery and equipment failure, fuel handling, and transfer accidents. The Coordinator / Site Safety and Health Officer (SSHO) will be responsible for implementing, at a minimum, the following planning and prevention measures.

**2.2 ROLES AND RESPONSIBILITIES Spill Coordinator**

The SSHO shall be designated by Ludlow as the Spill Coordinator. In the event a spill occurs, the on-site approved competent person for the Definable Feature of Work being performed shall be responsible for notifying the SSHO. For all construction related spills, the following shall apply:

- The Spill Coordinator shall report spills to appropriate federal, state, and local agencies as soon as possible. This includes the Contracting Officer/Representative.

- The Spill Coordinator shall mobilize on-site personnel, equipment, and materials for containment and/or cleanup commensurate with the extent of the spill.

- The Spill Coordinator shall assist the Emergency Response Contractor, and monitor containment procedures to ensure that the actions are consistent with the requirements of this Spill Plan.

- The Spill Coordinator in consultation with the Contracting Officer/Representative, and appropriate agencies shall determine when it is necessary to evacuate spill sites to safeguard human health.

- The Spill Coordinator shall coordinate with the Contracting Officer/Representative the need to contact additional parties or agencies.

- The Spill Coordinator is responsible for completing a Spill Report within 24-hours of the occurrence of a spill, regardless of the size of the spill.

- The Spill Coordinator will be responsible for filling out of any ESAMS forms that result from a reported leak or spill.

**Authorized Personnel**

- Authorized Personnel are representatives of Ludlow or their approved subcontractors who are designated to handle fuel, lubricants or other regulated substances.

- Authorized Personnel must attend training help by the SSHO explaining the requirements of the Spill Plan and the consequences of non-compliance.

**Construction Superintendent**

- The Ludlow Superintendent or representative must notify the SSHO and Project Manager immediately of any spill of a petroleum product or hazardous liquid, regardless of volume.

**Construction Personnel**

- Construction Personnel working under the specifications of this contract are representatives of Ludlow.

- Construction Personnel shall notify their designated on-site competent person or Spill Coordinator immediately of any spill of a petroleum product or hazardous liquid, regardless of volume.

**2.3 TRAINING**

- The Spill Coordinator shall conduct training of all Ludlow employees and subcontractors who handle fuels and other regulated substances to follow spill prevention procedures and to quickly and effectively contain and clean up spills that may occur in accordance with applicable regulations.

- The Spill Coordinator will brief Ludlow employees and subcontractors on procedures to respond to a spill during mandatory safety and environmental training to be provided during the preparatory meeting.

**2.4 EQUIPMENT**

- Each subcontractor handling chemicals must have adequate absorbent materials and containment booms on hand, to enable the rapid cleanup of a spill.
- Subcontractors must maintain spill kits containing a sufficient quantity of absorbent and barrier materials to adequately contain and recover foreseeable spills. These kits may include, but are not limited to absorbent pads, straw bales, absorbent clay, sawdust, floor-drying agents, spill containment barriers, plastic sheeting, skimmer pumps, and holding tanks. This equipment shall be located near fuel storage areas and other locations as necessary to be readily available to control foreseeable spills.

- Suitable plastic lining materials shall be available for placement below and on top of temporarily-stored contaminated soils and materials.

- All fuel, and where necessary, service vehicles, shall carry spill containment materials adequate to control foreseeable spills. Such material may include but not be limited to absorbent pads, commercial absorbent material, plastic bags with ties, and a shovel.

- The Spill Coordinator shall make known to all project personnel the locations of spill control equipment and materials, and have them readily accessible during construction activity.

- Unless previously approved by the Environmental Program Manager (Forrest Brown), construction equipment shall be removed from wetlands and parked a minimum of 100 feet away from streams, wetlands, ditches, and other waterbodies at the end of each work day.

- In large wetlands where no upland site is available for refueling, auxiliary fuel tanks on construction equipment are recommended.

- All fuel nozzles shall be equipped with functional automatic shut-offs and over-flow alarms.

- Fuel trucks transporting fuel to on-site construction equipment shall travel only on approved access roads.

**2.5 SUPERVISION AND INSPECTION**

- Subcontractors shall perform a pre-construction inspection and test of all equipment to ensure that it is in good repair.

- During construction, the subcontractors designated competent person and the SSHO shall regularly inspect hoses, pipes, valves, and tanks to ensure equipment is free of leaks. Any equipment that is leaking or in need of repair will be immediately removed from service by competent person or SSHO and repaired, prior to resuming work.

**3.1 STORAGE AND HANDLING OF FUELS/HAZARDOUS LIQUIDS**

**N/A for this project**

**3.2 FUEL STORAGE - GENERAL**

**N/A for this project**

**3.3 REFUELING**

- Ludlow personnel and subcontractors shall make all efforts to dispense fuel by Authorized Personnel during daylight hours.

- Fuel dispensing equipment (i.e., portable gas cans, nozzles, hoses, etc.) shall be of the appropriate type. Consult with the SSHO for details.

**3.4 REFUELING AND FUEL STORAGE NEAR WETLANDS AND WATERBODIES**

**Wetlands and waterbody potential spills will be addressed in a separate Stream Crossing Plan, which will Submitted separate from this Accident Prevention Plan.**

**3.5 OVERNIGHT PARKING**

Overnight parking areas of equipment shall be inspected for leaks that may have occurred overnight by the equipment operator prior to starting the equipment.

**3.6 CONCRETE WASHOUT HANDLING**

**N/A for this project**

**4.1 INITIAL SPILL MANAGEMENT**

**4.2 IMMEDIATE RESPONSE**

Immediately upon learning of any fuel, oil, hazardous material or other regulated substance spill, or upon learning of conditions that will lead to an imminent spill, the person discovering the situation shall:

- Initiate actions to contain the fluid that has spilled or is about to spill, and initiate action to eliminate the source of the spill to the maximum extent that is safely possible.

- Notify the competent person and/or the Spill Coordinator and provide them with the following information:

- Location and cause of the spill

- The type of material that has spilled

- Whether the spill has reached or is likely to reach any surface water Upon learning of a spill or a potential spill the Spill Coordinator shall:
- Assess the situation and determine the need for further action.

- Direct subsequent activities and/or further assign responsibilities to other personnel.

- Notify the Ludlow Environmental Program Manager (Forrest Brown) and/or USACOE Contracting Officer/Representative.

**4.3 MOBILIZATION**

- The Spill Coordinator shall mobilize on-site personnel, equipment, and materials for containment and/or cleanup commensurate with the extent of the spill.

- If the Spill Coordinator determines that a spill is beyond the scope of on-site equipment and personnel, the Spill Coordinator shall immediately notify an Emergency Response Contractor is needed to contain and/or clean up the spill.

- The Spill Coordinator shall assist the Emergency Response Contractor and monitor containment procedures to ensure that the actions are consistent with the requirements of this Spill Plan.

- In the event of a spill, the Ludlow Project Manager (Michael Pio) must be notified at 413-262-0237, as well as the Contracting Officer/Representative. Actions requiring emergency response employees and subcontractors will be coordinated by the Spill Coordinator.

**5.1 SPILL NOTIFICATION RESPONSIBILITIES**

**5.2 NOTIFICATION VOLUMES**

The subcontractor's designated competent person must notify the Ludlow Spill Coordinator and the Environmental Proram Manager (Forrest Brown) immediately of any spill of a petroleum product or hazardous liquid, regardless of volume.

**5.3 SPILL REPORT FORM**

A Spill Coordinator shall reports to the GDA each release of a regulated substance, regardless of volume. The Spill Report must be submitted the Project Manager within 24 hours of the occurrence of a spill. To complete the Spill Report, the Spill Coordinator shall compile the following information:

- A legal description of the spill location to the quarter section, and specific directions from the nearest community.

- The time and date of the spill, and the time and date the spill was discovered.

- The type and estimated volume of spilled material, and the manufacturer's name.

- The media in which the spill exists (e.g., soil, water, etc.).

- The topography and surface conditions of the spill site.

- Proximity of surface waters.

- Weather conditions.
- Name, company, address, and telephone number of the subcontractor Superintendent, and the person who reported the spill.
- The cause of the spill.
- Immediate containment and/or cleanup actions taken.
- Current status of cleanup actions.

Follow-up written reports, associated laboratory analyses, confirmatory field sampling and other documentation may also be required separately on a site-specific basis as directed by the Project Manager, Environmental Program Manager (Forrest Brown), or Contracting Officer/Representative. Documentation is the responsibility of the subcontractor competent person and Spill Coordinator.

**5.4 AGENCY NOTIFICATION**

Ludlow Construction will report spills to appropriate federal, state and local agencies as soon as possible. These include, but may not be limited to the following:
National Response Center, in Washington, D.C. Phone: (800) 424-8802 (24 hours)
**Connecticut Department of the Environment (Emergency Response)**
**The CT Department of the Environment (Emergency Response) provides a single answering point for local and state agencies to request state-level assistance for emergencies, serious accidents or incidents, or for reporting hazardous materials and petroleum spills.**
The Spill Coordinator in coordination the appropriate federal, state and local agencies must ensure that additional parties or agencies are properly notified. Additionally, the Spill Coordinator is responsible for ensuring that all cleanup activities required by a jurisdictional agency are satisfactorily met and provide documentation to the Project Manager and Contracting Officer/Representative demonstrating this compliance.

**6.1 SPILL CONTAINMENT AND CLEANUP**

In the event of a spill, all personnel and subcontractors will abide by all applicable federal, state and local regulations with respect to cleaning up the spill. All cleanup and other construction related spill activities must be completed by, and costs assumed by Ludlow or the subcontractor responsible for creating the spill. Specific cleanup measures for both upland and wetland/waterbody spills are described below.

**6.2 SPILL CONTROL - UPLAND AREAS**

- If a spill should occur during refueling operations, STOP the refueling operation until the spill can be controlled and the situation corrected.
- The source of the spill must be identified and contained immediately.
- For large spills on land, the spill must be contained and pumped immediately into tank trucks.
- The spilled material and the contaminated soil must be treated and/or disposed of in accordance with all applicable federal, state, and local agency requirements.

- Smaller spills on land shall be cleaned up with absorbent materials. Contaminated soil or other materials associated with these releases shall also be collected and disposed of in accordance with applicable regulations.

- Flowing spills must be contained and/or absorbed immediately.

- Absorbent material(s) shall be placed over spills to minimize spreading and to reduce its penetration into the soil.

- The Spill Coordinator and/or the subcontractor, in consultation with the Contracting Officer/Representative and appropriate agencies, determine when spill sites will be evacuated as necessary to safeguard human health.

**6.3 SPILL CONTROL - WETLANDS AND WATERBODIES**

**All wetland and water control measures are identified and addressed in a separate plan from the APP**

**7.1 STORAGE AND DISPOSAL OF CONTAMINATED MATERIALS**

**N/A for this project**

## 13.4. FIRE PREVENTION PLAN

# Ludlow Construction Company, Inc.

## Fire Prevention Plan

**I. OBJECTIVE**

The purpose of this Fire Prevention Plan is to eliminate the causes of fire, prevent loss of life and property by fire. This plan provides employees with information and guidelines that will assist them in recognizing, reporting, and controlling fire hazards. It is Ludlow Construction Company's intent to comply with NFPA, and Occupational Safety and Health Administration's (OSHA) 29 CFR 1910.39 standards on fire prevention. In all cases the most stringent requirements shall apply.

**II. BACKGROUND**

Ludlow Construction Company is committed to minimizing the threat of fire to employees, visitors, and property. Ludlow Construction Company complies with all applicable laws, regulations, codes, and good practices pertaining to fire prevention. This Fire Prevention Plan serves to reduce the risk of fires in the following ways:

A. identifies materials that are potential fire hazards and their proper handling and storage procedures;
B. distinguishes potential ignition sources and the proper control procedures of those materials;
C. describes fire protection equipment and/or systems used to control fire hazards;
D. identifies persons responsible for maintaining the equipment and systems installed to prevent or control ignition of fires;
E. identifies persons responsible for the control and accumulation of flammable or combustible material;
F. describes good housekeeping procedures necessary to insure the control of accumulated flammable and combustible waste material and residues to avoid a fire emergency; and
G. provides training to employees with regard to fire hazards to which they may be exposed.

**III. ASSIGNMENT OF RESPONSIBILITY**

Fire safety is everyone's responsibility. All employees should know how to prevent and respond to fires, and are responsible for adhering to company policy regarding fire emergencies.

A. Management

Management determines the Ludlow Construction Company's prevention and protection policies. Management will provide adequate controls to provide a safe workplace, and will provide adequate resources and training to its employees to encourage fire prevention and the safest possible response in the event of a fire emergency.

B. Plan Administrator

The Site Safety and Health Officer shall manage the Fire Prevention Plan for Ludlow Construction Company, and shall maintain all records pertaining to the plan. The Plan Administrator shall also:

1. DEVELOP AND ADMINISTER THE FIRE PREVENTION TRAINING PROGRAM.
2. ENSURE THAT FIRE CONTROL EQUIPMENT AND SYSTEMS ARE PROPERLY MAINTAINED.
3. CONTROL FUEL SOURCE HAZARDS.
4. CONDUCT FIRE RISK SURVEYS (SEE PAGE 162 OF THIS PLAN) AND MAKE RECOMMENDATIONS.
5. WHEN UNUSUAL FIRE HAZARDS EXIST OR FIRE EMERGENCIES DEVELOP, SSHO MAY IMPLEMENT FURTHER PROTECTIONS AS REQUIRED.

C. Supervisors

Supervisors are responsible for ensuring that employees receive appropriate fire safety training, and for notifying the SSHO when changes in operation increase the risk of fire. Supervisors are also responsible for enforcing the plans prevention and protection policies.

D. Employees

All employees shall:

1. COMPLETE REQUIRED TRAINING BEFORE WORKING WITHOUT SUPERVISION.
2. CONDUCT OPERATIONS SAFELY TO LIMIT THE RISK OF FIRE.
3. REPORT POTENTIAL FIRE HAZARDS TO THEIR SUPERVISORS.
4. FOLLOW FIRE EMERGENCY PROCEDURES.

**IV. PLAN IMPLEMENTATION**

A. Good Housekeeping

To limit the risk of fires, employees shall take the following precautions:

Minimize the storage of combustible materials.

1. Maintain hallways, stairs, and other exit routes free of obstructions.

2. Dispose of combustible waste in self closing covered, airtight, metal containers.

3. Only non-combustible or UL labeled nonmetallic containers may be used to dispose of waste and rubbish.

4. Use and store flammable materials in well-ventilated areas at least 50 feet from ignition sources.

5. Use only nonflammable cleaning products.

6. Keep incompatible (i.e., chemically reactive) substances away from each other.

7. Perform “hot work” (i.e., welding or working with an open flame or other ignition sources) in controlled well-ventilated areas with the appropriate precautions. (Obtain permits, extinguishers, curtains, fire watch etc.)

8. Keep equipment in good working order (i.e., inspect electrical wiring and appliances regularly and minimize dust and grease)

9. Ensure that heating units are safeguarded.

10. Report all gas leaks immediately and ensure that gas leaks are repaired immediately upon notification.

11. Repair and clean up flammable liquid leaks immediately.

12. Keep work areas free of dust, lint, sawdust, scraps, and similar material.

13. Do not rely on extension cords if wiring improvements are needed, and take care not to overload circuits with multiple pieces of equipment.

14. Turn off electrical equipment when not in use.

A. Maintenance

Ensure that equipment is maintained according to manufacturers' specifications. Ludlow Construction Company will comply with requirements of the National Fire Protection Association (NFPA) codes for specific equipment. Only properly trained individuals shall perform maintenance work.

The following equipment is subject to the maintenance, inspection, and testing procedures:

1. Equipment installed to detect fuel leaks, control heating, and control pressurized systems;
2. Portable fire extinguishers, automatic sprinkler systems, and fixed extinguishing systems;
3. Detection systems for smoke, heat, or flame;
4. Fire alarm systems; and
5. Emergency backup systems and the equipment they support.

**V. TYPES OF HAZARDS**

The following sections address major workplace fire hazards and the procedures for controlling the hazards.

A. Electrical Fire Hazards

Electrical system failures and the misuse of electrical equipment are leading causes of workplace fires. Fires can result from loose ground connections, wiring with frayed insulation, or overloaded fuses, circuits, motors, or outlets.

To prevent electrical fires:

1. Make sure that worn wires are replaced.
2. Use only appropriately rated fuses.
3. Do not use extension cords as substitutes for wiring improvements.
4. Use only approved extension cords [i.e., those with the Underwriters Laboratory (UL) or Factory Mutual (FM) label].
5. Check wiring in hazardous locations where the risk of fire is especially high.
6. Check electrical equipment to ensure that it is either properly grounded or double insulated.
7. Ensure adequate spacing while performing maintenance.

B. Portable Heaters

Portable heaters, if permitted, shall be labeled/listed by a nationally-recognized testing laboratory and subject to further authorization by the SSHO. Portable electric heaters shall have tip-over protection that automatically shuts off the unit when it is tipped over. There shall be adequate clearance between the heater and combustible furnishings or other materials at all times.

C. Office Fire Hazards

To prevent office fires, employees shall: N/A for this project

D. Cutting, Welding, and Open Flame Work

Employees cutting, welding or using other open flame shall ensure the following:

1. All necessary hot work permits have been obtained prior to work beginning.
2. Cutting and welding are done by authorized personnel in designated areas.
3. Never leave fire and open flame devices unattended.
4. Adequate ventilation is provided.
5. Torches, regulators, pressure-reducing valves, and manifolds are UL listed or FM approved.
6. Oxygen-fuel gas systems are equipped with listed and/or approved backflow valves and pressure-relief devices.
7. Cutters, welders, and helpers are wearing eye protection and protective clothing as appropriate.
8. Cutting or welding is prohibited in sprinklered areas while sprinkler protection is out of service.
9. Cutting or welding is prohibited in areas where explosive atmospheres of gases, vapors, or dusts could develop from residues or accumulations in confined spaces.
10. Cutting or welding is prohibited on metal walls, ceilings, or roofs built of combustible sandwich-type panel construction or having combustible covering.
11. Confined spaces such as tanks are tested to ensure that the atmosphere I not over ten percent of the lower flammable limit before cutting or welding in or on the tank.
12. Small tanks, piping, or containers that cannot be entered are cleaned, purged, and tested before cutting or welding on them begins.
13. Establish a 1 hour fire watch after any hot work has been performed, or the possibility of a fire is likely as a result of the work performed.

E. Flammable and Combustible Materials

The SSHO shall regularly evaluate sites for the presence of combustible materials at (*see the Fire Risk Survey pg. 163 of this plan*).

1. Class A combustibles.

These include common combustible materials (wood, paper, cloth, rubber, and plastics) that can act as fuel.

To handle Class A combustibles safely:

a. Dispose of waste daily.
b. Keep trash in metal-lined receptacles with tight-fitting covers
c. Keep work areas clean and free of fuel paths that could allow a fire to spread.
d. Keep combustibles away from accidental ignition sources, such torches, heat guns, or other heat or spark-producing devices.
e. Store combustible stock in approved metal cabinets.
f. Store rags in metal bins with self-closing lids.
g. Do not order excessive amounts of combustibles.
h. Make frequent inspections to anticipate fires before they start.

Water, multi-purpose dry chemical (ABC), and halon 1211 are approved fire extinguishing agents for Class A combustibles.

2. Class B combustibles.

These include flammable and combustible liquids (oils, greases, tars, oil-based paints, and lacquers), flammable gases, and flammable aerosols.
To handle Class B combustibles safely:

a. Use only approved pumps, taking suction from the top, to dispense liquids from tanks, drums, barrels, or similar containers (or use approved self-closing valves or faucets).
b. Do not dispense Class B flammable liquids into containers unless the nozzle and container are electrically interconnected by contact or by a bonding wire. Either the tank or container must be grounded.
c. Store and use Class B combustibles only in approved locations where vapors are prevented from reaching ignition sources such as heating or electric equipment, open flames or electric sparks.
d. Do not use a flammable liquid as a cleaning agent inside buildings.
e. Do not use, handle, or store Class B combustibles near exits, stairs, or any other areas normally used as exits.
f. Do not weld, cut, grind, or use unsafe electrical appliances or equipment near Class B combustibles.
g. Do not generate heat, allow an open flame, or smoke near Class B combustibles.
h. Know the location of and how to use the nearest portable fire extinguisher rated for Class B fire.

DO NOT USE WATER to extinguish Class B fires caused by flammable liquids. Water can cause the burning liquid to spread, making the fire worse. To extinguish a fire caused by flammable liquids, exclude the air around the burning liquid. The following fire-extinguishing agents are approved for Class B combustibles: carbon dioxide, multi-purpose dry chemical (ABC), halon 1301, and halon 1211.

F. Smoking
Smoking is prohibited in all Ludlow Construction Company buildings and work sites.
Certain outdoor areas may also be designated as no smoking areas. The areas in which smoking is prohibited outdoors are identified by NO SMOKING signs.

**VI. TRAINING**

The SSHO shall present basic fire prevention training to all employees upon employment, and shall maintain documentation of the training, which includes:

A. Review of the EM385-1-1 (Section 9) and 29 CFR 1910.38, including how it may be accessed
B. Good Housekeeping practices
C. Proper response and notification in the event of a fire
D. Instruction on the use of portable fire extinguishers
E. Recognition of potential fire hazards
Supervisors shall train employees about the fire hazards associated with the specific materials and processes to which they are exposed, and will maintain documentation of the training. Employees will receive this training:

A. at their initial assignment;
B. annually; and

C. when changes in work processes necessitate additional training.

**VII. PROGRAM REVIEW**

The SSHO shall review this Fire Prevention Plan at least annually, but, may review and make changes as often as necessary. Employees shall be notified of any changes.

| Types of Fire Hazards | Location | Type of Emergency Response | Required PPE |
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**Completed by: _____** **Date: _____**

## 13.5. WORKPLACE CONDUCT PLAN

# Ludlow Construction Company, Inc.

## Workplace Conduct Plan

Introduction:

In the event Ludlow Construction Company Site Safety Staff notifies a sub-contractor or self-performance crews of any noncompliance within the provisions of Ludlow Construction Company Accident Prevention Plan, the violating party shall make all reasonable efforts to bring the work into compliance in an expeditious manner. Should the violating party fail to properly respond to each notification, Ludlow Construction Company has the authority to stop the operations or a portion thereof until such time as Site Safety Staff has received proper written documentation that continuation will be in accordance with applicable safety standards. Unsafe acts or conditions cannot be allowed to continue. In addition, if the violating party still fails to respond appropriately, one or more of the following steps or actions may be taken at the discretion of Ludlow Construction Company.

1) Correct the situation and back charge the sub-contractor for expenses incurred, including but not limited to actual cost of materials, tools, labor, transportation, storage, ancillary costs that may

arise from delays and reasonable administrative fees as well as penalties incurred due to scheduling delays. This includes the back charge of liquidated damages levied by the owner.

2) Stop payment for the work being performed.

3) Remove the violating party permanently and reassign the performance of the work.

4) All deficiencies will be dated and posted on the job site bulletin board along with a description of the deficiency, responsible parties and resolution date.

Deficiencies: If a Discrepancy is found, the SSHO must annotate said discrepancy on the Daily Safety Report Form (in appendix of this document). If requested these discrepancy will be transmitted to the USACOE for their review. When the discrepancy is corrected, follow up safety inspections shall be conducted. If the discrepancy has not been corrected, work shall be stopped until the discrepancy is corrected. The Daily Safety Report is to be completed by the SSHO. The completed forms shall be transmitted to the Project Manager weekly for review and archived.

Compliance Enforcement Program: It is the responsibility of the Site Safety Staff to enforce this Project specific Accident Prevention Plan. Compliance will be enforced through inspections, discussions, meetings, training, written correspondence and, if necessary, legal action. All Subcontract Agreements contain legal authority giving Ludlow Construction Company the right to terminate any subcontractor for safety violations. All subcontractors will be evaluated on their work and safety performance.

*Project Rules and Regulations*

The following violations are grounds for immediate discharge of Ludlow Construction personnel:

1. Gross disregard, refusal to obey, or repeated violations of safety and health rules and regulations

2. Fighting (physical contact), horseplay, gambling or sleeping on the job

3. Theft or other illegal conduct

4. Possession or use of illegal drugs or alcohol

5. Willful destruction of property

6. Smoking outside of designated areas

A representative of Ludlow Construction Company (SSHO) must be on the site when any work is being performed by Ludlow Construction Company subcontractor, or by Ludlow Construction Company direct work forces. This representative shall be in charge of general coordination with Ludlow Construction Company and shall be responsible for ensuring that all safety regulations are observed. In addition, he shall be responsible for responding to medical emergencies related to Ludlow Construction Company employees or its Subcontractors. This representative must be someone that is safety competent in the work that is taking place.

No firearms or explosives are allowed on the job site.

Streets, walks and other facilities occupied and used by the government shall not be closed or obstructed without written permission from the Contracting Officer. This is important since the scope of this project includes roadways and utility infrastructure and has a direct impact on base operations. Ludlow Construction Company will be sensitive to the needs of the end users, ensuring compliance with specification Special Project Procedures.

Violence, fighting, horseplay, and any other form of physical and mental misconduct will not be tolerated by Ludlow Construction Company. All workers coming on to site will be made of aware of Ludlow Construction's Violence in the Workplace polices at Safety Orientation. Any worker found not complying with the terms of Ludlow Construction Company policies regarding violence will be immediately escorted from the jobsite and not allowed to return. Ludlow Construction Company employees will be terminated.

## 13.6. SITE SANITATION PLAN

# Ludlow Construction Company, Inc.

## Site Sanitation Plan

**BACKGROUND INFORMATION**:

a. Contractor Name and Address:
Ludlow Construction Company Inc.
19 Carmelina's Circle
Ludlow, MA 01056
b. Contract Number:
EPA CONTRACT NO. EP-S1-06-01 TASK ORDER NO. 0060-RD-RD-01D5
c. Project name:
CONSTRUCT WATERLINE DURHAM MEADOWS, DURHAM CT

**1. STATEMENT OF SAFETY AND HEALTH POLICY**.

It shall be the policy of Ludlow Construction Company to abide by all of the safety requirements of the Corps of Engineers, including those outlined in EM385-1-1 Safety and Health Requirements Manual, OSHA regulations, and

described in the following Safety Plan. Public and personal safety shall be a top priority during the course of work under this contract. All employees shall be trained and equipped to work in a safe and healthful manner, and shall comply with, all safety and security requirements.

**2. RESPONSIBILITIES AND LINES OF AUTHORITIES**:

a) The SSHO shall be responsible for ensuring each job site has been adequately cleaned prior to the end of shift.
b) The Project Superintendent shall be responsible for holding accountable all project subcontractors for keeping the job site as clean as possible.
c) The subcontractors' Competent Person shall be the point of contact for Project Management staff in the event job sites are not being kept in an orderly fashion.

**3. SUBCONTRACTORS AND SUPPLIERS:**

No sub-contractors are expected to be used explicitly for job site clean-up work under this contract. If site clean-up sub-contractors are used in the performance of work under this contract, Ludlow Construction shall first notify the Contracting Officer/Representative. Ludlow Construction shall be responsible to insure that all sub-contractors adhere to all of the safety and health standards required by this contract and related documents.

**4. TRAINING:**

a) A minimum the subcontractor competent person shall be certified in First Aid and CPR. Anyone working alone shall be so trained and have an effective means of communications in case of accident.
b) Employees will be trained in emergency responses, including contacting emergency personnel.
c) The SSHO shall hold a monthly safety meeting for as many employees as possible. Topics to be covered during such meetings may include hazardous (cleaning) materials and **SDS**s, safe lifting, safe driving, proper use of Personal Protective Equipment, safe cleaning technique, visitor assistance (dealing with the public), etc. In addition, each crew shall have weekly "Tool Box" safety meetings.
d) A copy of an approved AHA and the Ludlow Construction Safety Plan shall be maintained on site. All employees shall be required to read these documents.

**5. SAFETY AND HEALTH INSPECTIONS:**

The SSHO with the cooperation of on-site competent person will be responsible for implementation of the safety program and shall inspect for safety and health requirements on a daily basis.

**6. SAFETY AND HEALTH EXPECTATIONS, INCENTIVE PROGRAMS, AND COMPLIANCE:**

All employees will be required to practice safe working activities, use required personal protective items, become familiar with this plan and the availability and general contents of the 385-1-1 Safety Manual, and to report both accidents and hazards to the proper personnel. Employees performing work with methods which are not in compliance with requirements will be counseled as to the correct method and the reason for it. Repeat infractions may require written warnings or dismissal.

**7. ACCIDENT REPORTING:**

a) Report all accidents immediately to the SSHO. All accidents shall be thoroughly investigated by the SSHO in conjuncture with the GDA. The GDA shall review the findings of the investigation and appropriate corrective actions with Ludlow Construction prior to submitting the investigation report to the appropriate authorities within 24 hours of the incident. In the event of a serious accident as specified in EM 385-1-1 Section 01.D.02, the SSHO shall contact the GDA immediately. All corrective actions shall be implemented as soon as reasonably possible. Ludlow Construction's personnel shall thoroughly cooperated with the GDA. For job related injuries which require medical treatment, the SSHO, on the day of injury, shall accompany the injured employee to the medical treatment facility to facilitate the exchange of information, both to facility staff and for reporting purposes, and to facilitate the employee's return to work as soon as able.
b) The SSHO shall immediately notify the Government of any accidents involving Ludlow Construction personnel.
c) The SSHO shall maintain a log, in the format of OSHA Form 300, of both occupational illnesses and injuries and shall make this log available to the GDA upon request.
d) Exposure data (man-hours worked) – to the project office not later than the fourth day of each month.

**8. MEDICAL SUPPORT:**

a) The emergency phone numbers of "911" and other related emergency number shall be maintained on site. All personnel shall be familiar with the capabilities of 911 assistance. Cell phones shall be provided by all subcontractors working on site.
b) In an emergency, initial phone calls will only be made to those with the ability to respond to the emergency, i.e., "911" for ambulance, sheriff, and fire department.
c) The names of workers trained in First Aid / CPR will be furnished to the project office as they are hired and trained.
d) The Contractor shall notify a government employee of any emergencies and an Accident Report shall be completed, as soon as practical. The Emergency Phone List includes guidance of who to notify in the case of accidents.

**9. PERSONAL PROTECTIVE EQUIPMENT**.

The following items of personal protective equipment shall be made readily available for subcontractor's use, when the work environment requires it. Personnel will be trained in the proper use and maintenance of all issued PPE.

a) Gloves. Leather gloves shall be worn when there is a danger of burns, cuts, scrapes, scratches or other injury to employee's hands.
b) Reflective Vests. Employees performing work along roadways shall wear approved safety vests.
c) Eye Protection. Approved eye and face protection (safety glasses, goggles, etc.) shall be worn when there is a danger of cleaning compounds or other foreign material coming into contact with an employee's eyes. Eye protection will be required whenever work requires the use of a pressure sprayer.
d) d. Footwear. Hard-toed, protective footwear which meets standards of ANSI Z41 shall be worn while performing work.
e) Hearing Protection. Hearing protection shall be worn while using power equipment or noise levels exceed 85 decibels.

**10. CLEANING POLICIES AND PROCEDURES**:

a) All cleaning supplies shall be clearly labeled and shall be approved by the COR. Safety Data Sheets shall be maintained with the cleaning products.
b) Trash bags shall not be overloaded. Leather gloves shall be worn if needed to protect hands, and proper lifting techniques shall be practiced. Employees shall work together to lift larger or awkward loads.
c) Policing Grounds. Employees shall exercise care when working on slippery or uneven surfaces. Proper lifting techniques shall be practiced.
d) Sanitation/Hygiene. Appropriate PPE shall be worn to protect employees from exposure to chemicals and body fluids while cleaning. Hand cleaner shall be available to wash and disinfect hands upon completion of cleaning work.
e) Hazardous Materials. If suspicious or hazardous materials are found during the course of cleaning, the area shall be secured and the proper authorities shall be notified.
f) Reported Hazards. When hazards to public safety are discovered by or reported to the workers, the workers shall report the hazard to the COR, Resource Manager, or other project employee.
g) Housekeeping. All work areas shall be maintained in a neat, clean, and safe manner. Particular attention shall be paid to tripping hazards.

## 13.7. HEALTH HAZARD CONTROL PROGRAM

# Ludlow Construction Company, Inc.

# Health Hazard Control Plan

**1. INTRODUCTION**

**1.1 Purpose of the Hazardous Waste Management Plan**

The purpose of this plan is to describe how Ludlow maintains compliance with all laws and regulations related to the management of hazardous waste while on board Navy Installations. Ludlow's policy is to provide for the protection of its staff and subcontractors as well as the environment through development and implementation of a comprehensive safety, health and environmental protection program.

The Comprehensive Environmental Response, Compensation Liability Act (CERCLA) or Resource Conservation and Recovery Act (RCRA) of 1976 gave the United States Environmental Protection Agency (EPA) the authority to regulate

the generation, transportation, treatment, storage and disposal of hazardous chemical waste. The controlling of hazardous waste from "point of generation" to actual disposal is commonly referred to as the "cradle to grave" and holds Ludlow and its subcontractors liable for the disposal of hazardous chemical waste.

As a safety driven company, Ludlow not only wants to support a healthy and safe environment but is also responsible for compliance with the USACE EM 385-1-1 safety and health requirements. With the assistance of Forrest Brown the Environmental Program Manager (Forrest Brown), each generator (i.e. subcontractor) is responsible for maintaining compliance per federal (40 CFR Part 260), 29 CFR 1970.120, 29 CFR 1926.65 (a) (i), (ii), and (iii), EM 385-1-1 Section 28, and Ludlow's Policies as outlined in this Plan.

**1.2 Ownership Information**

This Plan covers hazardous wastes generated during the execution of contract N6258-11-D533-JN31 by Ludlow Construction Company Inc. and all subcontractors employed by Ludlow on this contract.

**2. RESPONSIBILITIES**

Overall responsibility for providing for the health and safety of personnel and the protection of the environment rests with the project appointed Environmental Program Manager and SSHO (Forrest Brown). The responsibilities are as follows:

**2.1 Principal Investigators/Facilities Supervisors/Hazardous Waste Project Managers**

Principal investigators, facilities supervisors and hazardous waste project managers are ultimately responsible for the proper management of hazardous waste generated and/or stored in areas under their oversight. This responsibility includes the following activities:

1. Be aware of applicable hazardous waste regulations and procedures.
2. Establish hazardous waste accumulation areas with assistance from generating subcontractor competent person
3. Ensure that all personnel receive the requisite initial and annual refresher training.
4. Ensure necessary supplies for proper hazardous waste management are maintained on the project site.
5. Track transportation and disposal of hazardous wastes with the assistance of the generating subcontractor's competent person.
6. Ensure that weekly SAA self-inspections are being completed.
7. Reinforce the importance of hazardous waste management by communicating expectations, and assuring that project objectives are not in conflict with regulatory compliance.

**2.2 Personnel / Generators: Individuals generating (producing) hazardous wastes**

The most important person responsible for achieving successful hazardous waste management objectives is the individual generating hazardous waste. The responsibilities of each individual are as follows:

1. Complete the approved training initially and annually thereafter on the management of hazardous waste. Records of training should be maintained.
2. Oversee the collection, identification and satellite accumulation area storage of hazardous waste as outlined in this plan.
3. Wear the correct personal protective equipment when handling hazardous chemical wastes.

4. Promptly report unsafe conditions and accidents to the Environmental Program Manager / SSHO (Forrest Brown).
5. Assure that hazardous spills are immediately 1) contained or picked up to the fullest extent possible, without compromising personal safety; 2) reported to the Environmental Program Manager / SSHO (Forrest Brown).
6. Respond to audits of satellite accumulation areas and make corrective actions.
7. Understand all requirements to maintain a safe and compliant satellite accumulation area.
8. Complete weekly SAA self-inspection.

**2.3 LUDLOW Environmental Program Manager**

The responsibilities of Environmental Program (Forrest Brown Project SSHO) Manager include:

1. Act to implement emergency response procedures in a timely and compliant manner.
2. Assure that hazardous waste spills are 1) contained to the fullest extent possible, without threatening personal safety; 2) reported to the Contracting Officer/Representative; and 3) cleaned up using appropriate safety measures and procedures.
3. Investigate accidents/spills of hazardous waste materials and revise programs and policies to avoid repeat incidents.
4. Provide technical and regulatory advice and support to generators of hazardous waste.
5. Provide guidance to project staff/subcontractors on regulations and changes in management procedures.
6. Act as the liaison with regulatory agencies and Contracting Officer/Representative.
7. Maintain documentation that each hazardous waste employee has received proper training for handling and storage of hazardous waste.
8. Document and generate reports on institutional hazardous waste management, off-site movement of hazardous waste and waste minimization activities.
9. Review and approve hazardous waste transporters and disposal facilities, maintain records for all transporters and disposal facilities used by subcontractors and verify and keep on file current certificates of insurance for all vendors.
10. Ensure waste being offered for shipment is appropriately profiled with the waste vendor and that the profile is up to date.
11. Ensure all waste packaging complies with United States Department of Transportation standards.
12. Complete and review all hazardous waste manifest information and accompanying documentation for accuracy and completeness.
13. Ensure generating subcontractors arrange for the transport of hazardous waste from project site accumulation areas before storage time limits are exceeded.
14. Oversee the transport of filled containers of hazardous chemical waste from satellite accumulation areas (SAA) to central/main accumulation areas within 3 days (72-hrs) of being full or unwanted.
15. Coordinate and approve new hazardous waste accumulation areas and satellite accumulation areas.
16. Supervise supply delivery.

**2.4 Additional Sources of Information**

Handling waste can present hazards, hence all personnel generating, handling or working around hazardous waste should review the LUDLOW Accident Prevention Plan, AHA's and Quality Control Plan.

**3. IDENTIFICATION OF HAZARDOUS WASTE**

When handling any hazardous chemical waste it is critical to understand the hazardous materials you are using. Review Safety Data Sheets (**SDS**), container labels and chemical inventories to locate and classify material as non-hazardous, hazardous, or acutely hazardous.

**3.1 The Identification Process**

In determining whether a given waste is to be regulated as hazardous waste, individuals should determine the following:

Is the material a "waste?"

The first step in the identification process is determining when a given material becomes a waste. Chemical stock, solutions, etc. become a waste when the generator declares it a waste. In addition, there are a number of other qualities which are often referred to as "inherently waste-like qualities" that will also dictate when a chemical becomes a waste. These are as follows:

1. Shelf-life expiration dates have been exceeded or are unknown.
2. Chemicals are stored in old, bulging, badly decomposed or damaged containers.
3. Chemicals have become obsolete because of questionable purity or discontinued usage.
4. Chemicals have undergone visible change (i.e. amber-colored per chloric acid) that would prevent the chemical from being used.

**Note: Extreme caution should be used when discovering an old or damaged peroxide forming, extremely toxic or volatile chemical. Immediately contact Environmental Program Manager/ SSHO (Forrest Brown) for assistance.**

Is the waste defined as "hazardous?"

Once you have determined that a given material is a waste, the next step in the decision-making process is to determine whether or not that waste is defined as hazardous. There are three tiers of oversight; federal, state and internal requirements. In addition, other requirements such as waste water limitations restrict sink disposal of chemicals that do not fall under one of the three tiers of oversight. A summary of each tier is as follows:

Federal (EPA): The EPA has established four lists (F, K, U, and P) which are available on its website. Chemicals on any one of the lists are classified as a "listed waste" and must be managed as a hazardous chemical waste.

The "F" list: These wastes from non-specific sources, may be generated as a part of several different industrial applications.

The "K" list: These wastes from specific sources, are typically wastewaters or sludge from a particular industry or process.

The "U" list: These are specific commercial chemical products, that are either discarded or off-spec. Spill residues or debris from these products is also considered a hazardous waste.

The “P” list: This list of commercial chemical products, is similar to the “U” list in that it includes specific discarded or off-spec. chemical products. However, the items on the “P” list have been deemed acutely hazardous. As with the “U” list, residues or debris containing the “P” list substances are also considered as hazardous chemical waste.

In addition to listed waste, chemicals may be classified as a characteristic waste, thus making them applicable to the same requirements. Characteristic waste is a chemical that contains any one of the following; ignitable, corrosive, reactive, toxic. Below are the definitions of each.

Ignitable: Liquids with a flashpoint of 60°C/140°F or less.
Examples: alcohols, ethyl ether, petroleum ether and benzene

Solids that may cause fire through friction or the absorption of moisture. Examples: sodium potassium metal, carbon powders, metal dusts

Examples: chlorates, nitrates, peroxide, nitric acid >40% or fuming Ignitable compressed gas.

Corrosive: pH ≤2.0 or ≥12.5
Examples: Strong acids and bases such as hydrochloric acid, nitric acid, ammonium hydroxide, sodium hydroxide.

Reactive: Unstable. Reacts violently with water. Friction or heat may cause an explosion. A cyanide or sulfide bearing waste which, when exposed to a pH between 2.0 and 12.5, can generate toxic gases. Old bottles of picric acid and cans of ether may explode if opened or otherwise disturbed (Contact the Environmental Program Manager (Forrest Brown) for assistance).

Toxic: Waste containing concentrations equal to or greater than the maximum listed concentrations in the Toxicity Characteristic Leachate Procedure (TCLP).

MAXIMUM CONCENTRATION OF CONTAMINANTS FOR TOXICITY CHARACTERISTICS

| EPA | Contaminant | Level (mg/L) | EPA | Contaminant | Level (mg/L) |
|---|---|---|---|---|---|
| D004 | Arsenic | 5.0 | D025 | p-cresol | 200.0 |
| D005 | Barium | 100.0 | D026 | Cresol | 200.0 |
| | | | | | |
| D006 | Cadmium | 1.0 | D027 | 1, 4 Dichlorobenzene | 7.5 |
| D007 | Chromium | 5.0 | D028 | 1, 2 Dichloromethane | 0.5 |
| D008 | Lead | 5.0 | D029 | 1, 1 Trichloroethylene | 0.7 |
| D009 | Mercury | 0.2 | D030 | 2, 4 Trinitrotoluene | 0.13 |
| D010 | Selenium | 1.0 | | | |
| D011 | Silver | 5.0 | D031 | Heptachlor | 0.008 |
| D012 | Endrin | 0.02 | D032 | Hexachlorobenzene | 0.13 |
| D013 | Lindane | 0.4 | D033 | Hexachlorobutadiene | 0.5 |
| D014 | Methoxychlor | 10.0 | D034 | Hexachloroethane | 3.0 |
| D015 | Toxaphene | 0.5 | | | |
| D016 | 2, 4 D | 10.0 | D040 | Trichloroethylene | 0.5 |

| | | | | | |
|---|---|---|---|---|---|
| D017 | 2, 4, 5-TP (Silvex) | 1.0 | D041 | 2, 4, 5,- Trichlorophenol | 400.0 |
| D018 | Benzene | 0.5 | D039 | Tetrachloroethylene | 0.7 |
| D019 | Carbon Tetrachloride | 0.5 | D035 | Methyl ethyl ketone | 200.0 |
| D020 | Chlordane | 0.03 | D036 | Nitrobenzene | 2.0 |
| D021 | Chlorobenzene | 100.0 | D037 | Pentachlorophenol | 100.0 |
| D022 | Chloroform | 6.0 | D038 | Pyridine | 5.0 |
| D023 | o-Cresol | 200.0 | D042 | 2, 4, 6,- Trichlorophenol | 2.0 |
| D024 | m-Cresol | 200.0 | D043 | Vinyl chloride | 0.2 |

**3.2 Classifying Empty Containers**

Any container that previously held a hazardous chemical waste is considered a hazardous waste unless the container meets the regulatory definition of "empty." The definition of empty also changes when the waste involved is an acutely toxic hazardous waste (P-list). The definitions of an "empty" container for listed and characteristic wastes (except acutely hazardous wastes) include:

1. All waste has been removed using practices commonly used to remove the contents from that type of container.
2. No more than 1 inch of residue remains on the bottom of the container or liner.
3. When the pressure in the container has reached atmospheric pressure (compressed gas cylinders).

**3.3 Identification Protocol**

If a subcontractor is unsure how a waste should be classified, contact the Environmental Program Manager (Forrest Brown). The Environmental Program Manager (Forrest Brown) will assist any and all subcontractors working on this contract in the determination process and/or arrange for a waste analysis. The Environmental Program Manager (Forrest Brown) will maintain a file of each waste analysis profile and make it available during the off-site shipment and disposal of the waste.

**Note: Except for a limited number of situations, the onsite treatment of regulated hazardous waste that renders it non-regulated waste is prohibited without additional approval by regulatory agencies. Contact the Environmental Program Manager (Forrest Brown) to review these protocols.**

**4. STORAGE OF HAZARDOUS CHEMICAL WASTE**
N/A for this project

**4.1 Satellite Accumulation Area Requirements**

N/A for this project

**4.2 Central/Main Accumulation Area Requirements**

N/A for this project

**4.3 Protocol for Establishing Satellite Accumulation Areas**

N/A for this project

**5. DISPOSAL OF HAZARDOUS WASTE**

Requests for chemical waste pickup are made by phone or email directly to the subcontractor's approved Transportation Company. Once a waste request is submitted, an environmental specialist will complete it during the next scheduled service to comply with RCRA three day rule. Waste pickups completed by request or a regular schedule can be made for routine wastes. Ludlow Construction does not anticipate the need for disposal of Hazardous Waste on this project.

Subcontractors must submit the name and certifications of the company of their choosing, for transporting and disposing of hazardous wastes from the project site to MAAs. This provides an opportunity for trained experts to answer generator questions, increases safety and compliance and allow generators to focus on research and teaching once waste is transported the SAA. All generators are encouraged but not required to participate in this program based on consultation with the Environmental Program Manager (Forrest Brown). All contractors must follow Ludlow's Hazardous Waste Management Plan.

**5.1 On-site Pickup and Disposal from Satellite Accumulation Areas**

N/A for this project

**5.2 Disposal of Empty Containers**

When there is an empty container in which the previous constituent is known, the container may be reused for collection of the same waste or a compatible waste.

In the event the container cannot be reused, it will have to be disposed. Place a note on the container "empty" and discard glass in glass receptacle boxes or plastics in standard trash receptacles. However, for containers that previously contained extremely toxic chemicals such as p-list waste, carcinogens, mutagens or teratogens, containers should be labeled with a hazardous waste label, placed in the SAA and a pick up requested.

Empty gas cylinders should be returned to the vendor who supplied them to the user.

5**.3 Off-site Shipments**

N/A for this project

**5.4 Hazardous Waste Shipment Documentation**

Ludlow and its subcontractors must comply with regulations pertaining to the hazardous waste paperwork tracking system. All hazardous waste will be disposed of off-site in accordance with the Specification Section 02053 paragraph 3.01.F Handling of Characterized Hazardous Waste.

**6. MANAGING SPILLS**

The contingency plan's objective is minimize hazards to human health and the environment from fires, explosions, or any unplanned releases of hazardous waste or hazardous waste constituents to the air, soil, or surface water. Ludlow's Contingency Plan that shall be routinely reviewed and updated as necessary.

**6.1 Spill Prevention Plan**

In addition to the contingency plan requirements for waste generators, there are regulations pertaining to the management of oil containing vessels and the procedures needed in the event of a release. Ludlow has a Spill Prevention Plan that is routinely reviewed and updated as necessary.

**6.2 Spill Response**

Each person or area generating hazardous waste is responsible for the cleanup or the notification of the Environmental Program Manager (Forrest Brown) to initiate clean-up of any spills. In the event of a spill, personnel should reference the Emergency Response Plan in the project Accident Prevention Plan.

**7. TRAINING REQUIREMENTS**

**7.1 Hazardous Waste Personnel Training**

Both federal and state regulations require initial and annual training for those employees whose job description involves the handling or management of hazardous materials and wastes.

Subcontractors are responsible for producing training documentation of those employees whose job will require contact with or working near hazardous waste. Waste Personnel Training Program shall be directed by the subcontractors Health and Safety Manager. The manager should trained in hazardous waste management procedures. The program should include instruction which teach personnel hazardous waste management procedures, including contingency plan implementation, relevant to the position in which they are employed.

Any new employee on the job site is not permitted to work in unsupervised positions until they have successfully reviewed all project associated plans with Ludlow's SSHO and Environmental Program Manager (Forrest Brown).

All personnel working with hazardous waste are required to receive and satisfactorily complete introductory and annual continuing training that will be given to each individual filling a position listed. Training records on current personnel shall be maintained on site by the SSHO.

Personnel will be familiarized with the properties and hazardous nature of the hazardous waste that will be present at the job site by direct training from their supervisor/competent person. All personnel shall refer to Ludlow's Accident Prevention Plan in any emergency.

**8. WASTE MINIMIZATION**

EPA and CT DEEP regulations require waste minimization and toxic use reduction efforts. Waste minimization means reducing the amount of hazardous waste that is generated, treated, stored or disposed. Waste minimization can include any source reduction or recycling activity undertaken by a waste generator that results in either; 1) the reduction of total volume or quantity of hazardous chemical waste generated; or 2) the reduction of toxicity of the hazardous chemical waste generated, or both, as long as such reduction is consistent with the goal of minimizing present and future threats to human health and the environment.

**8.1 Toxic Use Reduction Techniques**

Both EPA and CT DEEP list desirable methods for reducing toxics in production processes. The following list of action provides the most desirable toxic use reduction techniques. The most desirable methods center on reducing or eliminating the use of toxics altogether.

1. Substitution with a less toxic chemical.
2. Reformulation of a product/chemical resulting in it becoming less toxic.
3. Production units process redesign or modification.
4. Production unit modernization resulting in less waste.
5. Improvements in operation and maintenance procedures resulting in less waste.
6. In-process recycling resulting in less waste.
7. Chemical exchange.

**9. UNIVERSAL WASTE MANAGMENT**

Universal waste consists of material that generally pose little hazard to humans and the environment and are generated by many activities or "universally." Universal waste includes pesticides, batteries, mercury containing lamps/bulbs, mercury containing thermostats and mercury containing devices. Due to the low level of hazard constituents in universal waste, regulatory requirements are much less stringent than hazardous chemical waste. To assure limits are not exceeded, routine shipments and the coordination of the projects with all subcontractors is vital to the success of Ludlow's environmental program effort.

**9.1 The Identification Process**

In determining whether a given waste is to be regulated as universal waste, individuals should determine the following: Is the waste defined as "universal waste?"

Not all pesticides, batteries and lamps are universal waste, and therefore, do not all qualify as universal wastes. Such wastes may instead be managed as non-hazardous solid wastes. Please contact the Environmental Program Manager (Forrest Brown) for guidance on determining which wastes can be managed as non-hazardous solid waste.

Pesticide: A pesticide is a substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest, and any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant.

Battery: A battery is a device consisting of one or more electrically connected electrochemical cells which are designed to receive, store, and deliver electric energy. There are multiple battery types with different chemistries.

Mercury Containing Lamps/Bulb: A mercury containing lamp is any bulb or tube portion of an electric lighting device specifically designed to produce radiant energy, including, but not limited to incandescent, fluorescent, high intensity discharge, and neon lamps in which mercury is purposely introduced by the manufacturer for the operation of the lamp.

Mercury Containing Thermostat: A thermostat is a temperature control device that contains metallic mercury in an ampoule attached to a bimetal sensing element.

All Other Mercury Containing Devices: A mercury containing device is any electrical product or component (excluding batteries, lamps and thermostats) which contains elemental mercury that is necessary for its operation and is housed within an outer metal, glass or plastic casing. Mercury- containing devices include, but are not limited to, thermocouples, thermometers, manometers, barometers, sphygmomanometers, electrical switches and relays, as well as certain gas flow regulators and water meters.

Lamp Ballast: A ballast is a device intended to limit the amount of current in an electrical circuit. Though Polychlorinated biphenyl (PCB's) are regulated under the Toxic Substance Control Act (TSCA),

**9.2 Universal Waste Accumulation Areas**

The Environmental Program Manager (Forrest Brown) with the assistance of the Contracting Officer/Representative will established an accumulation area for the storage of universal waste. Accumulation areas are protected from weather, secure, and clearly designated by a sign reading "Universal Waste Accumulation Area."

**9.3 Breaks, Leaks, Spill Management**

Storage of universal waste at accumulation areas must be conducted in a manner that limits the risk for breaks, leaks or spills. If a lamps/bulb or mercury device breaks or a ballast, pesticide container or battery leaks, the material is no longer a universal waste and now must be managed as a hazardous waste as outlined in this plan.

**9.4 Training**

The SSHO and Environmental Program Manager (Forrest Brown) will inform all employees who handle or have responsibility for managing universal waste of proper handling and emergency procedures. Initial training on this plan is provided to personnel during their initial safety orientation prior to commencing work on this contract. In addition, subcontractors will be provided detailed refresher training depending on the size of their job and life of the project.

## 13.8. HAZARDOUS COMMUNICATION PROGRAM

# Ludlow Construction Company, Inc.

## Hazardous Communication Plan

**Introduction:**

Ludlow Construction Company is firmly committed to providing all employees with a safe and healthy work environment. It is a matter of company policy to provide their employees with information about hazardous chemicals on the worksite through our Hazardous Communication Program, which container labeling, Safety Data Sheets (**SDS**), and employee information/training.

**A. Responsibilities:** The SSHO will have overall responsibility for coordinating the Hazard Communication program for the above referenced project. The SSHO will author the Written Hazard Communication Program, with the goal of making available **SDS** to employees, or their designated representatives.

**B. List of Hazardous Chemicals:** The SSHO will compile a list of all hazardous chemicals that will be used on the worksite by reviewing container labels, collecting Safety Data Sheets, and from information received from other contractors. It is company policy to record the receipt of all incoming hazardous material into the HazCom File Log. Since this log shall be kept current throughout the duration of the project, it will also serve as the list of hazardous materials. It will be kept in the Ludlow Construction Company Site Office in the **SDS** binder.

**Labeling:** It is the policy of this company to ensure that each container of hazardous substance used by Ludlow Construction Company or their Subcontractors are properly labeled. The labels will list the following items as a minimum:

A. The identity of the hazardous chemical in the container.
B. Appropriate hazard warning such as words, pictures, symbols or combinations.
C. Name and address of the chemical manufacturer, importer, or other responsible party.

It is also the policy to request additional labels for hazardous products that are confined to containers. The request for a sticker or label shall be attached or written on the purchase order. When received, place the additional label in the HazCom File; when the label is used, a replacement label is again ordered. All secondary containers (containers into which hazardous substances are transferred for temporary use) shall be labeled with the same label as the source container. To ensure that every incoming Hazardous product in a container is accompanied by a complete and accurate label identifying the chemical content with the appropriate names and hazard warning, a "**SDS** Label-Completeness Worksheet" shall be completed. The above responsibilities have been assigned to the Superintendent with assistance from the SSHO.

**Safety Data Sheets:** Copies of Safety Data Sheets for all hazardous chemical materials to which employees may be exposed are kept in the Ludlow Construction Company Field Office, and are readily accessible to employees and other contractors in the work area during each work shift. The SSHO is responsible for obtaining and maintaining the file of Material Data Sheets.

Although it is the responsibility of the supplier/manufacturer to provide a **SDS** with the products they sell, the **SDS** may not contain all the information required by the HazCom Standard. Therefore, the Safety Officer will follow a routing procedure for:

1. Checking completeness of incoming **SDS**.
2. Copying information from the **SDS**.

3. Filing **SDS** in HazCom file.
4. Obtaining **SDS**, if one did not accompany the product

If the **SDS** does not contain adequate information:

1. Phone the supplier/manufacturer immediately and follow up with written correspondence requesting a complete and accurate **SDS**.

2. Copy in "Request for **SDS** Log" with date sent (See forms Appendix)

3. Record the receipt of the **SDS** in the request for **SDS** log and file **SDS** in the file. If hazardous material should arrive at the Ludlow Construction Company Field Office without a **SDS** attached:

    I. Send a letter to the supplier/manufacturer requesting **SDS** (See forms section).
    II. File the copy in the request for **SDS** folder. Document the date sent in the request for **SDS** log. This log is kept in the request for **SDS** Log and request file.
    III. Send a follow up letter in 30 days and document the action.
    IV. Record the receipt of the **SDS** in the request log file, the **SDS** in the appropriate file.

Under the HazMat Standard, Ludlow Construction Company is required to perform many tasks which can be expedited by copying information from the **SDS**. These requirements include educating employees on hazardous materials, educating employees on non-routine tasks, and informing contractors of hazardous material their employees might come in contact with at the work site. Therefore, the Safety Officer should photocopy the following from each **SDS**:

1. Control measures
2. Precautions for Safe Handling and use.
3. Signs/Symptoms for Exposure.
4. Cover page with name and reference number.
5. Copy for each subcontractor's folder.
6. Distribute as necessary.

**SDS Employee Training:** Employees are to attend a training session on hazardous materials prior to their initial work assignment. See the Forms Section for a copy of the “Employee Orientation Form and Right to Know Acknowledgement Form”. Upon completion of the training session the employee shall sign the form acknowledging his understanding of the Ludlow Construction Company program. The training session shall cover the following topics:

1. An overview of the Hazard Communication requirements.
2. A review of all chemicals present in their workplace operations.

3. The location and availability of our Written Hazard Communication Program, a list of hazardous chemicals, and Safety Data Sheets.
4. Methods and observation techniques that may be used to detect the presence or release or hazardous chemicals in the work area.
5. How to lessen or prevent exposure to hazardous workplace chemicals by using good work practices, personal protective equipment, etc.
6. Physical and health hazards of chemicals in the work area.

An explanation of our Hazardous Communication Program, including how to read labels and Safety Data Sheets to obtain appropriate hazard information.

**When a new type of product is introduced into a work area, or the chemical composition changes, the SSHO will review the items as they relate the chemicals on hand and insure compliance with the Hazard Communication program.*

**Non-Routine Tasks:** Periodically, employees are required to perform non-routine tasks. Prior to starting work on such projects, each affected employee will be informed by the Safety Officer regarding hazards which they may be exposed to, and appropriate protective and safety measures.

**Informing Other Employers:** To ensure that the employees of other contractors have access to the information regarding hazardous chemicals on the job site, it is the responsibility of the Safety Officer to provide the other contractors with the following information:

1. Where the **SDS** are available (Field Office/laydown area).
2. The name and location of the hazardous chemicals to which their employees may be exposed, and any appropriate protective measures required to minimize their exposure.
3. An explanation of the labeling system at the job site.

**Methods and Observations:** Techniques that may be utilized to detect the presence or release of hazardous chemicals in the work area.

1. All operations, materials and equipment shall be evaluated by a competent person to determine the presence of hazardous environments, or if hazardous or toxic agents may be released into the work environment.
2. Engineering controls (such as local/general ventilation) shall be instituted to limit exposure to hazardous substances, agents, and environments within acceptable limits. Work practice controls (such as wetting of hazardous dusts) shall be instituted.
3. All employees using, storing, or disposing of hazardous materials shall be able to read the information contained in the Safety Data Sheet for the substance, as well as any general safety and health instruction required for them to fully understand this information.
4. The following observation techniques will be used to detect the presence or release of hazardous chemicals:
    I. Monitoring
    II. Visual Appearance
    III. Odor of hazardous chemicals

**Project Supervision**

1. Include safety in all job activities:

    I. Look for, report, and correct all unsafe conditions/acts on the spot.
    II. Follow up for compliance.
    III. Issue reprimands for violations if necessary.

2. Affirm that new employees are properly trained for each task assigned.

3. Participate in weekly safety meetings.

4. Assist in all serious accident/safety violations.

5. Insure that all employee accidents and injuries are reported promptly.

6. Require proper use of tools and equipment.

7. Stop work immediately to correct safety/dangers/hazards on site.

8. Provide drinking water from proper source with disposable cups.

9. Correct noncompliance with Ludlow Construction Company policies on job site

10. Identify and anticipate need for:

    I. Special Training
    II. Special Tools and Equipment
    III. Safety Equipment
    IV. Emergency medical planning

THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION REQUIRES ALL EMPLOYERS TO MAKE INFORMATION ON ANY HAZARDOUS CHEMICAL IN THEIR WORKPLACE AVAILABLE TO ALL EMPLOYEES. VITAL INFORMATION ABOUT THE NATURE OF THESE SUBSTANCES, SAFETY PRECAUTIONS AND EMERGENCY PROCEDURES MAY BE FOUND IN THE SAFETY DATA SHEETS **(SDS**).

**SDS FOR THIS WORKPLACE ARE LOCATED**
Ludlow Construction Company Field Office/Laydown Area
**Person responsible for SDS:**
Site Safety and Health Officer (SSHO)

**Employee Information, Responsibilities and Procedures**

**Introduction to Employees**

This document explains procedures adopted by Ludlow Construction Company to protect employees and Subcontractors from hazardous chemicals. You have a right by law to know this vital information; Ludlow Construction Company wants you to understand your rights. It is our policy to continually provide this type of information to you. It is through instruction, training, answering questions, posting signs, container labeling,

protective clothing and optional methods of communication that your safety and well-being are protected. However, your participation is vital to the success of this plan.

IT IS EVERY EMPLOYEES OBLIGATION to be informed and OBTAIN IMMEDIATE HELP if s/he becomes ill as a result of employment. We will do everything within our power to assist you; however, we cannot do it all. If there is anything at any time regarding our safety plan that you do not fully understand, ASK YOUR SUPERVISOR AT ONCE. Whenever you feel there is a work hazard, of if you ever become ill or develop any symptoms of illness as a result of your work (or if you become aware of a fellow employee who has), immediately notify your supervisor. This will help Ludlow Construction Company and it is also a requirement of your employment to provide this vital information.

To ensure that you are aware of all the hazards associated with the various materials you work with, Ludlow Construction Company has developed the following comprehensive HAZARD COMMUNICATION PROGRAM. Ludlow Construction Company is committed to providing all employees with a safe and healthy work environment. The Safety Officer will have the overall responsibility for the HAZARD COMMUNICATION PROGRAM coordination. The Safety Officer will make our written program available to employees, our subcontractors and suppliers, and all other parties having jurisdictional interest on the matter.

Ludlow Construction Company is committed to the safety of its employees. Ludlow Construction Company is determined to eliminate or control the frequency of job related accidents through a concise and functional safety program. Ludlow Construction Company consists of many employees with various trade skills along with many tools and pieces of equipment. Therefore, safety must be instilled in each employee for our safety program to work. SAFETY IS ALSO AN INDIVIDUAL OBLIGATION.

As an employee of Ludlow Construction Company or a Sub-Contractor crew performing work for Ludlow Construction Company you are part of a team of construction workers, a team dedicated to working as safely as possible in the construction industry. We all must strive to eliminate the two main causes of accident in the work place, UNSAFE ACTS and UNSAFE CONDITIONS. It is your responsibility as an employee to perform all assigned tasks in a professional and safe manner. SAFETY STARTS WITH YOU!

The information that follows is a safety program which has been established with YOU in mind, you must understand your rights, obligations, and responsibilities regarding the Safety Program as outlined in the attached papers. You will be held accountable for following these procedures just as you are held accountable for the quality and quantity of your work. **SAFETY IS YOUR RESPONSIBILITY!**

**Employee Responsibilities**

1. Participate in all available training.
2. Learn what **SDS** forms are and how to use them.
3. Make use of provided safety equipment.
4. Notify Supervisor immediately of unlabeled containers.
5. Notify Supervisor immediately of missing **SDS** forms.
6. Make safety a part of your normal workday.
7. Know the safety rules. VIOLATIONS will result in reprimands and/or termination.
8. Report any and all unsafe acts or conditions immediately. If the condition or act can be corrected safely, do it immediately.
9. Attend all required safety meetings. Toolbox safety meetings are mandatory. They will be held weekly in addition to new employee orientation and other special training.
10. Report all work-related injuries or illness, immediately.

11. Become familiar with "Right to know" and "Code of safe practices"

**Hazardous Communication**

**"RIGHT TO KNOW RULES"**

1. When working with chemicals, keep your exposure to a minimum. Do not breathe the chemical; do not get it on your skin, or in your eyes.

2. Know what you are working with, its hazards, and what to do if it gets in your eyes, on your skin, on your clothes, or catches fire.

3. Clean up all spills and leaks immediately with recommended materials.

4. Read and follow container label precautions.

5. Report chemical problems to your Supervisor; take all questions regarding chemicals to your Supervisor.

6. Keep your personal protective equipment, exposed skin, and work clothing clean.

7. Know where the Safety Data Sheet collection and the workplace chemical inventory are kept.

8. Use the **SDS** to get more information about the chemicals you work with.

9. Know your site's fire evacuation routes and emergency procedures.

10. Disposes of chemicals properly, never pour chemicals together, into drains or sewers.

11. Keep products in their original containers, if you must transfer chemicals to other containers make sure labels are intact and like chemicals are being mixed.

12. **Chemicals + misuse = DANGER. Chemicals + precautions = SAFETY.**

**PROTECTIVE CLOTHING**

**GLOVES:** Different types for different purposes
- Heat Resistant
- Sharp Surfaces
- Acid Resistant
- Solvent Types (Butyl, PVC)

**GOGGLES:** Vented Vs Non-Vented
- Faces Shield
- Safety Glass

**RESPIRATORS:** Air-Purifying Vs Air Supply
- Disposable Types (Cartridge)
- Documented Program

**Personal Hygiene**

Use appropriate protective clothing as required, DO NOT SHARE EQUIPMENT.
Remove contaminated clothing immediately.
Wash off before going on break. (A toxic material like asbestos requires showering)
Never take food to work area.
Never smoke in a work area if chemicals are present. Leave cigarettes in storage area.
Clean up spills immediately. Keep work areas clean.

**Identification of Hazardous Substances**

Definition: **"Hazardous Chemical"** is defined as any chemical that is a physical or health hazard.

Hazardous chemicals fall in the following health and physical hazard categories:

| **HEALTH HAZARD** | **PHYSICAL HAZARD** |
|---|---|
| a. Carcinogen | a. Combustible or flammable |
| b. Corrosive | b. Compressed Gas |
| c. Irritant | c. Explosive |
| d. Sensitizer | d. Organic Peroxide |
| e. Toxic | e. Oxidizer |
| f. Chemicals Affecting | f. Pyrophoric acid |
| Specific organs, e.g. Liver, kidney | (Ignites in air at or below 130 degrees) |
| g. Unstable | g. Water-reactive |

The hazardous chemical list should contain the following information:

1. The chemical name and common name used on the container label and the Safety Data Sheet.

2. The manufacturer's name, address, and phone number.

3. The work area in which the chemical is used or stored.

4. Date **SDS** were requested or received.

## HAZARD COMMUNICATION

Ludlow Construction Company has an active Hazard Communication Safety Program and on this project the SSHO is responsible for administering the HAZCOM program. Each employee is responsible to observe and follow safe work guidelines when working with hazardous products.

Most hazards will fall into five broad categories:

1. Flammables and combustibles
2. Compressed gases
3. Systemic poisons
4. Corrosives
5. Irritants

A hazardous substance can endanger our well-being in three ways:

1. Inhaled
2. Ingested
3. By contact with you

**SDS**s (Safety Data Sheets) contain the following information:

1. How to properly handle and store
2. Outline spill clean-up procedures
3. The medical and first aid procedures

**SDS**s, emergency supplies, and emergency phone numbers are located in Ludlow Construction Company office trailer. Each employee should understand how to interpret and use the **SDS**s.

When working with hazardous products in containers, follow the guidelines outlined on labels, which explain the dangers of the product and the proper way to use this product.

The hazardous chemical list for Ludlow Construction Company, Hazardous Communication Program, and the **SDS** are available for my review upon request.

Each employee must observe and follow safe work practices while working for Ludlow Construction Company as a condition for their employment.

## 13.9. SEVERE WEATHER PLAN

# Ludlow Construction Company, Inc.

# Weather Contingency Plan

**Heat Stress**

Heat stress is a common illness at construction sites. The risk of heat stress is high for personnel working in the open and in areas subject to outdoor temperatures (e.g., inside buildings without HVAC or on the road projects which make up a significant portion of the work). Workers wearing impermeable personal protective garments are also subject to heat stress. Because this equipment does not allow evaporation of sweat, workers required to wear this attire will be monitored for heat stress when the ambient temperature is above or equal to 70-degree F. The degree of risk associated with working in heavy attire is directly related to numerous factors: ambient temperature, length of time in the attire, availability of shade, acclimatization of personnel, adequate fluid intake by workers, and length of rest periods. Personnel should follow appropriate guidelines and take the actions noted below if any personnel exhibit these symptoms:

Heat Rash – Redness of skin. Frequent rest and change of clothing.

Heat Cramps – Painful muscle spasms in hands, feet, and/or abdomen. Administer lightly-salted water by mouth, unless there are medical restrictions.

Heat Exhaustion – Clammy, moist, pale skin, along with dizziness, nausea, rapid pulse, fainting. Remove to cooler area and administer fluids.

Heat Stroke – Hot dry skin; red, spotted or bluish; high body temperature of 104-degree F, mental confusion, loss of consciousness, convulsions, or coma. Immediately cool victim by immersion in cool water. Wrap with wet sheet while fanning; sponge with cool liquid while fanning; treat for shock. DO NOT DELAY TREATMENT. COOL BODY WHILE AWAITING AMBULANCE.

**Work Practices**

The following procedures will be carried out to reduce heat stress:

Heat stress monitoring
Acclimatization
Work/Rest regimes
Liquids that replace electrolytes/salty foods
Use of buddy system

The level of heat stress at which excessive heat stress will result depends on the heat tolerance capabilities of the worker. Each worker has an upper limit for heat stress beyond which the resulting heat strain can cause the worker to become a heat casualty. In most workers, appropriate repeated exposure to elevated heat stress causes a series of physiologic adaptations called acclimatization, whereby the body becomes more efficient in coping with the heat stress. Work/rest regimes will be partially determined by the degree of acclimatization provided.

**Worker Information and Training**

All employees who work in areas where there is a reasonable likelihood of heat injury or illness should be kept informed, through continuing education programs, of:

1. Heat stress hazards

2. Predisposing factors and relevant signs and symptoms of heat injury and illness

3. Potential health effects of excessive heat stress and first-aid procedures

4. Proper precautions for work in heat stress areas

5. Worker responsibilities for following proper work practices and control procedures to help protect the health and safety of themselves and their fellow workers, including instruction to immediately report to the employer the development of signs or symptoms of heat stress or overexposure.

6. The effects of therapeutic drugs, over-the-counter medications, or social drugs that may increase the risk of heat injury or illness by reducing heat tolerance.

The Safety Officer will monitor the heat index during periods of high humidity and temperatures and provide assistance to the workforce.

**Cold Stress**

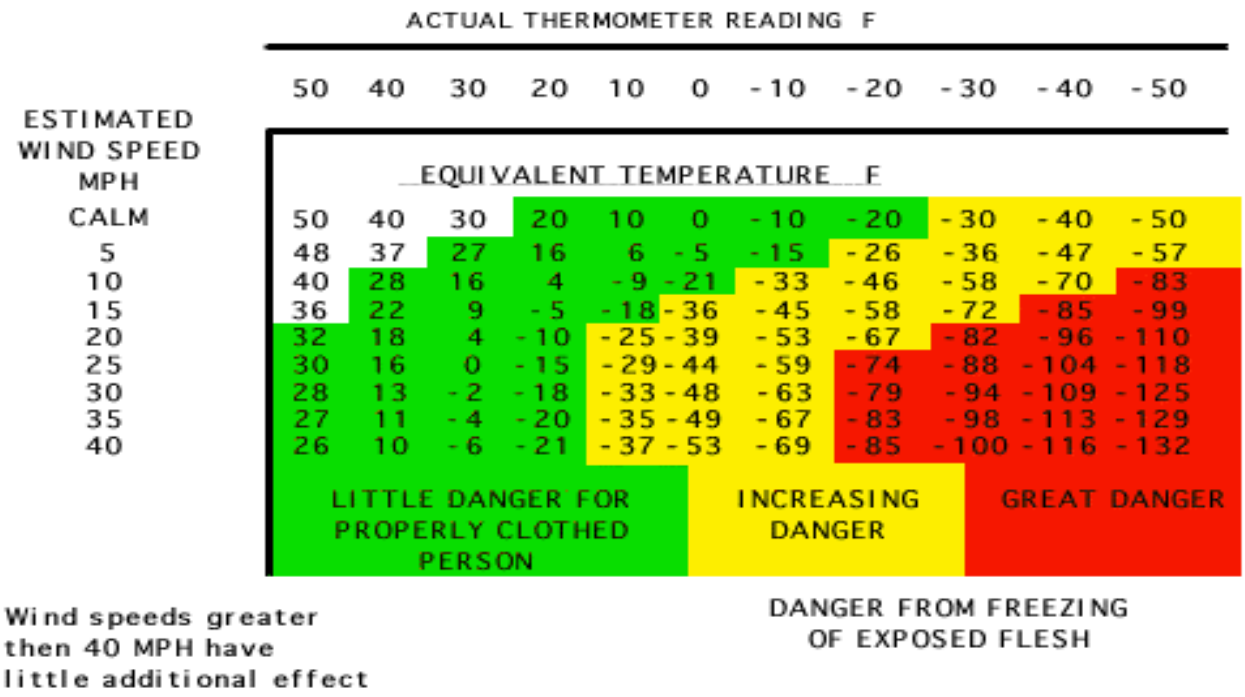
Outdoor work will result in cold exposure during most months in this type of climate. When the body loses more heat than it produces, the deep body temperature may be lowered to dangerous levels. This condition is known as hypothermia and can be serious. The symptoms of hypothermia include shivering, sleepiness, numbness (i.e., frostbite), difficulty in movement, impaired ability to work, and diminished eyesight. If the condition is allowed to progress, heart failure may occur. First-aid procedure for hypothermia is to seek immediate medical attention.

Methods to protect against hypothermia include: wearing multi-layer cold weather outfits; be aware of wind chill factors; have access to a readily available warm shelter; alternate scheduled work and rest periods; drink warm fluids (no alcoholic beverages); use the buddy system; and monitor conditions of fellow workers.

The SSHO will post a copy of the "Cooling Power of Wind on Exposed Flesh Expressed as an Equivalent Chill Temperature" chart at the field trailer.

Ludlow Construction Company will use the "Threshold Limit Values Work/Warm up Schedule for Four-Hour Shift" to determine the cold weather exposure for its employees and subcontractors.

## WIND - CHILL CHART




**Inclement Weather Preparation and Emergency:** If a tornado, hurricane, or inclement weather warning is issued, Ludlow Construction Company's Project Management Personnel will direct its employees and subcontractors to prepare all work sites for hurricane force winds and/or gale force winds. All items subject to winds will be secured to prevent them from becoming air borne, or hauled off site. Exposed walls subject to being toppled will be shored with additional bracing. All work will be stopped and personnel cleared from site before gale force winds begin. SSHO will inspect the entire site for proper secure of materials, prior to releasing project staff and subcontractors. All personnel on-site will muster at the Ludlow Construction job trailer and be checked off from the project daily sign in sheet to ensure all persons are present and accounted for prior to exiting the site.

## 13.10. FALL PROTECTION AND PREVENTION PLAN

# Ludlow Construction Company, Inc.

## Fall Protection and Prevention Plan

**Introduction:**

During this project all other work in the scope of this project, personal fall arrest system will used by all employees in accordance with the EM 385-1-1, 29 CFR 1926.502 / EM 385, Section 21 and OSHA 1926.502. AHA will identify all scopes of work requiring Fall Protection.

Personal fall arrest systems and their use will comply with the provisions set forth below. Body belts are not acceptable as part of a personal fall arrest system. Note: The use of a body belt in a positioning device system is acceptable as described in OSHA regulations 1926.502(e). Positioning devices shall be rigged such that an employee cannot free fall more than 2 feet. Positioning devices shall be secured to an anchorage capable of supporting at least twice the potential impact load of an employee's fall or 5,000 pounds, whichever is greater. Existing anchors must be recertified prior to use.

Personal fall arrest system must meet the following OSHA requirements and must comply with 29 CFR 1926.502 / EM 383 Section 21: 1926.502(d) (1)

Connectors shall be drop forged, pressed or formed steel, or made of equivalent materials. 1926.502(d) (2)

Connectors shall have a corrosion-resistant finish, and all surfaces and edges shall be smooth to prevent damage to interfacing parts of the system. 1926.502(d) (3)

Dee-rings and snap hooks shall have a minimum tensile strength of 5,000 pounds (22.2 kN). 1926.502(d) (4)

Dee-rings and snap hooks shall be proof-tested to a minimum tensile load of 3,600 pounds (16 kN) without cracking, breaking, or taking permanent deformation. 1926.502(d) (5)

Snap hooks shall be sized to be compatible with the member to which they are connected to prevent unintentional disengagement of the snap hook by depression of the snap hook keeper by the connected member, or shall be a locking type snap hook designed and used to prevent disengagement of the snap hook by the contact of the snap hook keeper by the connected member. Effective January 1, 1998, only locking type snap hooks shall be used.

Unless the snap hook is a locking type and designed for the following connections, snap hooks shall not be engaged: Directly to webbing, rope or wire rope; 1926.502(d) (6) (i)

I. to each other; 1926.502(d)(6)(ii)
II. to a de-ring to which another snap hook or other connector is attached; 1926.502(d)(6)(iii)
III. to a horizontal lifeline; or 1926.502(d)(6)(iv)
IV. to any object which is incompatibly shaped or dimensioned in relation to the snap hook
V. such that unintentional disengagement could occur by the connected object being able to depress the snap hook keeper and release itself. 1926.502(d)(6)(v)

On suspended scaffolds or similar work platforms with horizontal lifelines which may become vertical lifelines, the devices used to connect to a horizontal lifeline shall be capable of locking in both directions on the lifeline. 1926.502(d) (7)

Horizontal lifelines shall be designed, installed, and used, under the supervision of a qualified person, as part of a complete personal fall arrest system, which maintains a safety factor of at least two. 1926.502(d) (8)

Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds (22.2kN). 1926.502(d) (9)

When vertical lifelines are used, each employee shall be attached to a separate lifeline. 1926.502(d) (10) (i)

The SSHO will review and revise the Fall Protection Program every 6 months.

The SSHO will maintain Fall Protection Program documentation throughout the construction project duration.

The SSHO should implement a fall protection and prevention training program. This training shall include company policy, identify responsibility, education/training, fall hazard identification, control measures, inspect storage, care and maintenance of fall protection equipment and rescue and evacuation procedures.

In the event of a rescue, the fall victim should attempt a self-rescue. If that is not possible, the crew supervisor will carry a throw bag. The fall victim will grab a rope thrown at them in the throw bag, and attempt to pull themselves to safety. In the event that is not possible, elevated platforms will be used to rescue the victim. This platform will be located on the barge if fall occurs over the water and self-rescue is not possible. Once rescued the fall victim will be medically evaluated, to ensure there are no injuries that occurred as a result of the fall. This will happen immediately upon rescue. If injuries are apparent the SSHO will contact 911 immediately. All crew supervisors who have crews that have the potential for falls to occur will be trained by the SSHO in rescue procedures for fall victims.

**Fall Protection Best Management Practices:**

All employees shall wear a full body harness when working six (6) feet or more above the ground when no other type of fall protection is provided. The lanyard shall be securely attached to the employee 100% of the time and shall allow a maximum fall distance of six (6) feet. A full body harness shall also be worn and attached to the tie-off rail when working out of extension able and articulating boom platforms or suspended scaffolding. Safety nets shall be provided when work places are more than twenty-five (25) feet above the ground or where the use of other fall protection devices are impractical. All Ludlow Construction Projects are 100 % Fall Protection projects and this requirement is a condition of employment on this project.

Any time employees are exposed to a fall hazard of six foot (72”) or greater. The employee must be protected from falling.

1. Guardrail System

I. Support post- 8’-0” Max. spacing
II. Top rail 42”+ above the walking/working level
III. Midrail
IV. Toe board
V. Walking / Working Surface

2. Protection from falling objects

3. Covers shall be secured over any whole 2” or greater. The cover must be visibly marked.

4. Unprotected sides and edges on walking / working surfaces:

I. Constructing a leading edge
II. Hoist areas
III. Holes
IV. Formwork and reinforcing steel
V. Ramps, Runways, and other walkways
VI. Excavations
VII. Dangerous Equipment
VIII. Overhand bricklaying and related work
IX. Roof work on low-slope roofs
X. Steep roofs
XI. Wall openings
XII. Walking/working surfaces not otherwise addressed

Proper application and use of a full body safety harness, shock absorbent lanyards with double locking hooks and positioning systems.

I. Anchor points at least 5,000 lbs. per person.
II. Maximum arresting force of 1,800 lbs. on the body
III. All fall protection equipment must be inspected on a frequent and regular basis.

## 13.11. LADDER AND SCAFFOLDING SAFETY PLAN

# Ludlow Construction Company, Inc.

## Ladder and Scaffolding Safety Plan

**There is no excuse for using a makeshift or defective ladder as a means of access to any work area or working platform. Use only approved and safe ladders.**

1. Job-built ladders must be constructed to conform to the established safety requirements and rungs must be twelve inches (12") on-centers with filler blocks installed.

2. Only industrial-type/heavy-duty grade manufactured ladders will be used on the jobsite.

3. Ladders broken or missing side-rails or rungs must not be used. Repair or destroy them immediately. Tag ladders to be repaired with wording: "DO NOT USE".

4. Do not splice together short ladders to make a longer ladder.

5. All straight ladders must be tied off at the top and rigidly secured at the bottom.

6. Ladders shall not be placed against movable objects.

7. The base of the ladders must be set back a safe distance from vertical – approximately one-fourth (1/4) of the working length of the ladder.

8. Ladders used for access to a floor or a platform must extend at least three feet (3') above the landing and be tied off.

9. The areas around the top and base of ladders must be free of tripping hazards such as loose materials, trash, lumber, pipes, electrical cords, etc.

10. Ladders which project into passageways or doorways where they could be struck by personnel, moving equipment, or materials being handled must be protected by barricades or guards.

11. You must face the ladder at all times when ascending or descending.

12. Be sure that your shoes are free of mud, grease, or other substances which could cause a slip or fall.

13. Do not carry any materials in your hand while using any ladder. Use a hand line.

14. Always move the ladder to avoid overreaching.

15. Stepladders must be fully opened to permit the spreader to lock. Never use a stepladder leaning against a wall or form.

16. Standing/working from the top 3 rungs or cleats on any ladder, unless you are firmly secured to the structure with a safety belt and lanyard is PROHIBITED.

17. The use of metal ladders rated for the intended purpose and weight classification.

18. Metal ladders must not be used for electrical work or within four feet (4') of open electrical apparatus, wiring, or other live electrical equipment. An adequate warning sign must be posted on all metal ladders warning of these safeguards, which states: "Caution" – Do Not Use Around Electrical Equipment.

1. The use of ladders with broken or missing rungs or steps, broken or split rails or other defects is prohibited.
2. Ladders shall extend no less than thirty-six (36) inches above any landing and shall be secured to prevent displacement.
3. Portable ladders shall be equipped with safety shoes.
4. Wooden ladders shall not be painted.
5. Aluminum and metal ladders are not permitted. Fiberglass ladders are recommended.
6. Ladders shall not be stored in the upright position.
7. The use of a ladder is prohibited when wind speeds (or gust) exceed twenty (20) m.p.h.
8. All ladders shall be properly tied-off.
9. Ladders shall not be set up on stairways.
10. While ascending or descending ladders, the user shall always face the ladder and nothing shall be carried that will prevent the user from holding on with both hands. A hand-line shall be used if it is necessary to raise or lower materials.
11. The use of ladders with broken or missing rungs, broken or split side rails, or other faulty or defective construction is prohibited.
12. Portable ladder feet should be placed on a substantial base, and the area around the top and bottom of the ladder should be kept clear and clean at all times.
13. Ladders should not be used in a horizontal position as platforms, runways, or scaffolds.
14. Portable ladders should be tied, blocked or otherwise secured to prevent movement.
15. Place ladders on a substantial base and do not use ladders with broken, split or missing rungs or rails.
16. All ladders must be used with a 4:1 slope, extend at least three (3) feet above the landing platform and be securely fastened at the top.
17. Workers are not to carry loads up or down ladders. All tools and materials are to be raised and lowered by rope or machine.
18. Avoid the use of metal ladders when the possibility of contact with electrical power exists.
19. Clean mud or greasy substances from your shoes before climbing up ladders. Always face the ladder and hold on with both hands, whether climbing up or down. You must face the ladder and keep a (3) points of contact at all times.
20. It is dangerous to reach out too far from a ladder in any direction, keep your “center of gravity” as close to the ladder as possible. Move the ladder as the work requires.
21. Stepladders must be used with spreader fully engaged. The top and second from the top step shall not be used.
22. All job made ladders shall be built in accordance to OSHA standard 1926.1503
23. Personnel are not to ride rolling scaffolds. Equipment or material on the scaffold deck must either be removed or secured.
24. Rolling scaffolds shall only be used on smooth, level surfaces; otherwise the wheels shall be contained in wooden or iron channels which are level and stabilized.
25. No rigging from scaffold members shall be permitted unless catheads or well wheels designed for such purposes are utilized. Whenever such systems are used, the individuals performing the work shall ensure that no personnel are exposed to falling material or equipment.

**Scaffolding:**

Each scaffold must be inspected and approved by your responsible supervisory personnel prior to initial use and after any alteration, repair or moving.

1. There is no such thing as a temporary scaffold. All scaffolding must be erected and maintained to conform to all established requirements. (29 CFR Subpart L / EM 385, Section 22) A copy of the manufacturer's recommendations (operating manual) or guidance from the Scaffolding, Shoring, and Forming Institute shall be available at the work site.

2. Guardrails, mid-rails, and toe-boards should be constructed from components furnished by the manufacturer. Where this is not possible, lumber which is sound and free of defects must be used. Always use 2"x4" lumber for Guardrails and 1"x6" lumber for toe-boards. Top rail to be set at forty-two inches (42") from upper surface to rail to floor.

3. Guardrails, mid-rails, and toe-boards must be installed on all open sides and ends of any scaffold more than six feet (6') in height.

4. Scaffold planks should be cleated and must extend over the end support at least six inches (6") – but not more than twelve inches (12").

5. Scaffold planks must be at least 2"x12", and span not more than one foot (1') for each inch of plank width between the end supports.

6. All scaffolds must be at least two (2) planks wide regardless of height. The planks should cover the entire space between uprights – but in no case be further than eight inches (8") from the outside guardrail and six feet (6') from the building or structure. No employee shall work from a single plank.

7. Scaffold planks must be visually inspected before each use. Defective or damaged planks must be removed immediately.

8. Access ladders must be provided for every scaffold five feet (5') or more in height and must provide a safe and unobstructed means of access. Climbing any portion of a scaffold frame is prohibited unless the design incorporates an unobstructed and safe means of access with rungs twelve inches (12") on centers.

9. Adequate mud sills or other rigid footing, capable of withstanding the maximum intended load, must be provided.

10. Scaffolds must be tied to the building or structure at intervals which do not exceed twenty feet (20') horizontally and vertically. At least ONE row of ties is required, regardless of the scaffold height.

11. Do not overload any scaffold. Materials should be brought up as needed and not exceed seventy-five (75) pounds. A scaffold must not be loaded in excess of one-fourth (1/4) of its rated capacity.

12. Makeshift scaffolds include barrels, boxes, kegs, and similar unstable objects must never be used as work platforms or to support scaffolds. Their use will result in your immediate discharge.

13. A scaffold permit must be posted for any scaffold over three (3) stories or thirty-six feet (36') in height. This must be obtained before the scaffold can be erected. Said permit must be reviewed by the Safety Officer.

14. Where persons are required or permitted to work or pass under a scaffold, a screen of 18-gauge, ½-inch standard wire mesh or equivalent material is required between the toe board and the top rail.

15. Overhead protection is required if employees working on a scaffold are exposed to overhead falling hazards. Such protection must be two-inch (2") planking or equivalent.

1. All scaffolding shall be inspected by a qualified individual and approved by Ludlow Construction Company prior to use and shall be in accordance with the 29 CFR / EM 385.

2. No scaffold shall be erected, moved, dismantled, or altered except under the supervision of competent persons. All scaffolds shall be erected plumb.
3. Footings or anchorage for any scaffold shall be sound, rigid and capable of carrying the maximum intended load without settling or displacements.
4. No unstable objects such as concrete blocks shall be used to support scaffolds or planks.
5. Any part of a scaffold weakened or damaged shall be repaired or replaced immediately.
6. All scaffold planking shall be free of knots and cracks and shall completely cover the work platform.
7. Scaffold plans shall be placed tightly, cleated at both ends or overlapped a minimum of twelve (12) inches and nailed or bolted to prevent movement. Overlaps shall only occur directly above scaffold supports.
8. Safe access shall be provided to the scaffold platform, specifically, a ladder with a safe means of access to the platform from the ladder.
9. Scaffold shall be equipped with a top rail made of lumber not less than two (2) inches by four (4) inches (or equivalent in strength), forty-two (42) inches high; a twenty-one (21) inch high mid-rail made of lumber not less than one (1) inch by six (6) inches (or equivalent in strength); and toe-boards shall be installed on all open sides and end of scaffold platforms ten (10) feet or more above the ground or floor.
10. Employees working on suspending scaffolds shall wear a full body harness with lanyards attached to an independent lifeline.
11. Scaffolds and their components shall be capable of supporting without failure at least four (4) times their maximum intended load. In no event shall this intended load be exceeded.
12. Where persons are required to work or pass under the scaffolds, scaffolds shall be provided with a screen (or the equivalent) between the toe-board and the guardrail, extending along the entire opening.
13. Scaffolds shall be tied into the structure, guyed or out-rigged whenever their height exceeds four (4) times the minimum base dimension, and/or their length exceeds twenty (20) feet.

**Rolling Scaffolds**

1. The platform must cover the entire space between uprights and must be cleated with at least one inch (1") material at each end.

2. All wheels and casters on rolling scaffolds shall have a positive locking device, securely fastened to the scaffold, to prevent accidental movement. (EM385, Section 22.C.06 (a)).

3. The height of any rolling scaffold must not exceed three (3) times the width of the scaffold base unless substantial outriggers are provided. Every rolling scaffold must be rigid and self-supporting.

**Scaffolding General Guidance**

The following information shall be adhered to by all employees on this project:

1. All scaffolding and work platforms are to be erected, moved, altered, or dismantled under the supervision of a competent person. All employees shall be trained to identify all hazards associated with scaffolding and working platforms.

2. A scaffolding check sheet/tag must be completed by the competent person for each scaffold erected on this project. The check sheet must be turned into the safety department daily.

3. All equipment shall be inspected for any defects or damages prior to using.

4. Proper ladder access shall be used on all scaffolds and work platforms. DO NOT CLIMB CROSS BRACES

5. Never work below scaffolding or work platforms that are in use.

6. Each working level shall be fully planked and guardrail / toe board system installed.

7. The use of Fall Protection is required during the assembly, use, or dismantling of any scaffolding or work platform 6 feet and above.

8. All personnel working in a boom type aerial lift shall wear a full body harness and tied off at all times.

## 13.12. CONFINED SPACE ENTRY

# Ludlow Construction Company, Inc.

## Confined Space Plan

**Introduction:**

This Permit Required Space (PRCS) Program is provided to protect authorized employees that will enter confined spaces and may be exposed to hazardous atmospheres, engulfment in materials, conditions which may trap or asphyxiate due to converging or sloping walls, or contains any other safety or health hazards.

Many workplaces contain confined spaces not designed for human occupancy which due to their configuration hinder employee activities including entry, work and exit. The hazards encountered and associated with entering and workings in confined spaces are capable of causing bodily injury, illness, and death to the worker. Accidents occur among workers because of failure to recognize that a confined space is a potential hazard. It should therefore be considered that the most unfavorable situation exists in every case and that the danger of explosion, poisoning, and asphyxiation will be present at the onset of entry. Reference: OSHA Permit- Required Confined Spaces (29 CFR 1926.657). Signage with wording
DANGER—PERMIT –REQUIRED CONFINED SPACE, shall be attached to access cover to confined area.

**Responsibilities:**

**Management:**

1. Ensure proper training for entry & rescue teams
2. Provide proper equipment for entry & rescue teams
3. Ensure confined space assessments have been conducted
4. Ensure all permit required confined spaces are posted
5. Annually review this program and all Entry Permits
6. Evaluate Rescue Teams/Service to ensure they are adequately trained/prepared
7. Ensure rescue team at access during entry into spaces with IDLH atmospheres

**Employees:**

1. Follow program requirements
2. Complete training for Confined Space Work
3. Report any previously unidentified hazards associated with confined spaces

**Implementation of Program:** The Safety Officer and Superintendent are responsible for the project permit-required confined space program and must coordinate all entry procedures, tests, permits, equipment and other relevant activities.

The Safety Officer shall obtain from the owner’s information on the location and hazards of "permit-required confined spaces (PRCS)" that Ludlow Construction Company or their subcontractors, employees will be entering or working near that has been identified to be Project Specific. [29 CFR 1926.657]

The Safety Officer and Superintendent shall identify any confined space work within the scope of work defined by the scope of work. The Safety Officer and Superintendent shall plan the required work in accordance with 29 CFR 1926.657, OSHA and the Company's program.

**Confined Space Entry Permits:** The Permit must be completed and signed by the Safety Officer or his designated representative before entry.

All Confined Space work shall be in accordance with the Safety and Health Requirements
Manual 29 CFR 1926.657
Permits will be maintained in the project file.

**Definition of Confined Spaces Requiring an Entry Permit**

**A Confined space:**

1. Is large enough or so configured that an employee can bodily enter and perform work.
2. Has limited or restricted means for entry or exit (i.e. tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry).
3. Is not designed for continuous employee occupancy.
Permit required confined space (permit space)
1. Contains or has a potential to contain a hazardous atmosphere.
2. Contains a material that has the potential for engulfing an entrant.
3. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly covering walls or by a floor that slopes downward and tapers to a smaller cross-section.
4. Contains any other recognized serious safety or health hazard.

**Entry Standard Operating Procedures**

The Safety Officer and Superintendent shall:
1. Identify the Scope of Work requiring a Permit
2. Identify Hazards associated with the Scope of Work
a. Prepare Activity Hazard Analysis
(1) Perform preliminary investigation to identify all hazards
Gases, Chemical, Physical, etc.
b. Review Facility program requirements for PRCS.
c. Designate company personnel who are authorized (trained) to perform PRCS work.
(1) Medical documentation is current.
(2) Training documentation is current.
(3) Capability to perform necessary work within confined space.
(4) Identify other work associated with PRCS work.
Work to be completed before PRCS work.
Concurrent work with PRCS.
3. Prepare Testing and Monitoring requirements for PRCS work area.
a. Monitoring equipment – availability – calibration/certification
b. Locations to conduct monitoring
c. Personnel authorized to conduct testing
d. Rules & Regulations – Limits / documentation

4. Prepare list of specialized equipment required by PRCS.
a. Ventilation equipment
b. Communication

c. Personal Protection

5. Prepare Emergency procedures according to the type of PRCS work to be performed.
a. Company emergency equipment needed
b. Emergency personnel needed on site or on stand-by
c. Adopt/Modify Emergency Response Plan for PRCS
d. Identify additional emergency training required by PRCS
e. Coordinate emergency needs with Government emergency personnel.

6. Prepare PRCS request
7. Prepare schedule and plan for work.

8. Follow district requirements for submitting request
9. Upon return of signed PRCS request execute plan according to plan and schedule.

**Coordination of PRCS**

Ludlow Construction Company will coordinate PRCS work with authorized personnel at the facility

Upon completion of PRCS work, Ludlow Construction Company will debrief on site authorized personnel on any matters concerning the entry program or any hazards created or confronted in the PRCS during Ludlow Construction Company entry operations

**General Rules:** During all Confined Space Entries, the following Safety Rules must be strictly enforced:

1. Only Authorized and Trained Employees may enter a Confined Space or act as Safety Watchmen.

2. No Smoking is permitted in a Confined Space or near entrance/exit area.

3. During Confined Space Entries, a watchman must be present at all times.

4. Constant visual or voice communication will be maintained between the Safety Watchmen and Employees entering a Confined Space.

5. No bottom or side entry will be made or work conducted below the level of any hanging material or material which could cause engulfment.

6. Air and Oxygen Monitoring is required before entering any Permit-Required Confined Space. Oxygen levels in a Confined Space must be between 19.5 and 23.5 percent.
Levels above or below will require the use of an SCBA or other approved air supplied respirator. Additional ventilation and Oxygen Level Monitoring is required when welding is performed. The monitoring will check Oxygen Levels, Explosive Gas Levels and Carbon Monoxide Levels. Entry will not be permitted if explosive gas is detected above one-half the Lower Explosive Limit (LEL).

7. To prevent injuries to others, all openings to Confined Spaces will be protected by a barricade when covers are removed.

**Training:**

Training for Confined Space Entry includes:

1. Duties of Entry Supervisor, Entrant and Attendants

2. Confined Space Entry permits

3. Hazards of Confined Spaces

4. Use of Air Monitoring Equipment

5. First Aid and CPR Training
6. Respirator Protection Program

7. Emergency Response & Rescue Procedures

8. Confined Space Entry & Rescue Equipment
9. Rescue training, including entry and removal from representative spaces

## 13.13. HAZARDOUS ENERGY CONTROL PLAN (LOCK OUT/TAG OUT)

# Ludlow Construction Company, Inc.

# HAZARDOUS ENERGY CONTROL PLAN
# LOCK OUT/TAG OUT

## I. OBJECTIVE

This Excavation Safety Program has been developed to protect employees from safety hazards that may be encountered during work in trenches and excavations. This program is intended to assure that:

A. Employees who perform work in excavations are aware of their responsibilities and know how to perform the work safely.
B. Ludlow Construction has appointed one or more individuals within the company to assure compliance with the requirements of this program.
C. The responsibilities of SSHO and workers are clearly detailed.
D. All persons involved in excavation and trenching work have received appropriate training in the safe work practices that must be followed when performing this type of work.

## ASSIGNMENT OF RESPONSIBILITY

### E. Employer

In administering the Excavation Safety Program, Ludlow Construction will:

- Monitor the overall effectiveness of the program.
- Provide atmospheric testing and equipment selection as needed.
- Provide personal protective equipment as needed.
- Provide protective systems as needed.
- Provide training to affected employees and supervisors.
- Provide technical assistance as needed.
- Preview and update the program on at least an annual basis, or as needed.

### F. Program Manager

The SSHO acts as the competent person for Ludlow Construction in reference to this program, and must assure that:

- The procedures described in this program are followed.
- Employees entering excavations or trenches are properly trained and equipped to perform their duties safely.
- All required inspections, tests, and recordkeeping functions have been performed.

### G. Employees

All employees, including subcontractor personnel, who work in or around excavations must comply with the requirements of this program. Employees are responsible for reporting hazardous practices or situations to Ludlow Construction's management, as well as reporting incidents that cause injury to themselves or other employees to the SSHO.

## TRAINING

### H. Training Schedule

All personnel involved in trenching or excavation work shall be trained in the requirements of this program by the SSHO with assistance from the Project Superintendent.

Training shall be performed before employees are assigned duties in excavations.

Retraining will be performed when work site inspections indicate that an employee does not have the necessary knowledge or skills to safely work in or around excavations, or when changes to this program are made.

Training records will be maintained by the SSHO, and shall include:

a. date of the training program;
b. name(s) of the instructor(s) who conducted the training;
c. a copy of the written material presented; and
d. name(s) of the employee(s) who received the training.

**I. Training Components**

The training provided to all personnel who perform work in excavations shall include:

- The work practices that must be followed during excavating or working in excavations.
- The use of personal protective equipment that will typically be required during work in excavations, including but not limited to safety shoes, hardhats, and fall protection devices.
- Procedures to be followed if a hazardous atmosphere exists or could reasonably be expected to develop during work in an excavation.
- The OSHA Excavation Standard, 29 CFR 1926, Subpart P.
- Emergency and non-entry rescue methods, and the procedure for calling rescue services.
- Ludlow Construction's policy on reporting incidents that cause injury to employees.

**J. Training and Duties of Program Manager**

The Program Manager, SSHO, shall receive the training detailed in this program as well as training on the requirements detailed in the OSHA Excavation Standard and EM 385-1-1. The Program Manager shall:

- Coordinate, actively participate in, and document the training of all employees affected by this program.
- Ensure on a daily basis, or more often as detailed in this program, that worksite conditions are safe for employees to work in excavations.
- Determine the means of protection that will be used for each excavation project.
- Ensure, if required, that the design of a protective system has been completed and approved by a registered professional engineer before work begins in an excavation.
- Make available a copy of this program and the OSHA Excavation Standard to any employee who requests it.

**EXCAVATION REQUIREMENTS**

**K. Utilities and Pre-Work Site Inspection**

Prior to excavation, the site shall be thoroughly inspected by the SSHO to determine if special safety measures must be taken.

**L. Surface Encumbrances**

All equipment, materials, supplies, permanent installations (i.e., buildings or roadways), trees, brush, boulders, and other objects at the surface that could present a hazard to employees working in the excavation shall be removed or supported as necessary to protect employees.

**M. Underground Installations**

The location of sewer, telephone, fuel, electric, water, or any other underground installations or wires that may be encountered during excavation work shall be determined and marked prior to opening an excavation. Arrangements shall be made as necessary by the SSHO with the appropriate utility entity for the protection, removal, shutdown, or relocation of underground installations.

If it is not possible to establish the exact location of these installations, the work may proceed with caution if detection equipment or other safe and acceptable means are used to locate the utility.

Excavation shall be done in a manner that does not endanger the underground installations or the employees engaged in the work. Utilities left in place shall be protected by barricades, shoring, suspension, or other means as necessary to protect employees.

**N. Protection of the Public**

Barricades, walkways, lighting, and posting shall be provided as necessary for the protection of the public prior to the start of excavation operations.

Guardrails, fences, or barricades shall be provided on excavations adjacent to walkways, driveways, and other pedestrian or vehicle thoroughfares. Warning lights or other illumination shall be maintained as necessary for the safety of the public and employees from sunset to sunrise.

Wells, holes, pits, shafts, and all similar hazardous excavations shall be effectively barricaded or covered and posted as necessary to prevent unauthorized access. All temporary excavations of this type shall be backfilled as soon as possible.

Walkways or bridges protected by standard guardrails shall be provided where employees and the general public are permitted to cross over excavations. Where workers in the excavation may pass under these walkways or bridges, a standard guardrail and toe board shall be used to prevent the hazard of falling objects. Information on the requirements for guardrails and toe boards may be obtained from requirements set forth in the OSHA 1926 and EM385-1-1 25.B

**O. Protection of Employees**

Stairs, ladders, or ramps shall be provided at excavation sites where employees are required to enter trench excavations over four (4) feet deep. The maximum distance of lateral travel (along the length of the trench) necessary to reach the means of egress shall not exceed 25 feet.

Ladders

a. When portable ladders are used, the ladder side rails shall extend a minimum of three (3) feet above the upper surface of the excavation.

b. Ladders shall have nonconductive side rails if work will be performed near exposed energized equipment or systems.

c. Two or more ladders, or a double-cleated ladder, will be provided where 25 or more employees will be conducting work in an excavation where ladders serve as the primary means of egress, or where ladders serve two-way traffic.

d. Ladders will be inspected prior to use for signs of damage or defects. Damaged ladders will be removed from service and marked with "Do Not Use" until repaired.

e. Ladders shall be used only on stable and level surfaces unless secured. Ladders placed in any location where they can be displaced by workplace activities or traffic shall be secured, or barricades shall be used to keep these activities away from the ladders.

f. Non self-supporting ladders shall be positioned so that the foot of the ladder is one-quarter of the working length away from the support.

g. Employees are not permitted to carry any object or load while on a ladder that could cause them to lose their balance and fall.

**P. Exposure to Vehicular Traffic**

Employees exposed to vehicular traffic shall be provided with, and shall wear high visibility safety vests or other suitable garments marked with or made of reflectorized or high-visibility material. Warning vests worn by flagmen shall be reflectorized material if worn during night work. Emergency lighting, such as spotlights or portable lights, shall be provided as needed to perform work safely.

**Q. Exposure to Falling Loads**

No employee is permitted underneath loads being handled by lifting or digging equipment. Employees are required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles provide adequate protection for the operator during loading and unloading operations.

**R. Warning System for Mobile Equipment**

A warning system shall be used when mobile equipment is operated adjacent to the edge of an excavation if the operator does not have a clear and direct view of the edge of the excavation. The warning system shall consist of barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

**S. Hazardous Atmospheres**

The SSHO will test the atmosphere in excavations over four (4) feet deep if a hazardous atmosphere exists or could reasonably be expected to exist. A hazardous atmosphere could be expected, for example, in excavations in landfill areas, areas where hazardous substances are stored nearby, or near areas containing gas pipelines.

Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or forced ventilation of the workspace.

Forced ventilation or other effective means shall be used to prevent employee exposure to an atmosphere containing a flammable gas in excess of ten (10) percent of the lower flammability limit of the gas.

When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, continuous air monitoring will be performed by the onsite documented competent person. The device used for atmospheric monitoring shall be equipped with an audible and visual alarm.

Atmospheric testing will be performed using a properly calibrated direct reading gas monitor. Direct reading gas detector tubes or other acceptable means may also be used to test potentially toxic atmospheres.

Each atmospheric testing instrument shall be calibrated on a schedule and in the manner recommended by the manufacturer. In addition:

a. Any atmospheric testing instrument that has not been used within 30 days shall be recalibrated prior to use.
b. Each atmospheric testing instrument shall be calibrated at least every six (6) months.

Each atmospheric testing instrument will be field checked immediately prior to use to ensure that it is operating properly.

**T. Personal Protective Equipment**

All employees working in trenches or excavations shall wear approved hardhats and steel-toed shoes or boots.

Employees exposed to flying fragments, dust or other materials produced by drilling, sawing, sanding, grinding, and similar operations shall wear approved safety glasses with side shields or face shield.

Employees performing welding, cutting, or brazing operations, or are exposed to the hazards produced by these tasks, shall wear approved spectacles or a welding face shield or helmet, as determined by OSHA 1926 and EM 385-1-1 requirements.

Employees entering bell-bottom pier holes or other similar deep and confined footing excavations shall wear a harness with a lifeline securely attached to it. The lifeline shall be separate from any line used to handle materials and shall be individually attended at all times while the employee wearing the lifeline is in the excavation.

Employees shall wear, as determined by the SSHO, approved gloves or other suitable hand protection.

Employees using or working in the immediate vicinity of hammer drills, masonry saws, jackhammers, or similar high-noise producing equipment shall wear suitable hearing protection, as determined by the SSHO.

Each employee working at the edge of an excavation six (6) feet or more deep shall be protected from falling. Fall protection shall include guardrail systems, fences, barricades, covers, or a tie-back system meeting OSHA and EM 385-1-1 requirements, as determined by the SSHO.

Emergency rescue equipment, such as breathing apparatus, a safety harness and line, and a basket stretcher, shall be readily available where hazardous atmospheric conditions exist or may develop during work in an excavation. This equipment shall be attended when in use. Only personnel who have received approved training and have appropriate equipment shall attempt retrieval that would require entry into a hazardous atmosphere. If entry into a known

hazardous atmosphere must be performed, then the SSHO shall be given advance notice so that the hazards can be evaluated and rescue personnel placed on standby if necessary.

**U. Walkways and Guardrails**

Walkways shall be provided where employees or equipment are permitted to cross over excavations. Guardrails shall be provided where walkways, accessible only to on-site project personnel, are six (6) feet or more above lower levels.

**V. Protection from Water Accumulation Hazards**

Employees are not permitted to work in excavations that contain or are accumulating water unless precautions have been taken to protect them from the hazards posed by water accumulation. Precautions may include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of safety harnesses and lifelines.

If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operation shall be monitored by a person trained in the use of that equipment.

If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation. Precautions shall also be taken to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains shall be reinspected by the SSHO after each rain incident to determine if additional precautions, such as special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of safety harnesses and lifelines, should be used.

The SSHO shall inform affected workers of the precautions or procedures that are to be followed if water accumulates or is accumulating in an excavation.

**W. Stability of Adjacent Structures**

The SSHO will determine if the excavation work could affect the stability of adjoining buildings, walls, sidewalks, or other structures.

Support systems (such as shoring, bracing, or underpinning) shall be used to assure the stability of structures and the protection of employees where excavation operations could affect the stability of adjoining buildings, walls, or other structures.

Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted, except when:

a. a support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure;
b. the excavation is in stable rock;
c. a registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be unaffected by the excavation activity; or
d. a registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

Sidewalks, pavements, and appurtenant structures shall not be undermined unless a support system or other method of protection is provided to protect employees from the possible collapse of such structures.

Where review or approval of a support system by a registered professional engineer is required, the SSHO__ shall secure this review and approval in writing before the work begins.

### X. Protection from Falling Objects and Loose Rocks or Soil

Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of:

- scaling to remove loose material;
- installation of protective barricades, such as wire mesh or timber, at appropriate intervals on the face of the slope to stop and contain falling material; or
- benching sufficient to contain falling material.

Excavation personnel shall not be permitted to work above one another where the danger of falling rock or earth exists.

Employees shall be protected from excavated materials, equipment, or other materials that could pose a hazard by falling or rolling into excavations.

Protection shall be provided by keeping such materials or equipment at least two (2) feet from the edge of excavations, by use of restraining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.

Materials and equipment may, as determined by the SSHO, need to be stored further than two (2) feet from the edge of the excavation if a hazardous loading condition is created on the face of the excavation.

Materials piled, grouped, or stacked near the edge of an excavation must be stable and self-supporting.

### Y. Inspection by Program Manager

The SSHO, shall conduct daily inspections of excavations, adjacent areas, and protective systems for evidence of a situation that could result in possible cave-ins, failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the SSHO prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard-increasing occurrence. These inspections are only required when the trench will be or is occupied by employees.

Where the SSHO finds evidence of a situation that could result in a possible cave-in, failure of protective systems, hazardous atmosphere, or other hazardous conditions, exposed employees shall be removed from the hazardous area until precautions have been taken to assure their safety.

The SSHO shall maintain a written log of all inspections conducted. This log shall include the date, work site location, results of the inspection, and a summary of any action taken to correct existing hazards.

**PROTECTIVE SYSTEM REQUIREMENTS**

**Z. Protection of Employees**

Employees in an excavation shall be protected from cave-ins by using either an adequate sloping and benching system or an adequate support or protective system. The only exceptions are:

a) excavations made entirely in stable rock; or
b) excavations less than five (5) feet in depth where examination of the ground by the SSHO provides no indication of a potential cave-in.

Protective systems shall be capable of resisting all loads that could reasonably be expected to be applied to the system.

**AA. Design of Sloping and Benching Systems**

The slope and configuration of sloping and benching systems shall be selected and constructed by the SSHO in accordance with the following options:

Allowable configurations and slopes

a. Excavations shall be sloped at an angle no steeper than one and one-half (1 ½) horizontal to one (1) vertical (34 degrees measured from the horizontal), unless one of the options listed below is used.
b. Slopes shall be properly excavated depending on soil type as shown in 29 CFR 1926, Subpart P, Appendix B and the EM 385-1-1 25.C.

Determination of slopes and configurations using 29 CFR 1926, Subpart P, Appendices A and B, and the EM385 25.C Figure 25-1.

The maximum allowable slopes and allowable configurations for sloping and benching systems shall meet the requirements set forth in these appendices.

Designs using other tabulated data

The design of sloping or benching systems may be selected from, and shall be constructed in accordance with, other tabulated data, such as tables and charts. The tabulated data used must be in written form and include the following:

c. Identification of the factors that affect the selection of a sloping or benching system.

d. Identification of the limits of the use of the data, including the maximum height and angle of the slopes determined to be safe.

e. Other information needed by the user to make correct selection of a protective system.

f. At least one copy of the tabulated data that identifies the registered professional engineer who approved the data shall be maintained at the jobsite during construction of the protective system. After that time, the data may be stored off the jobsite, and shall be maintained by the SSHO.

Design by a registered professional engineer

g. Sloping or benching systems designed in a manner other than those described in the preceding three options shall be approved by a registered professional engineer.

h. Designs shall be in written form and shall include at least the following information:

i. the maximum height and angle of the slopes that were determined to be safe for a particular project; and
ii. the identity of the registered professional engineers who approved the design.
iii. At least one copy of the design shall be maintained at the jobsite while the slope is being constructed. After that time, the design may be stored off the jobsite, and shall be maintained by the SSHO.

BB. Materials and Equipment

Materials and equipment used for protective systems shall be free from damage or defects that might affect their proper function.

Manufactured materials and equipment used for protective systems shall be used and maintained in accordance with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.

When materials or equipment used for protective systems are damaged, the SSHO shall ensure that these systems are examined by a competent person to evaluate suitability for continued use. If the competent person cannot assure that the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment shall be removed from service. The material or equipment shall then be evaluated and approved by a registered professional engineer before being returned to service.

CC. Installation and Removal of Supports

General

a. Members of support systems shall be securely connected together to prevent sliding, falling, kick outs, or other potential hazards.

b. Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support systems.

c. Individual members of the support systems shall not be subjected to loads exceeding those that they were designed to support.

d. Before temporary removal of individual support members begins, additional precautions shall be taken as directed by the SSHO to ensure the safety of employees (i.e., the installation of other structural members to carry the loads imposed on the support system).

e. Removal of support systems shall begin at, and progress from, the bottom of the excavation. Members shall be released slowly. If there is any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation, the work shall be halted until it can be examined by the SSHO.

f. Backfilling shall progress in conjunction with the removal of support systems from excavations.

Additional Requirements

g. Excavation of material to a level no greater than two (2) feet below the bottom of the members of a support system is allowed, but only if the system is designed to resist the forces calculated for the full depth of the trench. There shall be no indications of a possible loss of soil from behind or below the bottom of the support system while the trench is open.

h. Installation of a support system shall be closely coordinated with the excavation of trenches.

**DD. Sloping and Benching Systems**

Employees are not permitted to work above other employees in the faces of sloped or benched systems, except when employees at lower levels are protected from the hazards of falling, rolling, or sliding material or equipment.

**ACCIDENT INVESTIGATIONS**

All incidents that result in injury to workers, as well as near misses, regardless of their nature, shall be reported and investigated. Investigations shall be conducted by ***Forrest Brown (SSHO)*** as soon after an incident as possible to identify the cause and means of prevention to eliminate the risk of reoccurrence.

In the event of such an incident, the Excavation Safety Program shall be reevaluated by ***Forrest Brown (SSHO)*** to determine if additional practices, procedures, or training are necessary to prevent similar future incidents.

**CHANGES TO PROGRAM**

Any changes to the Excavation Safety Program shall be approved by the SSHO, and shall be reviewed by the Contracting Officer or representative as the job progresses to determine additional practices, procedures, or training needs necessary to prevent injuries. Affected employees shall be notified of procedure changes, and trained if necessary. A copy of this program shall be maintained at the jobsite by the SSHO.

**GLOSSARY**

**Accepted engineering practices**: the standards of practice required by a registered professional engineer.

**Aluminum hydraulic shoring**: a manufactured shoring system consisting of aluminum hydraulic cylinders (cross braces) used with vertical rails (uprights) or horizontal rails (wales). This system is designed to support the sidewalls of an excavation and prevent cave-ins.

**Bell-bottom pier hole**: a type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a bell shape.

**Benching system**: a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or more horizontal steps, usually with vertical or near-vertical surfaces between levels.

**Cave-in**: the movement of soil or rock into an excavation, or the loss of soil from under a trench shield or support system, in amounts large enough to trap, bury, or injure and immobilize a person.

**Competent person**: a person who has been trained to identify hazards in the workplace, or working conditions that are unsafe for employees, and who has the authority to have these hazards corrected.

**Cross braces**: the horizontal members of a shoring system installed from side to side of the excavation. The cross braces bear against either uprights or wales.

**Excavation**: any man-made cut, cavity, trench, or depression in an earth surface formed by earth removal.

**Faces or sides**: the vertical or inclined earth surfaces formed as a result of excavation work.

**Failure**: the movement or damage of a structural member or connection that makes it unable to support loads.

**Hazardous atmosphere**: an atmosphere that is explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, that may cause death, illness, or injury.

**Kick out**: the accidental movement or failure of a cross brace.

**Program Manager**: the individual within the company who oversees excavation work and is responsible for assuring compliance with this program.

**Protective system**: a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

**Ramp**: an inclined walking or working surface that is used to gain access to one point from another. A ramp may be constructed from earth or from structural materials such as steel or wood.

**Sheeting**: the members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

**Shoring system**: a structure that is built or put in place to support the sides of an excavation to prevent cave-ins.

**Sides**: see **faces**.

**Sloping system**: sloping the sides of an excavation away from the excavation to protect employees from cave-ins. The required slope will vary with soil type, weather, and surface or near surface loads that may affect the soil in the area of the trench (such as adjacent buildings, vehicles near the edge of the trench, etc.).

**Stable rock**: natural solid mineral material that can be excavated with vertical sides that will remain intact while exposed.

**Structural ramp**: a ramp built of steel or wood, usually used for vehicle access. Ramps made of soil or rock are not considered structural ramps.

**Support system**: a structure used as underpinning, bracing or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

**Tabulated data**: tables and charts approved by a registered professional engineer and used to design and construct a protective system.

**Trench**: a narrow excavation (in relation to its height) made below the surface of the ground.

**Trench box or trench shield**: see **shield**.

**Uprights**: the vertical members of a trench shoring system placed in contact with the earth and usually positioned so the individual members do not contact each other. Uprights placed so that individual members are closely spaced, in contact with or interconnected to each other, are often called **sheeting**.

**Wales**: horizontal members of a shoring system placed in the direction of the excavation face whose sides bear against the vertical members of the shoring system or earth (the uprights or sheeting).

## 13.14. HEARING CONSERVATION PLAN

# Ludlow Construction Company, Inc.

# HEARING CONSERVATION PLAN

**Purpose:**

The purpose of this plan is to establish a program and procedures for hearing conservation at Ludlow Construction Company. This program applies to all areas and subcontractors working under CONTRACT NO. W912WJ19C0002 that have operations that produce employee noise exposures equal to or in excess of 85 dBA (decibels, A-weighting), as an 8-hour time-weighted average (TWA).

The Occupational Safety and Health Administration Occupational Noise Exposure Standards 29 CFR 1910.95 (General Industry) and 29 CFR 1926.52 (Construction Industry) call for the development, implementation and maintenance of a hearing conservation program when employee exposure to noise is equal to or exceeds an 8-hour TWA of 85 dBA. The written hearing conservation program will include and address the following categories in order to satisfy the minimum requirements of the applicable Occupational Noise Exposure Standard:

- Noise exposure monitoring (area and/or personal)
- Audiometric testing for employees exposed to noise equal to or in excess of 85 dBA, as an 8-hour TWA
- Hearing protection provided and utilized
- Employee training
- Record keeping

The hearing conservation program will include the following:

- Identification of personnel responsible for the program.
- How noise levels and employee exposures will be measured.
- How audiometric testing will be performed.
- How hearing protection will be selected, provided, replaced and use enforced.
- How training will be performed.
- Procedures to evaluate and update the program.
- How records will be maintained.

**Responsibilities:**
The SSHO (Site Safety and Health Officer, Forrest Brown) is responsible for administering the hearing conservation program.

The SSHO is also responsible for:

- Monitoring noise via sound-level measurements or dosimetry in order to determine employee exposure to noise.
- Making available to employees copies of the applicable Occupational Noise Exposure Standard and posting a copy of the standard in the workplace, such as on the employee bulletin board.
- Administering the audiometric testing program.
- Providing annual training for employees and subcontractor personnel throughout the life of CONTRACT NO. W912WJ19C0002
- Notifying employees and subcontractor personnel of noise monitoring and audiometric testing results.
- Maintaining noise exposure monitoring, audiometric testing and training records.
- Reviewing the effectiveness of the hearing conservation program and making sure that it satisfies the requirements of all applicable federal, state or local hearing conservation requirements.

The SSHO, along with the Project Superintendent (Jonathan Pio) is responsible for the following aspects of the hearing conservation program:

- Enforcing the use of hearing protection by employees required to wear it.
- Ensuring that the hearing protectors are in good condition and are fitted and used correctly.
- Ensuring that hearing protectors provide adequate attenuation (i.e., the noise reduction rating is adequate).
- Enforcing administrative and engineering controls within the facility to reduce employee noise exposure.
- Proper care of hearing protection, including location of supply, and proper use and replacement of hearing protection equipment.

Employees and subcontractor personnel are responsible for the following aspects of the hearing conservation program:

- Wearing hearing protection in work areas requiring it.
- Knowledge and understanding of the consequences associated with not following company policy concerning the proper use of hearing protection.
- Proper care of hearing protection, including proper use, routine care and cleaning, storage, and replacement.

**Determination of Sound Levels:**
To determine employee exposure, noise monitoring will be conducted and repeated whenever there is a change in the work environment, such as changes in production, process, equipment and/or controls.

Noise exposure monitoring will be conducted using the following methods:

- **Area monitoring** - Measuring the noise levels in an area by use of a sound level meter.

- **Personal monitoring** - Measuring an employee's noise exposure by use of a dosimeter. A dosimeter is worn by an employee for a representative time frame in order to evaluate noise levels that the employee is exposed to when doing his or her particular job.

**Hearing Protection:**
Employees and subcontractor personnel included in the hearing conservation program will be provided with hearing protection as follows:

- Hearing protection will be provided at no cost to employees
- Employees will be able to select their hearing protection from a variety of suitable hearing protectors (Note: Personnel must be provided with a choice of at least one type of ear plug and one type of earmuffs at the very minimum)
- Employees and subcontractor personnel will receive training in the use and care of hearing protection
- The use of hearing protection will be required for employee's exposures exceed an 8-hour TWA of 85 dBA

**Training:**
Employees and subcontractor personnel included in the hearing conservation program will receive the following annual training:

- The effects of noise on the human ear and hearing
- The purpose of hearing protection, including the advantages and disadvantages of various types of hearing protection
- The proper selection, fitting, use and care of hearing protection
- The purpose and value of noise exposure monitoring and audiometric testing and a summary of the procedures
- The company's and employees' respective tasks for maintaining noise controls

**Recordkeeping:**
The SSHO will maintain records pertaining to the hearing conservation program in a confidential manner. Any requests for records should be directed to Forrest Brown. The SSHO will keep the following records:

- Noise exposure monitoring results
- Signed verification of training for all onsite personnel
- Warnings issued to employees and subcontractor personnel for not following the hearing conservation program

## 13.15. ASSURED EQUIPMENT GROUNDING CONTROL PROGRAM

# Ludlow Construction Company, Inc.

# ASSURED EQUIPMENT GROUNDING CONTROL PROGRAM

**ASSURED EQUIPMENT GROUNDING CONDUCTOR PROGRAM**
**TIPS AND CONSIDERATIONS**

**Applicability.** This Assured Equipment Grounding Conductor (AEGC) Plan applies to cord sets, receptacles which are not a part of a building or structure, and equipment connected by cord and plug available for use by employees in construction workplaces under the following criteria:

- For construction sites where the employer cannot or chooses not to use GFCIs for 120-volt, single-phase, 15- and 20-ampere receptacle outlets which are not a part of the permanent wiring of the building or structure and which are in use by employees (29 CFR 1926.404(b)(1)).

**AEGC Program requirements.** If an AEGC Program is used in place of GFCIs for ground-fault protection, the following minimum requirements apply:

- Keep a written description of the program at the jobsite that includes specific procedures for the required equipment inspections, tests, and test schedule, and make them available to regulatory officials and to affected persons on demand.
- Designate one or more competent persons (i.e., someone who is qualified to identify hazards and authorized to take prompt corrective measures) to implement the program.
- Visually inspect all cord sets, attachment caps, plugs and receptacles, and any equipment connected by cord and plug before use each day.
- Remove equipment from service that shows signs of any external damage until repaired, such as deformed or missing pins, damaged insulation, or if internal damage is discovered.
- Perform a continuity test and a terminal connection test on all electrical equipment.
- Perform any additional tests or procedures for equipment grounding conductors that may be needed.

Tests are required:

- Before first use
- After any repairs and before placing back in service
- After suspected damage and before returning to use
- Every months

**Industry consensus standards.** The National Fire Protection Association (NFPA) has adopted two consensus standards that contain detailed procedures to protect employees from electrical hazards. These standards may be purchased and relevant content can be incorporated into your AEGC Plan:

- National FPA 241, *Standard for Safeguarding Construction, Alteration, and Demolition Operations*
- NFPA 70: *National Electric Code*
- NESC: *National Electric Safety Code*
- NSC: *National Electric Code*

**Training.** According to the federal rule for safety training and education applicable to all construction operations (29 CFR 1926.21), Ludlow Construction Company “shall instruct each employee or subcontractor personnel in the recognition and avoidance of unsafe conditions and the regulations applicable to his work environment to control or eliminate any hazards or other exposure to illness or injury.” This rule applies to employees and subcontractors who use temporary power supplies and receptacles for portable power tools or other purposes.

**Documentation.** Ludlow Construction Company will maintain a written record of the required tests, identifying all equipment that passed the test and the last date it was tested (or the testing interval). As with the program

description, all records must be made available to OSHA as well as USACE inspectors and affected persons on demand.

**LUDLOW CONSTRUCTION COMPANY**
**ASSURED EQUIPMENT GROUNDING CONDUCTOR PLAN**

Plan last updated: April 30, 2019

**Scope**
This Assured Equipment Grounding Conductor (AEGC) Plan covers all work areas where electrical outlets are not equipped with ground-fault circuit interrupters (GFCIs) and where any employee or subcontractor personnel is exposed to potential electrical hazards from cord sets, receptacles not part of permanent wiring, and equipment connected by cord or plug.

**Option 2**
This Plan is in compliance with federal rules for wiring design and protection at construction sites (29 CFR 1926.404(b)(1)).

**Policy**
**Ludlow Constriction Company** will ensure the safety of its employees and subcontractor personnel from potential electrical hazards caused by cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and equipment connected by cord and plug which are available for use or used by employees and not equipped with GFCIs.

## 13.16. ACCESS AND HAUL ROAD PLAN

# Ludlow Construction Company, Inc.

# ACCESS AND HAUL ROAD PLAN

Hauling requirement for Contract No. W912WJ19C0002 will occur on public roadways and haul road. Work on the haul road will not begin till acceptance of the APP, therefore the Access and Haul Road Plan. Maps for hauling are at the end of this plan.

Access to the site laydown and storage areas along with the road for the Tank Access Driveway STA. 10+00 TO STA. 17+20 will be made with crushed stone. A construction entrance will be located at each entry/exit point of the project laydown and tank access sites so that track out is prevented. The following information is provided as part of the Access/Haul Road Plan.

a. Equipment usage, traffic density, and hours of operation;
Heavy construction equipment will not be used outside of the project site unless the equipment has rubber tires. The heaviest times of traffic density will be in the mornings and at the end of each day. Employees will be made aware of traffic patterns so the potential for accidents is greatly reduced. Hours of operation for the project site will be 0600-1800 Monday-Friday and night operations with a schedule to be determined.
b. Road layout and widths, horizontal and vertical curve data, and sight distances; all equipment hauling and material hauling will occur on public roadways that conform to state transportation guidelines for widths, curve data, and sight distances.
c. Sign and signalperson requirements, road markings, and traffic control devices; all equipment hauling and material hauling will occur on public roadways that conform to state transportation guidelines on signals, road markings and traffic control devices.
d. Drainage controls; all equipment hauling and material hauling will occur on public roadways that conform to state transportation guidelines on storm drainage. The project laydown and tank access sites will be constructed to shed water away from the staging and work areas.

e. Points of contact between vehicles and the public, and safety controls at these points of contact; Points of contract between vehicles and the public will be most common at Route 1 from Rt 17-Rt1 47-Rt 157 – Commerce Circle; Route 2 from Rt 17-Rt 68-Rt 157 – Commerce Circle and Route 24 Woodbury Rd, Deep River Rt 80 – Rt 79 – RT 68 – Rt 157 – Commerce Circle Durham, CT. Employees will take great care while accessing these roadways from the project site so that the possibility for vehicular accidents is greatly diminished.

f. Maintenance requirements, including roadway hardness and smoothness and dust control; all equipment hauling and material hauling will occur on public roadways that conform to state transportation guidelines for hardness, smoothness, and dust control (watering down haul roads as needed).

g. Hazards adjacent to the road, such as bodies of water, steep embankments, etc. all equipment hauling and material hauling will occur on public roadways that conform to state transportation guidelines for roadway hazards. It is assumed that guardrails are installed as required by DOT guidelines.

The following items are Best Management Practices regarding access roads for the project site:

SSHO (Forrest Brown) shall ensure that no employer shall move, or cause to be moved, any equipment or vehicle upon an access or haul road unless the roadway is constructed and maintained to safely accommodate the movement of the equipment or vehicle involved.

SSHO shall ensure that when road levels are above working levels, berms, barricades, or curbs shall be constructed to prevent vehicles overrunning the edge or end of embankment. Berms/curbs shall be constructed to one-half the diameter of the tires of the largest piece of equipment using the roadway.

SSHO shall ensure that roadways shall have a crown and ditches for drainage. Water shall be intercepted before reaching a switch back or large fill and be led off.

Haul roads shall be constructed to widths suitable for safe operation of the equipment at the travel speeds proposed by the Contractor and accepted by the TBD7 Representative.

All roads, including haul roads, shall be posted with maximum speed limits that are approved by the TBD7 Representative.

An adequate number of turn-outs shall be provided on single lane roads with two-way traffic. When turn-outs are not practical, the Contractor shall provide a traffic control system to prevent accidents.

Use a right-hand traffic pattern on two-way haul roads.

Curves.

a. All curves shall have open sight lines and as great a radius as practical.

b. Vehicle speed shall be limited on curves so that vehicles can be stopped within one-half the visible distance of the roadway.

c. The design of horizontal curves shall consider vehicle speed, roadway width and surfacing, and super elevation.

Grades.

a. When necessary, based on grade and machine and load weight, machines shall be equipped with retarders to assist in controlling downgrade descent.

b. Truck haul roads should be kept to less than a 10% grade. There should be no more than 400 ft. (121.9 m) of grade exceeding 10%.
c. The maximum allowable grade shall not exceed 12%.

Lighting shall be provided as necessary.

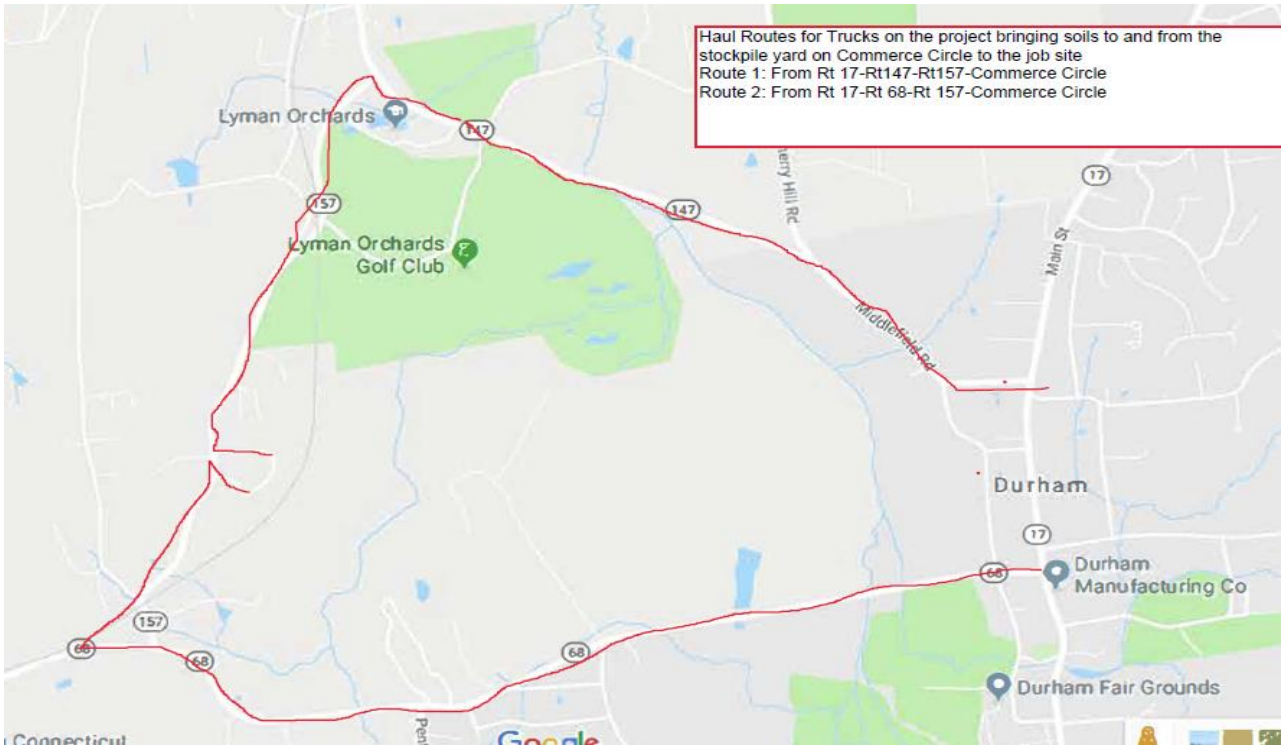
Traffic control lights, barricades, road markings, signs, and signalpersons for the safe movement of traffic shall be provided in accordance with the CT DOT Federal Highway Administration's "Manual on Uniform Traffic Control Devices" and this Section.

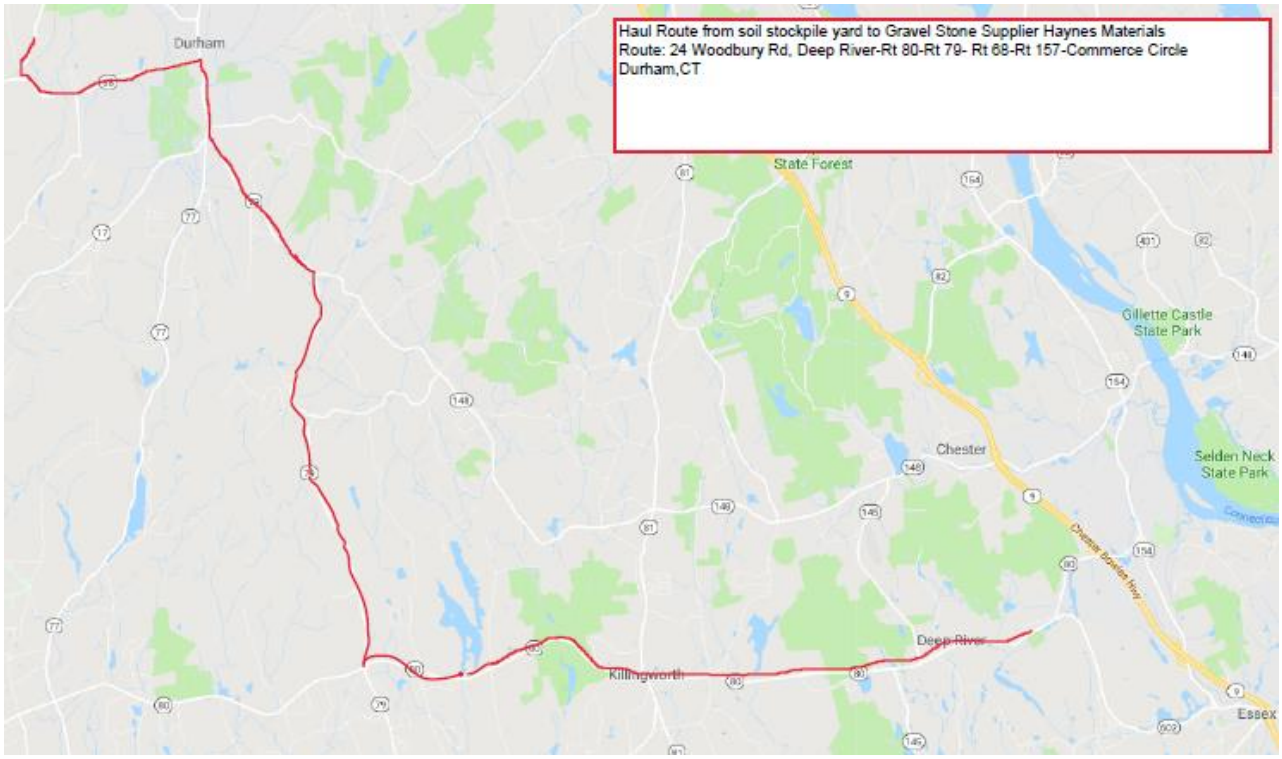
Roadway hardness, smoothness, and dust control shall be used to maintain the safety of the roadway.

All roads shall be maintained in a safe condition and eliminate or control dust, ice, and similar hazards.

The deposition of mud and or other debris on public roads shall be minimized to the extent possible and in accordance with local requirements.

Hauling off-road will only take plan within erosion control zones and abide by construction site speed limits.




Haul Route from soil stockpile yard to Gravel Stone Supplier Haynes Materials
Route: 24 Woodbury Rd, Deep River-Rt 80-Rt 79- Rt 68-Rt 157-Commerce Circle
Durham,CT
Durham
State Forest
Gillette Castle
State Park
Chester
Selden Neck
State Park
Deep River
Killingworth
Essex

## 13.17. TREE FELLING AND MAINTENANCE PROGRAM

# Ludlow Construction Company, Inc.

# TREE FELLING/MAINTENANCE PROGRAM

Tree felling and maintenance operations for Contract No. W912WJ19C00002 will be conducted by Ludlow Construction's subcontractor Northern Tree Service Inc. Northern Tree Service intends to use 75 foot aerial lift and log trucks for individual tree removals. In the areas of clearing Norther Tree Service will be using mechanized equipment: Feller Buncher, Forwarder and Peterson 30'' Chipper. No surrounding trees will be damaged.

- Feller Buncher
- Forwarder and Peterson 30 inch Chipper
- 75 foot aerial lift
- Log trucks

The following steps will be taken by Northern Tree Service under the supervision of the project SSHO (Forrest Brown):

1. Prior to felling any trees the following items will be addressed and discussed by Northern with the SSHO
    a) Tree size (e.g., able to fit in landing zone);
    b) Selected direction of fall;
    c) Felling path obstacles to avoid or clear;
    d) Vines or interlocking limbs;
    e) Species and shape of tree;
    f) Lean of tree;
    g) Loose limbs, hangars, broken tops, chunks, or other overhead material;
    h) Wind force and direction;
    i) Decay, cavities, or weak spot throughout the tree;
    j) Location of any electrical conductors or other wires;
    k) Tree cables, bracing, lighting protection, or other tree hardware;
    l) Size and terrain characteristics or limitations of work area;
    m) Potential for fling debris from tree impact;
    n) Adequate retreat path;
    o) Evidence of bees or wildlife habitation in trees;
    p) Poisonous plants, water hazards;
    q) Ability to control access to work site;
    r) Authority to remove tree;
    s) Quality of wood fibers in hinge area;
    t) Root mass stability;
    u) Ice or snow load;
    v) Throw-back or bounce-back potential;
    w) Potential for spring poles;
    x) Lodged trees or dead snags in area;
    y) Access to tools or resources required for task;
    z) Lighting damage;
    aa) Barber chair potential;
    bb) Foreign objects, nails, wire fence, concrete, etc. in the tree.

2. The work area shall be cleared to permit safe working conditions and an escape route shall be planned.
3. Felling paths shall be at least twice the distance as the height of the tree. Where this distance cannot be maintained, limbing may be required.
4. All workers not directly involved shall be kept clear of the operations.

5. Operator shall be sure of his/her footing prior to cutting and shall remove any objects or debris that may impede or hinder the operation of their equipment.
6. A notch and back cut shall be used in felling trees of 5 in (12.7 cm) in diameter (measured at breast height). No tree shall be felled by “slicing” or “ripping” cuts.
    a) The two cuts that form the notch shall meet at a pint called the apex, and shall hot cross that point or goes beyond the point where they meet.
    b) The notch cut used shall be a conventional notch, and open-face notch, or a Humboldt notch.
    c) Notches shall be 45 degrees or greater and large enough to guide the fall of the tree or trunk.
    d) Notch depth should not exceed one-third the diameter of the tree. The hinge width should be 80% of the tree’s diameter, as measured at the hinge.
    e) Saw cuts made to form the notch and back cut shall leave suitable amounts of hinge wood to adequately control the direction fall of the tree.
    f) With a conventional notch or Humboldt notch, the back cut shall be 1 to 2 inches (2.5 to 5 cm) above the apex of the notch to provide an adequate platform to prevent kickback of the tree of trunk. With an open-face notch (greater than 70 degrees), the back cut should be at the same level as the apex of the notch.

7. If sections of the tree are to be removed, sections shall be limited in lengths to one-third of the distance to the nearest structure. *Note: The discretion of the chainsaw operator must be used. In some instances it may be safer to fell a large trunk away from the structure rather than to remove it in small sections, especially where the tree has grown very close to the house or structure. If this is done, a tag line shall be used to help guide the direction of the fall along with the use of proper notch and back cut.*
8. The chainsaw operator shall work from the uphill side whenever possible. Tag lines may be used to help guide the direction of the fall provided the workers on the tag line are well clear of the fall path, such as twice the distance of the fall area.
9. Just before the tree or limb is ready to fall, an audible warning shall be given to all those in the area. All persons shall be safely out of range when the tree falls.
10. If there is danger that the trees being felled may fall in the wrong direction or damage property, wedges, block and tackle, rope, or wire cable (except when an electrical hazard exists) shall be used. All limbs shall be removed from trees to a height and width sufficient to allow the tree to fall clear of any wires and other objects in the vicinity.
11. Special precautions shall be taken when roping rotten or spit trees due to the potential for falling in an unexpected direction even though the cut is made on the proper side.
12. Persons shall be kept back from the butt of a tree that is starting to fall.

## 13.18. SITE LAYOUT PLAN

# Ludlow Construction Company, Inc.

## SITE LAYOUT PLAN

The following picture shows detail of Ludlow Construction's Site Layout Plan:

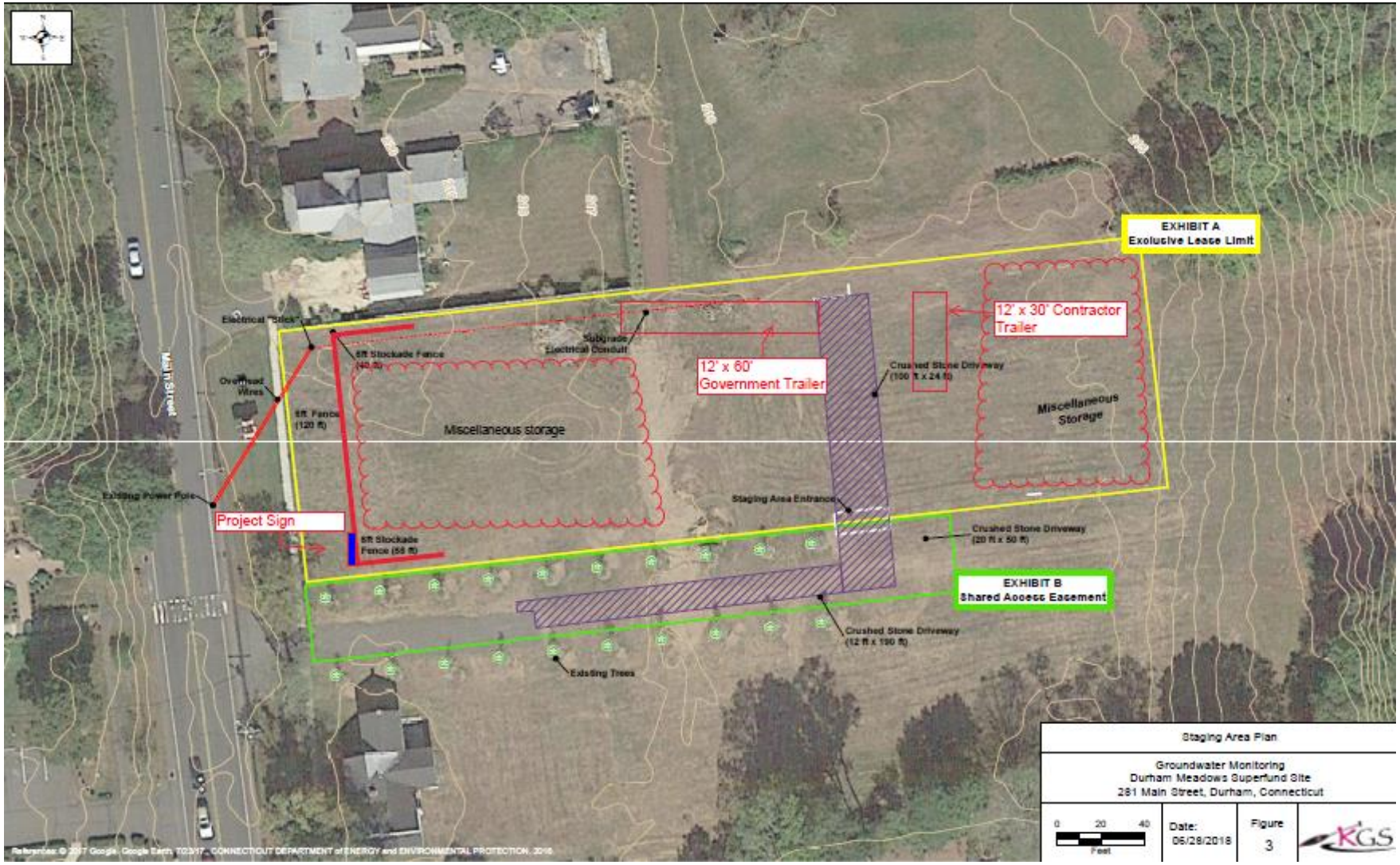


EXHIBIT A
Exclusive Lease Limit
12' x 30' Contractor Trailer
12' x 60' Government Trailer
Miscellaneous storage
Miscellaneous Storage
Project Sign
EXHIBIT B
Shared Access Easement
Staging Area Plan
Groundwater Monitoring
Durham Meadows Superfund Site
281 Main Street, Durham, Connecticut
Date: 06/28/2018
Figure 3

# 14. APPENDIX C ACCIDENT HAZARD ANALYSIS FORM

## 14.1. PDF VERSION OF AHA FORM

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## Activity Hazard Analysis (AHA)

| | |
|---|---|
| Activity/Work Task | |
| AHA Signature Log # | |
| Project Location | |
| Contract Number | |
| Date Prepared | |
| SSHO Signature | |
| Superintendant Signature | |
| QC Manager Signature | |
| Subcontractor Foreman Name: | |
| Signature: | |
| QA Reviewed by (Name/Title) | |
| Notes: (Field Notes, Review Comments, etc) | |

Overall Risk Assessment Code (RAC) (Use highest code )

**Risk Assessment Code (RAC) Matrix**

| Severity | Probability: Frequent | Likely | Occasional | Seldom | Unlikely |
|---|---|---|---|---|---|
| Catastrophic | E | E | H | H | M |
| Critical | E | H | H | M | L |
| Marginal | H | M | M | L | L |
| Negligible | M | L | L | L | L |

**Step 1:** Review each Hazard with identified safety "Controls". Determine RAC (see above).

Probability: Likelihood the activity will cause a Mishap (Near Miss, Incident, or Accident). Identify as Frequent, Likely, Occasional, Seldom or Unlikely

Identify as Catastrophic, Critical, Marginal, or Negligible

**Step 2:** Identify the RAC (probability vs. severity) as E, H, M, or L for each "Hazard" on AHA. Annotate the overall highest RAC at the top of the AHA

**RAC CHART**

- E = Extremely High Risk
- H = High Risk
- M= Moderate Risk
- L = Low Risk

| Job Steps (Work Sequences) | Specific Anticipated Hazards | Controls | RAC |
|---|---|---|---|
| | | | |

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## Activity Hazard Analysis (AHA)

| Job Steps (Work Sequences) | Specific Anticipated Hazards | Controls | RAC |
|---|---|---|---|
| | | | |

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## Activity Hazard Analysis (AHA)

| Equipment to be used | Training Requirements & Competent or Qualified Personnel Name(s) | Inspection Requirements |
|---|---|---|
| | | |
| UFGS 013526 11/15 1.9 Government reserves the right to require the Contractor to revise and resubmit the AHA if it fails to effectively identify the work sequences; specific anticipated hazards, site conditions, equipment, materials, personnel and the control measures to be implemented.<br>UFGS 013526 1.9.1 Review the AHA list periodically (at least monthly) at supervisory safety meetings, update when procedures, scheduling or hazards change.<br>UFGS 013526 1.9.2 Each employee performing work...must review the AHA and sign a signature log for that AHA prior to starting work. The SSHO must maintain a signature log on site for every AHA. | | |