



**BNB**  
BNBuilders

# HEALTH, SAFETY, AND ENVIRONMENTAL MANUAL

*"FREEDOM FROM DANGER" - WA / CA*



## POLICY STATEMENT

The health and safety of our employees and everyone else affected by our activities is fundamental to the success of our business.

At BNBuilders, we believe that our long-term success as a business is dependent upon the ability to keep our workforce, our business partners, our suppliers, our subcontractors and members of the public safe. Our program is not intended to replace DOSH/Cal-OSHA/OSHA requirements but to help assist in creating "Freedom from Danger" on all of our projects.

Every employee in our company plays a critical role in achieving our purpose and vision. Our policy is to create an environment in which no one can get hurt or sick. This is done by providing exemplary positive and inspirational leadership; pursuing every opportunity to eliminate risk by designing in safety; identifying hazards associated with our activities and removing the risk where reasonably practicable, including minimizing health and environmental impacts.

Each member of Management is responsible for the safety, well-being, and safe work conduct of all persons who report to or are assigned to him or her.

The employees of BNBuilders are considered to be our most valuable asset; their health and safety are of vital concern. Recognizing its need and responsibility for the health and safety of our employees, the company considers injury and illness prevention an important and integral part of every operation undertaken.

To carry out the policy, BNBuilders will:

- Maintain safe and healthful working conditions
- Furnish, within reason, the best available mechanical safeguards and personal protective equipment, where they are needed
- Maintain an active and aggressive program, in which all members of management will participate to promote safety awareness among its employees
- Provide adequate medical and first-aid facilities for work-related injuries and illnesses
- Maintain a continuous educational program in safe operating procedures
- Insist that all employees observe the established health and safety regulations, these practices and use the safety equipment provided.

A handwritten signature in blue ink, appearing to read 'B. Bastian'.

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## Revisions

The below changes have been made to the Health, Safety, and Environmental Programs and Policies (Freedom from Danger) from Rev 1.1.2023 to Rev 1.1.2024.

### Concrete & Masonry (Policy Update)

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The new "Emergency Eye Wash Station Policy" has been added under section "6.0 References".

### Cranes (Policy Update)

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This standard applies to BNB projects where cranes are used by BNB or other contactors. For the purpose of this standard, cranes are those with a two thousand pound or greater capacity. Please also reference Material Handling & Rigging.

In all areas of the crane policy referring to lift directors, clarification has been added that this will only be when the state requires the role. Please keep in mind according to the state you are operating in the Lift Directors responsibilities may fall either to the crane operator, or Subcontractor's Lead Rigger.

"3.3.1. Lift Directors, **when required by state regulations** are responsible for:"

"3.4.5.5.1. Issue drawings, plans and specifications to the Lift Director (**as required by state regulations**); and"

"3.4.5.5.2. Review, discuss and revise plans as required with the Lift Director (**as required by state regulations**)."

"5.3.40. When operating in cold weather **and when required by state regulations**, the Lift Director shall verify that cold weather crane ratings are obtained from the manufacturer, posted, and made available when requested. These ratings shall be applied for lifting in cold weather conditions."

### Emergency Eye Wash Station (New Policy)

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This policy applies to all BNB projects that store or use chemicals that are corrosive or strong eye irritants and may cause temporary or permanent eye damage.

### Heat Illness Prevention (Policy Update)

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This procedure applies to the control of risk and occurrence of heat illness and shall apply to all outdoor places of employment at those times when the environmental risk factors, as defined in the "Definitions" section are present.

- Portions of the Heat Illness program have been trimmed down to keep Washington and California Programs aligned.
- **The following sections in RED have been deleted:**
  - From 5.1.4 **When the water level within a container drops below 50%, water containers will be refilled with cool water. To accomplish this task, each trade supervisor will carry 1 to 2 additional water containers (i.e. 5-gallon bottles) to replace water as needed.**
  - From 5.1.6 **(i.e. no more than 50 feet from the workers).**
  - 5.3.2 **When the temperature exceeds 75 OF, the trade supervisors will hold short 'tailgate' meetings to review the weather report, reinforce heat illness prevention with all workers and provide reminders to drink water frequently, to be on the lookout for signs**

and symptoms of heat illness and inform them that shade can be made available upon request.

- 5.4.1. During a heat wave or heat spike (e.g., a sudden increase in daytime temperature of 9 degrees or more), the workday will be cut short (example 12 PM), will be rescheduled (example conducted at night or during cooler hours) or if possible, cease for the day.
- High Heat Procedure trigger temperature have been changed from 95°F to **90°F**
  - 5.3.3 Once the temperature equals or exceeds **90°F**, additional preventive measures such as the High Heat Procedures are to be implemented.
- Under 5.5.4. Cool down periods when needing to provide access to shade have been cleaned up:
  - **Supervisors must ensure employees take at minimum the following cool-down rest periods in the shade:**
  - **10 minutes every two hours at or above 90°F**
  - **15 minutes per hour at or above 100°F**
- Training requirements for supervisors overseeing work in temperatures 80°F plus.
  - **5.9.2. All BNB supervisors must be trained on this policy prior to overseeing work in outdoor temperatures that exceed 80°F.**
- Under 6.0 References **WA L&I 296-62-095** Outdoor heat exposure has been added.

## Material Handling and Rigging (Policy Update)

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This policy applies to material / load handling activities conducted with equipment when using slings, rigging hardware or below-the-hook lifting devices. For additional information, please reference Forklifts and Cranes.

- **"5.1.29.1.5. A maximum of three separate loads may only be rigged per lift." Has been deleted.**
- Multi Lift are required to follow 5.1.29.1.6. that states "A site-specific multiple load lift hoisting plan shall be developed by a qualified person, approved by the Superintendent of the sub-contractor performing the lift and reviewed by BNB Management, prior to hoisting procedures."

## COVID-19 Mission Critical Protocol (Policy Update)

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The Mission Critical Protocol is the BNBuilders policy to meet regulatory requirements related to protecting the safety and health of personnel on projects and in offices during the COVID-19 pandemic.

With this update **Washington requirements have been removed due to a lifting of COVID- 19 requirements.**

## Occupational Health (Policy Update)

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This standard applies to all tasks conducted on BNBuilders projects.

- Under 5.7 Pandemic Disease meeting guidelines have been added when under pandemic conditions.:
  - **5.7.1.8 The BNB Crisis Management Team will meet regularly during a pandemic to evaluate and discuss current and new regulations, control measures, project performance, reporting, and steps needed to improve project and office safety.**

- **5.7.1.9 The BNB Crisis Management Team will meet after a pandemic to review lessons learned and make improvements to the pandemic policy.**

### **Steel Erection (Policy Update)**

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Any BNBuilders project that will erect steel must use this standard as a guideline for ensuring proper control measures are in place to eliminate risk. Steel erection activities include hoisting, connecting, welding, bolting, and rigging structural steel, steel joists and metal buildings; installing metal deck, siding systems, miscellaneous metals, ornamental iron and similar materials; and moving from point-to-point to perform these activities. Please also reference Material Handling and Rigging

Material Handling and Rigging has been added as reference under section "**2.0 Scope**" and under section "**6.0 References**."

### **Utility Avoidance (Policy Update)**

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Any scope of work that involves the penetration of the ground or a structure whether by hand or machine or is located in proximity to overhead utilities must be executed in accordance with this standard.

Activities covered by this standard range from saw cutting, jackhammering, coring, trenching, excavating, demolition, boring, drilling, grading, mass excavation, etc.

- Under Sections 3.1.1.4 and 3.2.1, the Utility Avoidance Checklist has been replaced with the Coring and Saw cutting Checklist.
  - "3.1.1.4. ensuring completion and filing of "Dig Permits" and "**Coring and Saw Cutting Checklist**."
  - "3.2.1. Subcontractors are responsible for following the requirements of this program, submitting required submittals to the BNB Project Team, attending pre-dig meetings, and completing "Dig Permits" and "**Coring and Saw Cutting Checklist**."
- Under Section "4.0 Definitions", the Coring and Saw Cutting Definition has been added.
  - "**4.4. Coring and Saw Cutting – Any activity where core drillers or saw cutting equipment is used to drill or cut into concrete/asphalt/walls.**"
- The **Dig Permit Flowchart has been removed.**
- Under "5.2 New Utility Procedures", encasing new utilities in red concrete and using Concrete for duct banks have been changed to best practices.
  - "**5.2.1 It is a BNB Best Practice, if possible, to have all new underground electrical utilities encased in concrete that is dyed red.**"
  - "**5.2.2. Another BNB Best Practice, if possible, is to use concrete instead of CDF for duct banks.**"
- Under Section 5.2.11, Clarification has been added to only require a MOP or JHA.
  - Utilities Permit and **activity plans (MOP or JHA)** must be reviewed on the day that work is to begin with BNB Staff and all workers involved in the utility installation activity.
- Under Section 5.5.2 contacting the utility owner has been changed to "**May**"
  - 5.5.2 Potholing will be performed to locate the utility. The utility **MUST** be found prior to the start of excavation operations. The soil must be excavated in 6" lifts (approximately) by hand to verify that no utilities are present. If utilities are located, then the utilities must be exposed by hand. The proper tools that can be used for handwork are shovels and pry bars (or other tools of this nature), OR vacuum excavation systems. At no time should a pickaxe or other similar tools be used. Before using a vacuum excavation system, **it may be necessary to** contact the utility owner to determine if the utility owner will allow the use of a vacuum system. Not all utility owners allow the use of vacuum systems for locating the utility. Check your local regulations to determine if this is necessary.



- From section 5.5.6 to 5.5.9 potholing and marking requirement distances have been changed to be more consistent.:
  - 5.5.6 Gas and electric lines within **10** feet of your work area will be potholed and marked every **20** feet or less to verify that the line has not changed directions.
  - 5.5.7 Gas and electric lines outside the **20** feet of the work zone will be potholed at least once on each end of the limits of the excavation to verify Underground Service Alert and the utility plans.
  - 5.5.8 Communication Lines- Fiber-optic lines will be potholed every **20** feet at minimum or more frequently within the work area. Telephone/Cable lines will be potholed every **20** feet at minimum or more frequently within the work area. IF there is any damage to a fiber optic line, DO NOT LOOK INTO THE FIBER OPTICS. THE LIGHT WAVES GOING THROUGH THE FIBER OPTICS CAN CAUSE SERIOUS EYE INJURIES.
  - 5.5.9 Other Utilities:
    - 5.5.9.1 Will be potholed every **20** feet at minimum or more frequently.
- Under section 5.5.13.1 direction has been given for superintendents or supervisors to sign Dig Permits.
  - A Dig Permit is required for all operations which penetrate the original ground surface. **Dig permits are required to be reviewed and signed by the BNB superintendent or BNB designated representative.** The Subcontractor foreman of each operation is responsible for ensuring that the Dig Permit, Job Hazard Analysis (JHA) and Pre-Task Plan (PTP) and all necessary drawings are available at the operation and in the cab of the excavator, backhoe, etc. The operator is ultimately responsible and will be held accountable to ensure the operation does not proceed without a valid Dig Permit. The BNB Management will verify that the Dig Permit has been properly completed.
- Under section "5.5.13.3 Unintentional Uncovering of a utility (Known or unknown utility)" notification has been changed from the BNB Project Manager to BNB Superintendent or BNB designated representative.
  - 5.5.13.3.2 All unidentified underground utilities that are discovered during the course of excavation activities shall be marked on the As Built Plans and the **BNB Superintendent or BNB designated representative** shall be IMMEDIATELY notified.

# Subcontractors Requirements

## 1. Introduction

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- 1.1. This document outlines general and specific health, safety and environmental contractual requirements for work on BNBuilders (BNB) projects. Subcontractors are responsible for ensuring their employees are properly trained to carry out the rules and procedures required by this document. Subcontractors and their tiers are required to take action to eliminate unsafe acts of workers and unsafe/unhealthy working conditions.
- 1.2. Where “Subcontractor” is indicated throughout the Attachment G and the complete Freedom From Danger, the intent is to include Service Contractors as well.
- 1.3. Compliance with the following is a contractual obligation of the Subcontractors and their lower tiers working on each project:
  - Federal, State, Local Laws and Regulations
  - BNBuilders’ Health, Safety, and Environmental Manual “Freedom from Danger” (HS&E). The complete manual is available on our website at [www.bnbuilders.com](http://www.bnbuilders.com).
  - Manufacturer’s Recommendations

Conflicts between these requirements shall be resolved by adhering to the most stringent requirement. Failure to comply with contractual obligations may be grounds for termination.

## 2. Execution

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- 2.1. For subcontractors with an EMR over 1.0, additional requirements may be added to their contract.
- 2.2. When a Subcontractor is notified by the BNB Staff of any noncompliance with the provisions of the Contract, the Subcontractor shall IMMEDIATELY correct the unsafe act or condition. If the BNB Staff becomes aware of any condition that poses a serious or imminent danger to the health or safety of the public, owners and their representatives, or the Subcontractor’s personnel, the Subcontractor will be notified verbally followed with written confirmation and shall require immediate implementation of corrective action(s). Should the Subcontractor fail to comply promptly, the BNB Staff may stop all or any part of the work being performed. When, in the opinion of the BNB Staff, satisfactory corrective action has been taken to correct the unsafe act or condition, work may resume.
- 2.3. At no time shall the Subcontractor and their sub-tiers be relieved of the responsibility to be aware of and correct any unsafe actions and/or unsafe conditions. If the Subcontractor fails to take corrective action, the BNB Staff may direct the corrective action to be performed by a third party.

## 3. Related Documents

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- 3.1. The Subcontractor is responsible for knowing and abiding by the appropriate sections of these and any other applicable regulations and/or specifications:
  - 3.1.1. OSHA General Industry Safety and Health Standards (29CFR1910)
  - 3.1.2. OSHA Construction Industry Standards (29CFR1926)
  - 3.1.3. WISHA/DOSH/WAC Washington Administrative Codes, Chapter 296
  - 3.1.4. Cal/OSHA, Title 8, Division 1, Chapter 4, Subchapter 7, General Industry Safety Orders
  - 3.1.5. Cal/OSHA Title 8, Division 1, Chapter 4, Subchapter 4, Construction and Electrical Safety Orders

- 3.1.6. National Emission Standards for Hazardous Air Pollutants (40CFR61)
- 3.1.7. Environmental Protection Agency Final Rule (40CFR761)
- 3.1.8. State Water Resources Control Board (SWRCB) Order No. 2009-0009-DWQ for the General Construction Permit
- 3.1.9. Federal Standard 313A - Safety Data Sheets, Preparation and Submission
- 3.1.10. Record Keeping Guidelines for Occupational Injuries and Illnesses
- 3.1.11. American National Standards Institute (ANSI) A10.33 "Safety and Health Requirements for Multi-Employer Projects"
- 3.1.12. Manual on Uniform Traffic Control Devices (MUTCD), U.S. Department of Transportation, Federal Highway Administration
- 3.1.13. Procedure for conducting Pre-phase Planning, Job/Activity Hazard Analysis (JHA/AHA) and Pre-Task Plan (PTP)
- 3.1.14. (ANSI)/Scaffold Shoring & Forming Institute SC 100-5/2005
- 3.1.15. ASME B30.26-2004
- 3.1.16. ASME standards that are applicable to the equipment or operations.
- 3.1.17. ANSI standards that are applicable to the equipment or operations.
- 3.1.18. ASTM standards that are applicable to the equipment, operations or testing criteria.

## 4. HS&E Submittal Requirements

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- 4.1. Ten (10) working days prior to the start of onsite activities, the Subcontractor shall submit the required HS&E submittals to the BNB Staff. The submittals may be in either hard copy or digital format. As a reference, please see the submittal description outlined below. If the Subcontractor fails to submit the required HS&E submittals or any other required reports within the time specified within these documents. For reviewing purposes, the submittals shall be provided to BNB in the following format/file structure:
  - 4.2. **Accident Prevention Program (APP) WA or Injury and Illness Prevention Program (IIPP) CA**
    - 4.2.1. The Subcontractor's written Accident Prevention Program or Injury and Illness Prevention Program shall meet the requirements set forth in Washington Administrative Code WAC Chapter 296-800-140 or California Code of Regulations (T8CCR) section 320.
  - 4.3. **Site-Specific Health and Safety Program**
    - 4.3.1. Each Subcontractor shall prepare and submit a Site-Specific Health and Safety Program applicable to the project. The cost for preparing and conforming to the site-specific program is included in the subcontractor's price of the work.
  - 4.4. **The Site-Specific Health and Safety Program shall include at a minimum:**
    - 4.4.1. Company Health and Safety Policy Statements which include Principal's Signature(s)
    - 4.4.2. Drug / Alcohol Free Workplace
    - 4.4.3. Injury / Illness/ Near Miss Incident / Utility Strike Reporting Procedures
    - 4.4.4. Emergency Procedures, Rescue, Evacuation, Injury Treatment Procedure, Medical Facilities name, location, and phone number(s)

- 4.4.5. Code of Safe Work Practices (Subcontractors shall also comply with BNB's Code of Safe Work Practices) (CA Requirement)
- 4.4.6. Fire Prevention
- 4.4.7. Hazard Communication Program in accordance with the Globally Harmonized System requirements
- 4.4.8. Hazard Recognition
- 4.4.9. Fall Protection /Prevention Plan and Requirements
- 4.4.10. Housekeeping / Orderliness
- 4.4.11. Electrical Safety
- 4.4.12. Lock-Out / Tag-Out (LOTO) Procedure
- 4.4.13. Ladder / Scaffold Safety
- 4.4.14. Hot Work Procedure
- 4.4.15. Material Handling (Hoisting – Signaling, Rigging--Manual Personnel Lifting - Forklift )
- 4.4.16. Personal Protective Equipment Requirements (PPE)
- 4.4.17. Competent Person and/or Qualified Person Designation Acknowledgement Form
- 4.4.18. Outdoor Heat Exposure Plan must be in compliance with Washington Administrative Code 296-62-095 or with Heat Illness Prevention Program California Code of Regulations, title 8, section 3395 (8 CCR 3395)

**4.5. When applicable, the Site-Specific Health and Safety Program shall also include:**

- 4.5.1. Confined Space Procedures
- 4.5.2. Perimeter Guarding / Floor, Wall, and Roof Openings
- 4.5.3. Mobile Equipment Safety
- 4.5.4. Signs, Barricades, Flagging
- 4.5.5. Rigging /Signaling/ Crane Safety
- 4.5.6. Trenching and Excavation Procedures
- 4.5.7. Hazardous Material Handling
- 4.5.8. Asbestos, Lead, Mold, etc. Abatement Issues
- 4.5.9. Written Respiratory Protection Program
- 4.5.10. Concrete pumping and placement safety procedures
- 4.5.11. Tele-handler safety (forklift, aerial lifts, etc.)
- 4.5.12. Any other procedures specifically applicable to this project
- 4.5.13. Storm Water Pollution Plan Program

**4.6. Safety Data Sheets**

- 4.6.1. The Subcontractor shall submit a current Safety Data Sheet (SDS) for any product that may contain harmful or hazardous materials or chemicals. The SDS shall be legible, not more than three (3) years old, or be accompanied by a letter from the manufacturer stating that the process and content have not changed. SDS's shall be made available to all employers on multi-employer work sites. SDS shall accompany Subcontractor's JHA/AHA where chemicals or hazardous substances may be used.



**4.7. Job/Activity Hazard Analysis**

- 4.7.1. The Subcontractor shall submit a Job/Activity Hazard Analysis (J/AHA) which covers all major work activities to be conducted by the Subcontractor on the project. The J/AHA shall be updated, amended, and re-submitted as necessary to be always current throughout the project. Subcontractors may use their own Job/Activity Hazard Analysis Form if they meet or exceed BNB's J/AHA form (see attachment).
- 4.7.2. As applicable, subcontractors must ensure that the following work activities are included on their J/AHA:
  - 4.7.2.1. Confined space work
  - 4.7.2.2. Work in excavations or trenches
  - 4.7.2.3. Work involving hazardous materials or chemicals
  - 4.7.2.4. Work on or near exposed, energized systems (ex. electrical, fluid, air)
  - 4.7.2.5. Lock Out Tag Out
  - 4.7.2.6. Working in an environment where employees will be exposed to silica dust of 25 µg/m<sup>3</sup> or higher
  - 4.7.2.7. Work at elevated positions with potential fall hazards
  - 4.7.2.8. Scaffolding
  - 4.7.2.9. All work performed in areas accessible by or potentially affecting the general public
  - 4.7.2.10. Work requiring the use of respiratory protection
  - 4.7.2.11. Electrical – low and high voltage
  - 4.7.2.12. Crane work, including rigging and signaling
  - 4.7.2.13. Working around moving equipment/machinery

**4.8. Traffic Control Plan**

- 4.8.1. The Subcontractor shall submit traffic revision plans for all road, right of way, lane and pedestrian walkway closures, detours or deviations from existing roads, lanes and pedestrian walkways. Traffic control plans shall be submitted in a timely manner and in accordance with the local authority having jurisdiction reviewing timelines where required.

**4.9. OSHA 30 Training Certificate**

- 4.9.1. The Subcontractor's Superintendent/Foreman/Leadsperson assigned to the project shall have successfully completed one of the following and shall submit documentation thereof:
  - 4.9.1.1. U.S. Department of Labor sanctioned OSHA 30-Hour Construction Health & Safety Course
  - 4.9.1.2. EM385-1-1 40 Hour course (As applicable)
  - 4.9.1.3. Safety Trained Supervisor Construction (STSC) certification through [www.BCSP.org](http://www.BCSP.org)

**4.10. Competent & Qualified Personnel Documentation**

- 4.10.1. The Subcontractor shall submit a Competent and/or Qualified Person Acknowledgement Form for their "Competent Person" and/or "Qualified Person" for, but not limited to, the following activity categories:
  - 4.10.1.1. Asbestos
  - 4.10.1.2. Cadmium
  - 4.10.1.3. Lead
  - 4.10.1.4. Mold

- 4.10.1.5. Welding and Cutting
- 4.10.1.6. Ionizing Radiation
- 4.10.1.7. Scaffolding / Platforms
- 4.10.1.8. Excavations and Trenching
- 4.10.1.9. Fall Protection / Prevention
- 4.10.1.10. Respiratory Protection
- 4.10.1.11. Concrete, Concrete Forms and Shoring, Precast Concrete and Tilt-Up
- 4.10.1.12. Steel Erection
- 4.10.1.13. Silica Exposure of 25 µg/m<sup>3</sup> or higher
- 4.10.1.14. Rigging
- 4.10.1.15. Cranes and Derricks
- 4.10.1.16. Lock Out / Tag Out (LOTO)
- 4.10.1.17. Confined Space(s)
- 4.10.1.18. Material / Personnel Hoists and Elevators
- 4.10.1.19. Tunnels and Shafts, Caissons, Cofferdams and Compressed Air
- 4.10.1.20. Blasting
- 4.10.1.21. Hazardous Waste Operations and Emergency Response (HAZWOPER)
- 4.10.1.22. Underground Construction
- 4.10.1.23. Demolition
- 4.10.1.24. Traffic Control

**4.11. After the start of onsite activities, the Subcontractor shall submit the following daily:**

4.11.1. Pre-Task Plan (PTP) ([see attachment](#))

A PTP is required to be completed at least once a day prior to starting any work activity. It shall be completed by the Supervisor/Foreman/Leadsman. PTPs must be completed by subcontractors, their sub-tiers at every level, select material delivery involving a labor component such as material movement, select vendor activities and inspection services. Upon completion of the PTP, it MUST be signed by all parties in attendance, posted in or adjacent to the work area and made readily available for the crew and/or BNB staff. Failure to complete an adequately detailed PTP **WILL** result in a stoppage of work. A copy of the PTP MUST be forwarded to the BNB Staff at the conclusion of the workday/shift.

## 5. Site HS&E Training & Meetings

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**5.1. Pre-Construction HS&E Meeting**

- 5.1.1. The BNB Staff may conduct a Pre-Construction HS&E Meeting to cover site-specific and general requirements as well as any items identified on the Project’s Preconstruction Risk Assessment. The BNB Staff will coordinate the Pre-Construction HS&E Meeting with the Subcontractors, Supplier and Vendors. This is a management level meeting, and the Subcontractor is required to attend the meeting. No work, other than mobilization, may occur prior to the completion of the Pre-Construction HS&E Meeting.

**5.2. Project Orientation**

- 5.2.1. Prior to entering any work area on the project, all Subcontractor Employees shall receive a Project Orientation. The orientation may take up to 60 minutes. Subcontractors must

coordinate the on-site arrival of their personnel with the BNB Staff to ensure personnel receive the orientation prior to working on site.

**5.3. Weekly All-Hands HS&E Meetings**

5.3.1. All Subcontractors and their tiers must attend BNB's Weekly All-Hands HS&E Meeting.

**5.4. Weekly Tool-Box Health & Safety Meetings**

5.4.1. The Subcontractor shall conduct its own Weekly Tool-Box Health & Safety Meetings. The Subcontractor shall retain on site and submit meeting minutes and attendance sign-in sheets to the BNB Staff on the date of the meeting.

**5.5. Other Health & Safety Meetings**

5.5.1. BNB Staff may require Subcontractors to attend or have additional health and safety meetings. Additional meetings may be required as a result of special or changed conditions or to address health and safety audits/inspections and notices. Stand-down meetings fall under this category of "other" health & safety meetings.

**5.6. Committee Meeting**

5.6.1. Once per week, based on the size and/or complexity of the project, the site may have a Freedom from Danger Committee Meeting which consists of a job walk and discussion. Each Subcontractor on site is required to have a representative from their company at the meeting.

**6. Incident Reporting Requirements**

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- 6.1. An incident is defined as any work-related injury and/or illness and may also include but not limited to:
- 6.1.1. Utility strike
  - 6.1.2. First aid
  - 6.1.3. Property damage
  - 6.1.4. Near miss
  - 6.1.5. Etc.
- 6.2. The Subcontractor shall follow all Incident Reporting Procedures.
- 6.3. The Subcontractor shall IMMEDIATELY notify the BNB Staff of any incident.
- 6.4. The BNB Staff shall be notified IMMEDIATELY if a Subcontractor employee is:
- 6.4.1. Hospitalized for a work-related injury or illness.
  - 6.4.2. Involved in an occupational injury/illness resulting in days away from work, restricted duty or transfer, or an injury/illness that is OSHA Recordable.
  - 6.4.3. Involved in a work-related fatality.
- 6.5. Within eight (8) hours of any injury / illness or near miss, utility strike, or any harm caused to the Public, the Subcontractor shall provide assistance to the BNB Staff for completing the BNB Incident Report Form ([see attachment](#)).
- 6.6. The Subcontractor shall notify the appropriate OSHA organization within 8 hours of a fatal injury or when one or more employees are hospitalized overnight as a result of one incident requiring its employee(s) to be hospitalized for more than 24 hours. Documentation of whom the Subcontractor contacted and what was discussed shall be provided to the BNB Staff.

## **7. Post Injury-Illness Requirements**

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- 7.1. On-Site Health and Safety is the preferred vendor for non-emergency medical treatment on BNB projects.
- 7.2. If injured/ill worker(s) is/are sent off site for treatment, they must be accompanied by their supervisor or a designee.
- 7.3. Attempts must be made to avoid prescription medications and being placed off of work.
- 7.4. A Work Status Release/Report must be acquired from the treatment provider and a copy given to the BNB Staff within 24 hours.
- 7.5. Injured/ill persons are required to return to work when placed on restricted duty.
- 7.6. After any incident, involved party(ies) will be required to undergo drug and/or alcohol screening and provide results to the BNB Staff.

## **8. Inspection Requirements**

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- 8.1. The subcontractor is required to inspect their work areas and activities daily. Hazards identified must be corrected immediately and reported to BNB Staff as applicable. Inspections are to be documented and available upon request for review by BNB Staff. Subcontractors are responsible for taking prompt action to correct any HS&E hazards that they have created or exposed their personnel to.
- 8.2. If a subcontractor fails to correct known hazards, the disciplinary compliance and requirements will be implemented. Work which is not in compliance with applicable HS&E standards may be stopped until corrective action is implemented. Any HS&E issues that cannot be promptly corrected by the subcontractor shall be IMMEDIATELY brought to the attention of BNB Staff. Subcontractors shall be responsible to reimburse BNB for any fines, management time and attorneys' fees for violations caused by the performance of the Subcontractors work.
- 8.3. Any health or safety issues that cannot be promptly corrected by the Subcontractors shall be IMMEDIATELY brought to the attention of the BNB Staff.

## **9. Mandatory Compliance and Disciplinary Requirements**

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- 9.1. All personnel are required to work safely as a condition of employment, which includes strict compliance with:
  - 9.1.1. Requirements contained within this document.
  - 9.1.2. Requirements issued verbally.
  - 9.1.3. Health, safety and environmental regulations.
  - 9.1.4. Manufacturer requirements.
  - 9.1.5. Safe work practices.
  - 9.1.6. The avoidance of "horseplay".
- 9.2. Exercising reasonable judgment in the safe performance of work duties.
  - 9.2.1. BNB reserves the right to suspend or remove any employee of any Subcontractor or their tier-subcontractors from this project for failure to comply with health, safety and environmental requirements.
  - 9.2.2. Personnel responsible for enforcing the above provisions include the Subcontractor's Supervisor and BNB Staff.



- 9.2.3. Disciplinary actions may include the following and may be documented on the attached [Notice of Safety Violation Form](#):
  - 9.2.3.1. Verbal warnings
  - 9.2.3.2. Written warnings
  - 9.2.3.3. Removal from the Project
- 9.2.4. Any of the aforementioned disciplinary actions may be enforced at any time based upon the seriousness and circumstances of the safety rule violation. Following the issuance of disciplinary action, the Supervisor of the employee shall meet with the employee to discuss the infraction and inform the individual of the rule or procedure that was violated and the corrective action to be taken.

## **10. Site Health and Safety Representative**

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- 10.1. A full-time Health and Safety Representative MUST be assigned to the project for every 25 workers on site. However, based on the complexity of the scope of work and/or the Subcontractor's EMR history, a full-time Health and Safety Representative may be required for less than 25 workers. When applicable, the Subcontractor Site Health and Safety Representative shall be onsite during all scheduled work hours.
- 10.2. The Subcontractor shall submit the name(s), qualifications and resume of the Subcontractor's proposed Site Health and Safety Representative to the BNB Staff for approval ten (10) working days prior to the start of onsite activities. The documentation shall include, but not be limited to specific health and safety classes and courses the proposed Site Health and Safety Representative has completed. It is the Subcontractor's sole responsibility to determine the Health and Safety training has been provided by industry recognized and qualified instructors.
- 10.3. The Site Health and Safety Representative shall have a minimum of five years of experience in construction, possess appropriate skills and experiences related to construction occupational Health and Safety and have the authority to take prompt corrective measures to correct at risk worker behaviors and/or unsafe working conditions, and also specific knowledge and expertise in how to prevent their recurrence.
- 10.4. At the discretion of the BNB Staff, the Subcontractor Site Health and Safety Representative duties may be shared with other duties. However, Health and Safety responsibilities shall take precedence over any other assigned duties. The Site Health and Safety Representative shall be responsible for, but not limited to:
  - 10.4.1. The Health and Safety of the personnel of the Subcontractor and their tiers, suppliers, and vendors.
  - 10.4.2. Implementing the Subcontractor's Site-Specific Health and Safety Program and Injury, Illness & Prevention Program.
  - 10.4.3. Delivering Project Orientation to personnel on the project under the Subcontractor's contract.
  - 10.4.4. Ensuring employee compliance with all project requirements.
  - 10.4.5. Completing and documenting HS&E inspections of the Subcontractor's work area.
  - 10.4.6. Conducting the Subcontractors' weekly tool box safety meetings.
  - 10.4.7. Submitting reports and documentation.
  - 10.4.8. Implementing and overseeing provisions for protection of the public.

## **11. Substance Abuse Requirements**

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- 11.1. The Owner, BNB and their representatives have a vital interest in maintaining safe, healthful and efficient working conditions for all Subcontractors', tiered subcontractors, suppliers' and vendors' employees.
- 11.2. Possession or use of illegally obtained and/or illegal drugs or a third person's prescription medication and the possession of alcohol are prohibited on the jobsite. All Subcontractors must have a drug policy that is substantially similar to that of BNB's. BNB Drug and Alcohol program is available upon request from the BNB Staff. Alcohol, illegal drugs or substance abuse poses a serious threat to workplace Health and Safety.
- 11.3. Employees who abuse alcohol and/or drugs are a danger to themselves, co-workers, other Subcontractors and the public.
- 11.4. Subcontractors shall maintain an Alcohol and Drug Free Workplace. This will include requiring **ALL EMPLOYEES IMMEDIATELY** before they are assigned to this project be drug free. Alcohol and substance abuse testing is required for employees assigned to this project prior to the start of work and IMMEDIATELY following all injury/illness incidents including near hits or misses, and fitness for duty exams for employees returning to work from a non-work related injury/illness. All employees with positive test results will be barred from working at this project.

## 12. General Site Requirements

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The following site requirements shall be addressed on all BNB projects;

- 12.1. The Subcontractor shall take all precautions necessary to prevent injury/illness to the public, or damage to property of others. For the purposes of this document, the public shall include all persons not employed by the Subcontractor. When the construction area is adjacent to public occupied areas, the Subcontractor shall be responsible for conducting air monitoring, inside the public occupied areas, for airborne contaminants (chemicals, asbestos, welding fumes, lead dust/fumes, mold spores, nuisance dusts, etc.), vibrations generated by their construction activity. The Subcontractor shall provide a qualified, independent testing consultant to conduct such air monitoring. The Subcontractor must utilize devices such as signage, visqueen, flagging, barricades, K-rails, traffic plates, covered walkways, arc flash screens, etc. to effectively separate non-construction personnel from construction activities.
- 12.2. Stilts are not permitted on all BNB projects.
- 12.3. The Subcontractor shall ensure that monitored levels of chemicals and/or dusts or other contaminants are below established Permissible Exposure Limits as set forth in 29 CFR 1926, Subpart D. The Subcontractor shall submit air monitoring test results to the BNB Staff within seventy-two (72) hours after testing.
- 12.4. The use of equipment that generates harmful fumes is prohibited inside buildings after close-in, unless scrubbers and/or ducted ventilation are used.
- 12.5. Adequate ventilation and monitors are required when using propane/gas-fired devices indoors or in confined spaces.
- 12.6. The Subcontractor shall prevent building materials, debris, excavated and / or backfill material, etc. from migrating into or onto public or private areas.
- 12.7. The Subcontractor shall provide temporary lighting where required to maintain illumination levels in work areas, storage areas and walkways as set forth in 29 CFR 1926.56 subpart D, Illumination Washington Administrative Codes 296-800-210 Lighting or Cal/OSHA Title 8, Subchapter 4, Article 3, 1523 illumination, as applicable to the States requirements. Subcontractors shall be required to provide task specific lighting for areas not meeting the above site requirements.
- 12.8. Specifically prohibited from being brought onto this project are the following: pet animals of any kind, radios, including head set radios, Tape/CD/DVD/Electronic Chip players, iPods, MP3 players, televisions, or microwave ovens.

- 12.8.1. **Exception:** TV's and microwave ovens will be in a controlled environment such as a jobsite trailer.
- 12.8.2. Any variance from this must have the written approval of the BNB Staff.
- 12.9. All impalement hazards must be guarded against any object of sufficient shape and dimensions where if a worker falls onto or strikes against it could result in that object being driven or forced vertically or horizontally into the employee's body. A partial listing of common impalement hazards that must be guarded against are: reinforcing steel, steel stakes or rods, anchor-bolts, wooden survey stakes, small diameter pipe (less than 4 1/2 inches) and electrical conduits. Simply stated, when an object has the potential of impaling workers, that object must be properly guarded. For example, rebar caps, stake caps, wooden blocks, etc. Rebar caps must fit correctly without being forced into place. Damaged caps are not permitted.
- 12.10. Falling materials pose a significant hazard to all individuals on this site. Access to areas barricaded by chains, warning signs, and red or yellow tape will not be allowed without permission from the BNB Staff. Subcontractor shall be fully responsible to erect the most robust system of exclusion as necessary to prevent workers from entering this exclusion zone. Yellow or red barricade tape is not permissible for exclusion zones.
- 12.11. Worker visibility is important in all construction areas. Fluorescent clothing, vests, flags, cones or barricades must be used at this site to establish a visible safe work zone. Workers must be assigned to direct traffic as needed.
- 12.12. Subcontractor shall not remove any safety barriers unless approved by BNB Superintendent. If approval is given, Subcontractor is responsible to re-install the safety barriers after specific task have been complete.
- 12.13. Subcontractors shall execute BNBuilders equipment liability waiver and obtain approval from BNB Staff prior to use. Subcontractors employees must provide the proper equipment user certification prior to use.
- 12.14. Subcontractor shall comply with BNBuilders Personal Protective Equipment Policies contained within this document assure proper use and serviceability of all items in use. Also ensure logs and inspection are conducted as required.

# Claims Management

## 1. Purpose

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- 1.1. It is BNBuilders policy to ensure that every incident, near miss, or CRO is analyzed, reported, and managed. All incidents will be reported and investigated in a timely manner via the Incident Management Forms attached below. Follow-up will be conducted until claims are resolved and closed.

## 2. Scope

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- 2.1. Claims Management refers to all incidents / injuries where an employee may open a claim as a result. Claims must be managed from the very beginning.

## 3. Responsibility

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### 3.1. Claims Manager

- 3.2. The Claims Manager is responsible for managing open claims, ensuring claims are closed, and helping to accommodate employees into our light-duty program. See attached [Injury Flowchart](#) below.

### 3.3. Safety

- 3.4. Safety is responsible for managing claims of employees on their project/s. Safety will communicate with their regional manager on any changes to an existing claim.

## 4. Definitions

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- 4.1. **APF** – An activity prescription form is utilized by occupational doctors to establish the limitations of an employees working capability after an injury or illness has developed.

## 5. Procedure

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### 5.1. Pre-Injury Procedures

- 5.1.1. Select medical facilities close to the project location that treat the type of injuries that may occur on the project and meet with doctors when possible;
- 5.1.2. Develop grab and go folders for each project so projects are prepared for incidents up front;
- 5.1.3. Make available proper medical treatment;
- 5.1.4. Comply with legislation regarding first aid requirements;
- 5.1.5. Ensure availability of proper transportation for injured to proper medical facility;

### 5.2. Injury Reporting

- 5.2.1. Immediately report all incidents to supervision / BNB Staff;
- 5.2.2. Report BNB employee injuries to the applicable workers' compensation body and insurance company within the regulatory-required-time period; and
- 5.2.3. Initiate incident investigation

### 5.3. Post-Injury Procedures as Applicable

- 5.3.1. Acquire witness statements, evidence, photographs, etc.
- 5.3.2. Complete incident review and determine corrective actions
- 5.3.3. Complete and file applicable reporting forms and supporting documents
- 5.3.4. BNB Project teams, Subcontractors and their sub-tiers must submit the appropriate investigatory report within 24-hours of incident, near-miss or applicable occurrence

## 5.4. Types of Claims

5.4.1. All injuries where medical attention is required will follow the guidelines based on the type of injury.

### 5.4.2. First Aid Injuries

5.4.2.1. **First aid injuries don't typically require off-site medical treatment. To manage first-aid injuries, the project teams are to:**

- 5.4.2.1.1. Report and investigate first aid injuries;
- 5.4.2.1.2. Incident Report Form to be completed by a BNB Staff;
- 5.4.2.1.3. Notify Safety department of incident;
- 5.4.2.1.4. Follow up with employee throughout close-out of injury.

### 5.4.3. Injuries Requiring Medical Treatment

- 5.4.3.1. Incident Report Form to be completed by a BNB Staff;
- 5.4.3.2. Injured worker to be accompanied to the medical facility;
- 5.4.3.3. Return to work policy to be declared to the medical facility;
- 5.4.3.4. Work Status Report (Fit-for-Work Form or Activity Prescription Form (APF) to be acquired from treatment provider and forwarded to Safety department; and
- 5.4.3.5. Follow up with employee throughout injury close out.

### 5.4.4. Modified Work/Light Duty/Return-to-Work

5.4.4.1. When an employee is placed on modified work/light duty/return-to-work, BNB will make every reasonable effort to ensure that appropriate work is available to the employee. BNB will follow the guidelines set by the treating physician when setting up work for the injured employee. We will look at all avenues to provide the employee with productive and meaningful work during this process.

### 5.4.5. Modified Work/Light Duty/Return-to-Work Offer

5.4.5.1. **An offer will be presented to the injured employee and will include the following:**

- 5.4.5.1.1. Specific job duties;
- 5.4.5.1.2. Details of any medical restrictions;
- 5.4.5.1.3. Hours of employment during work;
- 5.4.5.1.4. Person responsible for establishing job tasks; and
- 5.4.5.1.5. Date of follow up visit.
- 5.4.5.1.6. The employee and project superintendent will sign offer and forward a copy to the Safety department.

### 5.4.6. Monitoring Modified Work/Light Duty

- 5.4.6.1. Once employee is placed on modified work/light duty/return-to-work, the project management team will monitor the progress of the employee, address any concerns the employee has, and verify that medical restrictions are being followed.
- 5.4.6.2. A daily record will be completed to track the work progress of the employee. This will be submitted weekly to the HS&E department.
- 5.4.6.3. Once employee is placed on full duty/released/no restrictions, the LP department is to be notified. Then, the LP department will notify the claims management department and/or the workers compensation carrier.

### 5.4.7. General Liability Incidents

5.4.7.1. All incidents involving the general public, BNB staff, and/or subcontractor personnel must be reported immediately to the respective management team. The BNB executive management team will report general liability claims to BNB legal. If the incident occurred on a project, the BNB Staff is responsible for immediately notifying the Owner. The party(ies) involved will complete the applicable documentation as required for Incident Investigation & Reporting. In all cases of damage, an incident, or injury, a full investigation will be conducted by BNB and the involved party(ies) to determine potential contributors to the incident in hopes of eliminating the

condition's recurrence. The intent of the investigation is not to affix blame, but to learn from the event.

#### **5.4.8. Fleet-related Incidents**

5.4.8.1. BNBuilders expects each driver to drive in a safe and courteous manner pursuant to the following safety rules. The Safety, Human Resources, Grizzly, and Project Executive team members are here to assist you and are responsible for the general administration of this policy.

5.4.8.2. The safety of employees is of prime importance to BNBuilders. Drivers are responsible for driving their vehicles in a careful, defensive, safe, and reliable manner at all times. Those driving company vehicles are representing BNBuilders and are required to exhibit courteous and civil behavior while driving company vehicles and practice the core values of the organization.

5.4.8.3. For more information related to Fleet safety, please refer to [BNBuilders Transportation Program](#).

#### **5.5. Builders Risk**

5.5.1. Please refer to contract language between Client and BNBuilders for more information.

#### **5.6. Drug Testing**

5.6.1. After any incident involving negligence, responsible employees will be required to undergo drug and/or alcohol screening and provide results to BNB Management. For vehicle incidents, please refer [BNBuilders Transportation Program](#).

### **6. References**

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- 6.1. [CALOSHA – Title 8 SS 10101 – Claim File - Contents](#)
- 6.2. [L&I WAC – 296-155 – Core Safety](#)
- 6.3. [FEDOSHA – Recordkeeping](#)

### **7. Attachments**

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- 7.1. [APF Form](#)
- 7.2. [CA Workers Comp Claim Form](#)
- 7.3. [Incident Report Form](#)
- 7.4. [Near Miss Form](#)
- 7.5. [Injury Flowchart](#)



# Cold Stress

## 1. Purpose

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- 1.1. Working in extreme cold may stress a person's heating system. When cold is combined with other stresses such as hard physical work, loss of fluids, fatigue or some medical conditions, it may lead to cold-related illness, disability and even death. At very cold temperatures, the most serious concern is the risk of hypothermia or dangerous overcooling of the body. Another serious effect of cold exposure is frostbite or freezing of the exposed extremities such as fingers, toes, nose and ear lobes. Hypothermia could be fatal in the absence of immediate medical attention. Employers have a duty to take every precaution reasonable in the circumstances for the protection of a worker. This includes developing cold-working environment policies and procedures to protect workers.

## 2. Scope

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- 2.1. Anyone working in a cold environment may be at risk of cold stress. Some workers may be required to work outdoors in cold environments and for extended periods of time.
- 2.2. What constitutes extreme cold and its effects can vary across different areas of the country. In regions that are not used to winter weather, near freezing temperatures are considered "extreme cold." A cold environment forces the body to work harder to maintain its temperature. Whenever temperatures drop below normal and wind speed increases, heat can leave your body more rapidly.
- 2.3. This standard is for all work in extreme cold temperature conditions and is intended to assist project management, project supervision, workers, and other workplace personnel in understanding the effects of extreme temperatures on the body, and to prevent any such effects in the workplace. As a general consideration, all persons working under this condition need to be prepared for the possibility of bodily stress due to extreme cold.

## 3. Responsibility

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### 3.1. Project Management

- 3.1.1. Project Management is responsible for identifying projects whose scope will involve exposing workers to extremely cold environments. Appropriate control measures will then need to be identified and enacted.

### 3.2. Supervision

- 3.2.1. ***An employer whose workers are exposed to extreme cold environments should implement a cold stress prevention program that includes:***

- 3.2.1.1. Worker training in the hazards, health effects and prevention of cold related illnesses.
- 3.2.1.2. Criteria or monitoring method (e.g. acting on wind chill warning or cold alert notices or measuring wind speed, and air temperature);
- 3.2.1.3. A monitoring / sampling plan (e.g. when, where and what to measure or monitor);
- 3.2.1.4. Responses or preventative measures (e.g. dressing in proper layers of clothing, acclimatizing workers to working conditions and required protective clothing, establishing warm-up schedule, providing warm shelter, use buddy system, suitable equipment, pace of work to avoid sweating or low activity);
- 3.2.1.5. First aid and emergency responses, including monitoring of worker symptoms, and investigating incidents of cold related illnesses.

### 3.3. Workers

- 3.3.1. Workers should recognize the signs and symptoms of overexposure in themselves and others. Any worker shivering severely should come in out of the cold.
- 3.3.2. Workers should monitor their physical condition and that of their coworkers. Also, workers should dress properly for the cold, stay dry in the cold, keep extra clothing (including underwear) handy, drink warm sweetened fluids (no alcohol), and use proper engineering controls, safe work practices, and personal protective equipment (PPE) provided by their employer.

## 4. Definitions

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- 4.1. **Wind Chill** – the temperature your body feels when air temperature and wind speed are combined. For example, when the air temperature is 40°F, and the wind speed is 35 mph, the effect on the exposed skin is as if the air temperature was 28°F.
- 4.2. **Cold Stress** – a symptom that occurs when the skin temperature is driven down and eventually lowers the internal body temperature (core temperature). When weather information is not available, the following signs may help to estimate wind speeds in the field:
  - 4.2.1. 5 mph – light flag just moves
  - 4.2.2. 10 mph – light flag is fully extended by the wind
  - 4.2.3. 15 mph – raises a newspaper sheet off the ground
  - 4.2.4. 20 mph – wind capable of blowing snow

## 5. Procedure

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### 5.1. Hazards

- 5.1.1. Working in extreme cold may stress a person’s heating system. When cold is combined with other stresses such as hard physical work, loss of fluids, fatigue or some medical conditions, it may lead to cold-related illness, disability and even death.
- 5.1.2. At very cold temperatures, the most serious concern is the risk of hypothermia or dangerous overcooling of the body. Another serious effect of cold exposure is frostbite or freezing of the exposed extremities such as fingers, toes, nose and ear lobes. Hypothermia could be fatal in the absence of immediate medical attention.
- 5.1.3. Warning signs of hypothermia can include complaints of nausea, fatigue, dizziness, irritability or euphoria. Workers can also experience pain in their extremities (hands, feet, ears, etc.), and severe shivering. Workers should be moved to a heated shelter and seek medical advice when appropriate.
- 5.1.4. Workers on medications or with pre-existing medical conditions may be more susceptible to hypothermia or overcooling. These workers should speak to their personal physicians about work in cold environments.
- 5.1.5. Cold stress or hypothermia can affect construction workers who are not protected against cold. The cold may result naturally from weather conditions or be created artificially, as in refrigerated environments.
- 5.1.6. Cold is a physical hazard in many construction workplaces. When the body is unable to warm itself, serious cold-related illnesses and injuries may occur, leading to permanent tissue damage and even death.
- 5.1.7. Construction workplaces exposed to cold, wet, and/or windy conditions include roofs, open or unheated cabs, bridges or other projects near large bodies of water, large steel structures that retain cold or are exposed to cold, high buildings open to the wind, refrigerated rooms, vessels, and containers.
- 5.1.8. Wind-chill involves the combined effect of air temperature and air movement. Wind-chill cooling rate is defined as heat loss (expressed in watts per meter squared) resulting from the effects of air temperature and wind velocity upon exposed skin. The higher the wind speed and the lower the temperature in the work environment, the greater the insulation value of the protective clothing required. Chart 1 compares the effects of air temperatures with and without wind. For example, when the air temperature is -20F there is little danger of flesh freezing with no wind, increased danger with a wind of 5 mph, and extreme danger with a wind of 25 mph or more. When air speed and temperature produce a chill temperature of -25.6F, continuous skin exposure should not be permitted. Unprotected skin will freeze only at temperatures below 30.2F, regardless of wind speed.

### 5.2. Hazard Controls

**5.2.1. Engineering Controls**

- 5.2.1.1. Propane tanks used for heating must never be thawed via open flame.
- 5.2.1.2. Metal handles of tools and control bars should be covered by thermal insulating material for temperatures below -30.2°F.
- 5.2.1.3. Workers should wear gloves where fine manual dexterity is not required and the air temperature falls below 60.8°F for sedentary, 39.2°F for light, and 19.4°F for moderate work.
- 5.2.1.4. To prevent contact frostbite, workers should wear insulated gloves when surfaces within reach (especially metallic surfaces) are colder than 19.4°F. Warn workers to avoid skin contact with these surfaces. Skin contact with liquid propane can cause frostbite.
- 5.2.1.5. Tools and machine controls to be used in cold conditions should be designed for operation by gloved hands.
- 5.2.1.6. Radiant heaters may be used to warm workers in outdoor security stations. If possible, shield work areas from drafts or wind to reduce wind chill.

**5.2.2. Administrative Controls**

- 5.2.2.1. Ensure that workers are medically fit to work in excessive cold, especially those subject to the risk factors highlighted above.
- 5.2.2.2. Make sure that workers understand the importance of high-caloric foods when working in cold environments. Warm sweet drinks and soups should be arranged at the work site to maintain caloric intake and fluid volume. Coffee should be discouraged because it increases water loss and blood flow to extremities.
- 5.2.2.3. Personnel working in isolated cold environments, whether indoors or outdoors, should have backup.
- 5.2.2.4. Provide hot drinks and regular breaks under extremely cold working conditions.
- 5.2.2.5. For work performed continuously in the cold, allow rest and warm-up breaks. Heated shelters such as trailers should be available nearby. Encourage workers to use these shelters at regular intervals depending on wind-chill factor.
- 5.2.2.6. Workers showing signs of shivering, frostbite, fatigue, drowsiness, irritability, or euphoria should immediately return to the shelter.
- 5.2.2.7. Workers entering the shelter should remove their outer layer of clothing and loosen other clothing to let sweat evaporate. In some cases, a change of clothing may be necessary.
- 5.2.2.8. Employers can provide plenty of warm sweetened liquids to workers. If possible, employers can schedule heavy work during the warmer part of the day. Employers can assign workers to tasks in pairs (buddy system), so that they can monitor each other for signs of cold stress. Workers can be allowed to interrupt their work, if they are extremely uncomfortable. Employers should give workers frequent breaks in warm areas, such as a job shack on a tower project. Acclimatize new workers and those returning after time away from work, by gradually increasing their workload, and allowing more frequent breaks in warm areas, as they build up a tolerance for working in the cold environment.

**5.2.3. Personal Protective Equipment**

- 5.2.3.1. Select protective clothing to suit the cold, the job, and the level of physical activity.
- 5.2.3.2. Wear several layers of clothing rather than one thick layer. Air captured between layers acts as an insulator.
- 5.2.3.3. Wear synthetic fabrics such as polypropylene next to the skin because this whisks away sweat. Clothing should not restrict flexibility.
- 5.2.3.4. If conditions are wet as well as cold, ensure that the outer clothing worn is waterproof or at least water-repellent. Wind-resistant fabrics may also be required under some conditions. If clothing does get wet, work must be stopped until clothing has been changed.
- 5.2.3.5. At air temperatures of 2°C (35.6°F) or less, workers whose clothing gets wet for any reason must be immediately given a change of clothing and be treated for hypothermia.
- 5.2.3.6. Encourage the use of hats and hoods to prevent heat loss from the head and to protect ears. Balaclavas or other face covers may also be necessary under certain conditions.

5.2.3.7. Tight-fitting footwear restricts blood flow. Footwear should be large enough to allow wearing either one thick or two thin pairs of socks. Wearing too many socks can tighten fit and harm rather than help.

5.2.3.8. Workers who get hot while working should open their jackets but keep hats and gloves on.

**5.2.4. Training**

5.2.4.1. Before working in extreme cold, workers should be instructed in safety and health procedures.

5.2.4.2. Training should cover proper clothing and equipment, safe work practices, guidelines for eating and drinking, risk factors that increase the health effects of cold exposure, how to recognize signs and symptoms of frostbite, how to recognize signs and symptoms of hypothermia, appropriate first aid treatment including re-warming procedures, and how the wind chill factor affects workers. Workers should also be trained in the following areas:

**5.2.4.3. Some of the risk factors that contribute to cold stress are:**

5.2.4.3.1. Wetness/dampness, dressing improperly, and exhaustion

5.2.4.3.2. Predisposing health conditions such as hypertension, hypothyroidism, and diabetes

5.2.4.3.3. Poor physical conditioning

**5.2.4.4. How does the body react to cold conditions?**

5.2.4.4.1. In a cold environment, most of the body's energy is used to keep the internal core temperature warm. Over time, the body will begin to shift blood flow from the extremities (hands, feet, arms, and legs) and outer skin to the core (chest and abdomen). This shift allows the exposed skin and the extremities to cool rapidly and increases the risk of frostbite and hypothermia. Combine this scenario with exposure to a wet environment, and trench foot may also be a problem.

**5.2.4.5. What are the most common cold induced illnesses/injuries?**

5.2.4.5.1. Hypothermia

5.2.4.5.2. Frostbite

5.2.4.5.3. Trench Foot

5.2.4.5.4. What is hypothermia?

5.2.4.6. *Hypothermia occurs* when body heat is lost faster than it can be replaced and the normal body temperature (98.6°F) drops to less than 95°F. Hypothermia is most likely at very cold temperatures, but it can occur even at cool temperatures (above 40°F), if a person becomes chilled from rain, sweat, or submersion in cold water.

**5.2.4.7. What are the symptoms of hypothermia?**

5.2.4.7.1. Mild symptoms:

5.2.4.7.1.1. An exposed worker is alert.

5.2.4.7.1.2. He or she may begin to shiver and stomp the feet in order to generate heat.

5.2.4.7.2. Moderate to Severe symptoms:

5.2.4.7.2.1. As the body temperature continues to fall, symptoms will worsen, and shivering will stop.

5.2.4.7.2.2. The worker may lose coordination and fumble with items in the hand, become confused and disoriented

5.2.4.7.2.3. He or she may be unable to walk or stand, pupils become dilated, pulse and breathing become slowed, and loss of consciousness can occur. A person could die if help is not received immediately.

**5.2.4.8. What can be done for a person suffering from hypothermia?**

- 5.2.4.8.1. Call 911 immediately in an emergency; otherwise seek medical assistance as soon as possible.
- 5.2.4.8.2. Move the person to a warm, dry area.
- 5.2.4.8.3. Remove wet clothes and replace with dry clothes, cover the body (including the head and neck) with layers of blankets; and with a vapor barrier (e.g. tarp, garbage bag). Do not cover the face.
- 5.2.4.8.4. If medical help is more than 30 minutes away:
  - 5.2.4.8.4.1. Give warm sweetened drinks if alert (no alcohol), to help increase the body temperature. Never try to give a drink to an unconscious person.
  - 5.2.4.8.4.2. Place warm bottles or hot packs in armpits, sides of chest, and groin. Call 911 for additional rewarming instructions.
- 5.2.4.8.5. If a person is not breathing or has no pulse:
  - 5.2.4.8.5.1. Call 911 for emergency medical assistance immediately.
  - 5.2.4.8.5.2. Treat the worker as per instructions for hypothermia but be very careful and do not try to give an unconscious person fluid.
  - 5.2.4.8.5.3. Check him/her for signs of breathing and for a pulse. Check for 60 seconds.
  - 5.2.4.8.5.4. If after 60 seconds the affected worker is not breathing and does not have a pulse, trained workers may start rescue breaths for 3 minutes.
  - 5.2.4.8.5.5. Recheck for breathing and pulse, check for 60 seconds.
  - 5.2.4.8.5.6. If the worker is still not breathing and has no pulse, continue rescue breathing.
  - 5.2.4.8.5.7. Only start chest compressions per the direction of the 911 operator or emergency medical services\*
  - 5.2.4.8.5.8. Reassess patient's physical status periodically.

**5.2.4.9. \*Chest compression are recommended only if the patient will not receive medical care within 3 hours.**

**5.2.4.10. What is frostbite?**

5.2.4.11. *Frostbite* is an injury to the body that is caused by freezing of the skin and underlying tissues. The lower the temperature, the more quickly frostbite will occur. Frostbite typically affects the extremities, particularly the feet and hands. Amputation may be required in severe cases.

**5.2.4.12. What are the symptoms of frostbite?**

- 5.2.4.12.1. Reddened skin develops gray/white patches.
- 5.2.4.12.2. Numbness in the affected part.
- 5.2.4.12.3. Feels firm or hard.
- 5.2.4.12.4. Blisters may occur in the affected part, in severe cases.

**5.2.4.13. What can be done for a person suffering from frostbite?**

- 5.2.4.13.1. Follow the recommendations described above for hypothermia.
- 5.2.4.13.2. Do not rub the affected area to warm it because this action can cause more damage.
- 5.2.4.13.3. Do not apply snow/water. Do not break blisters.
- 5.2.4.13.4. Loosely cover and protect the area from contact.
- 5.2.4.13.5. Do not try to rewarm the frostbitten area before getting medical help; for example, do not place in warm water. If a frostbitten area is rewarmed and gets frozen again, more tissue damage will occur. It is safer for the frostbitten area to be rewarmed by medical professionals.
- 5.2.4.13.6. Give warm sweetened drinks, if the person is alert. Avoid drinks with alcohol.

**5.2.4.14. What is immersion/trench foot? What are the symptoms of trench foot? What can be done for a person suffering from immersion foot?**

5.2.4.15. *Trench Foot* or immersion foot is caused by prolonged exposure to wet and cold temperatures. It can occur at temperatures as high as 60°F if the feet are constantly wet. Non-freezing injury occurs because wet feet lose heat 25-times faster than dry feet. To prevent heat loss, the body constricts the blood vessels to shut down circulation in the feet. The skin tissue begins to die because of a lack of oxygen and nutrients and due to the buildup of toxic products.

- 5.2.4.15.1. Redness of the skin, swelling, numbness, blisters
- 5.2.4.15.2. Call 911 immediately in an emergency; otherwise seek medical assistance as soon as possible.
- 5.2.4.15.3. Remove the shoes, or boots, and wet socks.
- 5.2.4.15.4. Dry the feet.

## 6. References

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- 6.1. [CALOSHA – Title 8 SS 3395 – Heat Illness Prevention](#)
- 6.2. [FEDOSHA – Cold Stress Guide](#)
- 6.3. [National Oceanic and Atmospheric Administration - Weather](#)
- 6.4. [L&I WAC 296-800 -Core Safety](#)

## 7. Attachments

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None



# Concrete & Masonry

## 1. Purpose

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- 1.1. The purpose of this standard is to protect our workers from the hazards of working with and around concrete and masonry operations by identifying best practices and requirements.

## 2. Scope

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- 2.1. This standard applies to all personnel, work sites, and operations engaged in concrete and masonry work.

## 3. Responsibility

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### 3.1. Project Management

#### **3.1.1. Project Management is responsible for ensuring that:**

- 3.1.1.1. Subcontractors who will engage in concrete and masonry work submit adequate safety documentation and submittals prior to mobilizing (i.e., Respiratory Protection Program, Fit Testing certifications, etc.)
- 3.1.1.2. Personnel engaged in concrete and masonry work adequately complete and follow a Job/Activity Hazard Analysis and Pre-Task Plans that include thorough provisions for the protection of personnel and the public from hazards associated with their work.

### 3.2. Workers

- 3.2.1. Workers are responsible for wearing the proper PPE and monitoring their exposure to concrete. If clothing becomes contaminated, it must be removed and the skin neutralized. Be aware of safety devices and their location in the event of contamination. Also take care to stretch periodically to relieve wrists, back and legs.

## 4. Definitions

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- 4.1. **Whip hose** – A suspended hose with only one coupling used to direct the delivery of concrete on the end of a concrete pumper. Velocity reducer or S tube at the end of the whip hose – not allowed
- 4.2. **Velocity Reducer / S Tubes** – Devices used to slow down the concrete exiting from a whip hose.
- 4.3. **Bull Float** – A tool used with aluminum handles to smooth and seal the surface of concrete immediately after striking off the surface of concrete at the top of forms.

## 5. Procedure

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### 5.1. Hazards

- 5.1.1. Velocity reducers or S tubes must not be placed on the whip hose since they may pose a struck-by hazard if the whip hose jerks.
- 5.1.2. All vertical and horizontal rebar, form stakes, conduit, or small pipe stub-ups will be protected against impalement and injury.
- 5.1.3. Personnel may be exposed to respiratory hazards from hazardous dust generated during concrete/masonry operations.
- 5.1.4. Personnel exposed to wet concrete may suffer chronic and/or acute skin conditions.
- 5.1.5. Surges in the hose may cause a caught-between or struck-by hazard

### 5.2. Hazard Controls

**5.2.1. Engineering Controls**

- 5.2.1.1. When cutting concrete with Post-Tension Cables, the area should be surveyed via ground penetrating radar or similar method to avoid contacting a cable.
- 5.2.1.2. A transition cover or back end cover must be used on the concrete pump.
- 5.2.1.3. Footing pads will be placed under outriggers of concrete pumps that are adequate to support the load of the outrigger. The underground structure and/or ground conditions should be evaluated before setting a pump. Outriggers should be fully deployed where feasible.
- 5.2.1.4. Double ended hoses must not be used as a whip hose off the boom of a concrete pump.
- 5.2.1.5. Dead man controls will be provided and maintained in an operable condition on Rotating type, powered concrete trowels.
- 5.2.1.6. Mixing machines must have guards in place to prevent personnel from being caught in machinery.
- 5.2.1.7. Concrete buggy handles must not extend beyond the wheels on either side of the buggy.
- 5.2.1.8. Concrete buckets must be equipped with a device that will allow an employee to operate it without being exposed to the load. Buckets must also be equipped with safety devices to prevent premature or accidental dumping and ensure that the release is self-closing.
- 5.2.1.9. When feasible, mechanical screeds should be used for finishing operations.

**5.2.2. Administrative Controls**

- 5.2.2.1. Limited access zones must be established prior to the construction of a masonry wall and shall be established on the side of the wall that is un-scaffold. The width of the zone shall be equal to the height of the wall to be constructed plus four feet (measured perpendicular from the base of the wall on the un-scaffold side). Entry must be restricted to authorized personnel. Bracing shall remain in place until the wall has been tied into the structure.
  - 5.2.2.1.1. Prior to operations where a boom will be used, overhead utility hazards must be reviewed and controlled.
  - 5.2.2.1.2. When tensioning or cutting slabs with Post-Tension Cables, the area should be kept clear of personnel. Also, personnel engaged in tensioning must keep clear of the area behind the jack. Signs and barricades shall be erected to limit employee access to the post-tension area during tensioning operations.
  - 5.2.2.1.3. Follow safe rigging practices when handling concrete buckets.
  - 5.2.2.1.4. Inspect the area before using bull floats for energized equipment or power lines nearby that the handles could touch.
  - 5.2.2.1.5. Prefabricated forms and form making material will always be stacked neatly. When stripping concrete forms, all material will be immediately removed and stacked in an orderly manner. Forming material or debris will not present a hazard from nails or block walkways and aisles. Rebar, tie-wire and other debris will be removed from the work area daily.
  - 5.2.2.1.6. No employee is allowed to ride a concrete bucket.
  - 5.2.2.1.7. Spotters and/or back-up alarms must be used when backing trucks or equipment.
  - 5.2.2.1.8. Ensure coiled wire mesh is adequately secured to prevent uncoiling.
  - 5.2.2.1.9. Reinforcing steel and forms for walls, piers, columns, stairs and similar structures are adequately supported to prevent overturning and collapse.
  - 5.2.2.1.10. Shores must be secured from displacement.
  - 5.2.2.1.11. Hose connections should not be placed in a way that creates a pinch point during surges. Employees should be instructed and trained on the potential pinch points during the operation. All finished surfaces that may come in contact with hose connections must be protected.
  - 5.2.2.1.12. Neutralizing agent must always be on site during pours to prevent concrete burns in cases of exposure to wet concrete.

**5.2.3. Personal Protective Equipment**

- 5.2.3.1. Finishers will wear kneepads and gloves when the concrete is hard. When in a plastic state, impervious gloves should be worn when hand finishing concrete.

- 5.2.3.2. Workers that are exposed to wet concrete and/or masonry dust, who operate vibrators, pump nozzles and concrete buckets will wear appropriate eye, hand, and foot protection. It is highly recommended that long sleeve shirts, aprons, and face shields be worn to protect against exposure of concrete to the bare skin and the possibility of concrete burn and contact dermatitis.
- 5.2.3.3. Protective clothing needs to be worn, and care needs to be taken to avoid contact with wet concrete. If clothing against the skin gets wet with concrete, it should be removed as soon as possible.
- 5.2.3.4. Workers engaged in vertical rebar assembly shall comply with the project's fall protection rules. Positioning devices alone are not approved fall protection but can be used in addition with personal fall protection equipment.
- 5.2.3.5. When using a gas-powered cut off saw (typically used to cut block), chaps must be worn. For example, these chaps have been proven effective.
- 5.2.3.6. Respirators must be maintained and worn properly if exposed to dust. Operations where personnel are exposed to dust may consist of pouring bags of dry cement/mortar/grout/etc., mixing, cutting, grinding, and chipping.
- 5.2.3.7. When stripping forms, especially overhead, goggles are recommended to be worn as a preventative measure.

### 5.3. Training

- 5.3.1. Riggers must be qualified riggers.
- 5.3.2. Personnel who wear respirators must be fit-tested, evaluated, and trained on the hazards as well as safe use of their respirator.
- 5.3.3. Personnel who erect or work on scaffolding must be trained.

## 6. References

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- 6.1. [FEDOSHA - CFR 1926.700 Concrete Construction](#)
- 6.2. [Cal/OSHA T8 CC Article 29. Erection and Construction](#)
- 6.3. [L&I WAC 296-155-675 to 296-155-699](#)
- 6.4. [Freedom from Danger Emergency- Eye Wash Station Policy](#)

## 7. Attachments

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- 7.1. [Coring & Saw Cutting Checklist](#)
- 7.2. [Silica Exposure Control Plan](#)
- 7.3. [Table 1 Attachment](#)

## Confined Space

### 1. Purpose

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- 1.1. This program provides a baseline guide for the elimination/control of hazards related to confined space work. Since potential hazards related to confined space work may consist of explosions, fire, and/or asphyxiation, it is paramount to safety and health that confined space work is carried out in a safe manner.

### 2. Scope

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- 2.1. This standard identifies proven best practices and procedures for confined space work. Examples of locations where confined spaces may occur include, but are not limited to, the following: Bins; boilers; pits (such as elevator, escalator, pump, valve or other equipment); manholes (such as sewer, storm drain, electrical, communication, or other utility); tanks (such as fuel, chemical, water, or other liquid, solid or gas); incinerators; scrubbers; concrete pier columns; sewers; transformer vaults; heating, ventilation, and air-conditioning (HVAC) ducts; storm drains; water mains; precast concrete and other pre-formed manhole units; drilled shafts; enclosed beams; vessels; digesters; lift stations; cesspools; silos; air receivers; sludge gates; air preheaters; step up transformers; turbines; chillers; bag houses; and/or mixers/reactors.

### 3. Responsibility

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#### 3.1. Project Management

- 3.1.1. Prior to any personnel's entrance into a permit-required confined space, approval must be granted from BNB Project Management & Supervision and a BNB Safety Representative. Upon approval, personnel shall comply with the requirements of the subcontractor's program.
- 3.1.2. BNB Project Management and Supervision are responsible for ensuring that this standard is communicated and followed by all trades engaged in confined space work. BNB project teams will require all subcontractors engaged in confined space work to submit adequate documentation such as a Confined Space Program, Completed Confined Space Evaluation Form, Competent/Qualified Person certifications, JHA(s), PTP(s), etc.
- 3.1.3. BNB Project Management and Supervision will ensure that the required procedures regarding confined space are appropriately followed. The project team is to verify that confined space competent person, attendants, entry supervisors, rescue team members, and entrants are properly trained.
- 3.1.4. **The following are considerations to be made by BNB project teams:**
- 3.1.4.1. Identify the confined space(s) and mark out on the site logistics plan
  - 3.1.4.2. Use BNB form to complete confined space evaluation and permit status determination
  - 3.1.4.3. Evaluate confined space for all hazards that could affect health and safety
  - 3.1.4.4. Coordinate shut offs, lockout/tag out all energy sources and mechanical hazards
  - 3.1.4.5. Periodic verification of ventilation or engineering controls of the confined space
  - 3.1.4.6. Obtain test results of the atmosphere prior to and during activity from the subcontractor / attendant
  - 3.1.4.7. Verify rescue and fall protection requirements are in place being utilized as required
  - 3.1.4.8. Review all Subcontractor SHE submittals- confined space program/documentation, JHA, PTP, checklist, proof of training for fall prevention, confined space, medical evaluations
  - 3.1.4.9. Review rescue/emergency procedures for adequacy

#### 3.2. Subcontractors

- 3.2.1. Subcontractors are responsible for submitting a job hazard analysis with project-specific confined space procedures, their confined space program, proof of confined-space training, acknowledgment of their competent person(s), emergency rescue plan, and respirator medical evaluations as applicable.
- 3.2.2. Subcontractors are responsible for ensuring they have adequate equipment available as needed such as ventilation fan(s), life lines, lanyards, retrieval equipment, PPE, monitoring equipment, lighting equipment, communication equipment, Lockout/Tagout devices, barricade equipment, firefighting and prevention equipment, permit documentation, other equipment required for the work.
- 3.2.3. Subcontractors are responsible for the fit testing and medical evaluation of all employees who are required to use respirators and/or self-contained breathing apparatus (SCBA).

- 3.2.4. Contractors are responsible for assuring that confined spaces are free of dangerous gases as indicated by an approved testing device prior to entering the space. Tests are to be repeated and documented at regular intervals to ensure that dangerous gases are not collecting in the confined space. Subcontractor shall have a confined-space competent person on site during all confined space work. Proof of current air test device certification and calibration shall be readily available upon request. Contractors are to provide proper ventilation as required for their employees during any work activities in the confined space. If space is identified to have explosive, fire, or asphyxiation hazards over the OSHA action Level or PEL, a full permit-required confined space program must be implemented.

### 3.3. Workers

- 3.3.1. All workers engaged in confined space work shall be identified and have full understanding of the work activities via safety meeting, training, JHA review, and PTP review. Workers have the right and responsibility to come forth with any concern of safety or deficiency observed at any time. Lastly, workers are charged with carrying out all work activities in compliance this standard and their employer's procedures. Employees shall understand their designated roles and duties (such as "Attendant" and/or "Authorized Entrant").

## 4. Definitions

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- 4.1. **Acceptable entry conditions** - the conditions that shall exist in a permit space, before an employee may enter that space, to ensure that employees can safely enter into, and safely work within, the space.
- 4.2. **Attendant** - an individual stationed outside one or more permit spaces who assesses the status of authorized entrants and who shall perform the duties specified in this policy.
- 4.3. **Alternative Methods** - Permit-required confined space using alternative methods. An alternative process for entering a permit space under very specific conditions outlined in WAC 296-809-60002 and 296-809-60004. The employer must complete documentation as required to communicate to the workers the space conditions.
- 4.4. **Authorized entrant** - an employee who is authorized by the entry supervisor to enter a permit space.
- 4.5. **Barrier** - a physical obstruction that blocks or limits access.
- 4.6. **Blanking or blinding** - the absolute closure of a pipe, line, or duct by the fastening of a solid plate (such as a spectacle blind or a skillet blind) that completely covers the bore and that is capable of withstanding the maximum pressure of the pipe, line, or duct with no leakage beyond the plate.
- 4.7. **Competent person** - one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- 4.8. **Confined space** - a space that:
- 4.8.1. Is large enough and so configured that an employee can bodily enter it;
  - 4.8.2. Has limited or restricted means for entry and exit; and
  - 4.8.3. Is not designed for continuous employee occupancy.
- 4.9. **Control** - the action taken to reduce the level of any hazard inside a confined space. Personal protective equipment is not a control.
- 4.10. **Controlling contractor** - the employer who was responsible, by contract or through actual practice, for safety and health conditions on the worksite; i.e., the employer who had the authority for ensuring that the hazardous condition is corrected (the controlling employer).
- 4.11. **Engulfment** - the surrounding and effective capture of a person by a liquid or finely divided (flowable) solid substance that can be aspirated to cause death by filling or plugging the respiratory system or that can exert enough force on the body to cause death by strangulation, constriction, crushing, or suffocation.
- 4.12. **Entry** - the action by which any part of a person passes through an opening into a permit-required confined space. Entry includes ensuing work activities in that space and is considered to have occurred as soon as any part of the entrant's body breaks the plane of an opening into the space, whether or not such action is intentional or any work activities are actually performed in the space.
- 4.13. **Entry supervisor** - the qualified person (such as the employer, foreman, or crew chief) responsible for determining if acceptable entry conditions are present at a permit space where entry is planned, for authorizing entry and overseeing entry operations, and for terminating entry as required by this standard.
- 4.14. **Hazardous atmosphere** - an atmosphere that may expose employees to the risk of death, incapacitation, impairment of ability to self-rescue (that is, escape unaided from a permit space), injury, or acute illness from one or more of the following causes:
- 4.14.1. Flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit (LFL);
  - 4.14.2. Airborne combustible dust at a concentration that meets or exceeds its LFL;

- 4.14.3. Atmospheric oxygen concentration below 19.5 percent or above 23.5 percent;
  - 4.14.4. Atmospheric concentration of any substance for which a dose or a permissible exposure limit is published in Article 4 of the Construction Safety Orders and Group 16 of the General Industry Safety Orders;
  - 4.14.5. Any other atmospheric condition that is immediately dangerous to life or health.
- 4.15. **Host employer** - the employer that owns or manages the property where the construction work is taking place. If the owner of the property on which the construction activity occurs has contracted with an entity for the general management of that property, and has transferred to that entity the information specified in Section 1952(h)(1), the Division will treat the contracted management entity as the host employer for as long as that entity manages the property. Otherwise, the Division will treat the owner of the property as the host employer. In no case will there be more than one host employer.
- 4.16. **Hot work** - operations capable of providing a source of ignition (for example, riveting, welding, cutting, burning, and heating).
- 4.17. **Immediately dangerous to life or health (IDLH)** - any condition that would interfere with an individual's ability to escape unaided from a permit space and that poses a threat to life or that would cause irreversible adverse health effects.
- 4.18. **Limited or restricted** - for entry or exit means a condition that has a potential to impede an employee's movement into or out of a confined space. Such conditions include, but are not limited to, trip hazards, poor illumination, slippery floors, inclining surfaces and ladders.
- 4.19. **Lockout/Tagout** – Refer to [Electricalat](#)
- 4.20. **Monitor or monitoring** - the process used to identify and evaluate the hazards after an authorized entrant enters the space. This is a process of checking for changes that is performed in a periodic or continuous manner after the completion of the initial testing or evaluation of that space.
- 4.21. **Oxygen deficient atmosphere** - an atmosphere containing less than 19.5 percent oxygen by volume.
- 4.22. **Oxygen enriched atmosphere** - an atmosphere containing more than 23.5 percent oxygen by volume.
- 4.23. **Permit-required confined space (permit space)** - a confined space that has one or more of the following characteristics: (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 converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or (4) Contains any other recognized serious safety or health hazard.
- 4.24. **Qualified person** - one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work, or the project.

## 5. Procedure

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### 5.1. Hazards

- 5.1.1. **Physical Hazards:** Hazards such as electrical, stored energy, moving mechanical parts, or any other physical condition that has the potential to negatively affect the health and safety of an employee.
- 5.1.2. **Dangerous gas stratification:** The phenomenon of gases forming layers, or stratifying based on weight, especially without normal ventilation in a confined space. This is the reason why atmospheric testing must be performed at various levels to ensure employee safety and that the space is under PELs & TLVs.
- 5.1.3. **Fire Hazards:** Any type of open flame or spark source is prohibited near any confined space area, unless it is deemed required for permitted welding and/or torching activities along with proper planning and review with all supervisors.
- 5.1.4. **Hazardous Atmosphere:** An atmosphere which exposes personnel to the risks of death, incapacitation, injury, or acute illness from one or more of the following causes:
  - 5.1.4.1. Flammable atmosphere
  - 5.1.4.2. Airborne combustible dust
  - 5.1.4.3. An atmosphere containing oxygen levels below 19.5% or above 23.5%
  - 5.1.4.4. An atmosphere where the permissible exposure limit for a certain chemical has been exceeded and could result in exposure
  - 5.1.4.5. Any other atmospheric condition that is immediately dangerous to life and health



- 5.1.4.6. Contains a material that has the potential for engulfing an entrant
- 5.1.4.7. Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section

## 5.2. Hazard Controls

### 5.2.1. Engineering Controls

- 5.2.1.1. The competent person should perform a pre-entry assessment to evaluate the confined space proposed to be entered and see if the hazard(s) can be eliminated or reduced. Perhaps it may be feasible to introduce a mechanical device or instrument that can carry out the required evaluation or work, such as a surveying probe or camera which would eliminate the need of personnel entering.
- 5.2.1.2. Forced-air ventilation of a confined space may be an engineering control by preventing a space from being a permit-required confined space. Forced air may also help reduce exposing personnel to heat illness factors.

### 5.2.2. Administrative Controls

- 5.2.2.1. The following items below are to be established and carried out at a minimum by the trade contractor(s) engaged in permit-required-confined-space work.
  - 5.2.2.1.1. Pre-Planning: a pre-planning meeting must be conducted to ensure that all parties know the work to be done, pre-entry procedures, duties of each team member, hazards that may be encountered, equipment necessary and emergency plans. Pre-planning must take place between all parties involved in permit-required confined space entries. This meeting serves the purpose of reviewing entry procedures as well as covering specific hazards inherent to the spaces being entered. Work procedures involving any chemicals or work techniques which could create additional hazards within the space should also be covered. Pre-planning must cover all required hazard controls needed to address the space's hazards, including ventilation, space isolation, lockout/tagout of equipment or processes, and PPE. Finally, emergency response and rescue procedures must be reviewed.
  - 5.2.2.1.2. Barricade the entrance with a hard barrier. If a fall hazard of six feet is present, adequate fall protection must be put in place.
  - 5.2.2.1.3. Post required public warnings in the predominant language(s) such as DANGER, PERMIT REQUIRED CONFINED SPACE, DO NOT ENTER
  - 5.2.2.1.4. The Entry Supervisor shall take effective measures to prevent unauthorized employees from entering into permitted spaces.
  - 5.2.2.1.5. Modification of Non-Permit Spaces - If non-permit spaces are modified or experience any change that causes an increased hazard to entrants, the supervisor of the exposed employees, shall ensure that the space is reevaluated by the competent person.
- 5.2.2.2. The following elements must be addressed in a **written project-specific confined space procedure**. This procedure must be approved in advance by the Project Manager, Superintendent, and the Safety Department.
  - 5.2.2.2.1. Environmental Controls – to ensure that pre-entry precautions have been implemented. (i.e. hazard evaluations, operating procedures, isolation methods, safety equipment, etc.)
  - 5.2.2.2.2. Atmospheric Testing – for oxygen content, explosive vapors, toxic substances and carbon monoxide to ensure that acceptable entry conditions exist
  - 5.2.2.2.3. List of employees designated to participate in confined space entries
  - 5.2.2.2.4. Assigned Duties – of each participant must be established and clearly communicated
  - 5.2.2.2.5. Rescue Equipment and Emergency Services – develop and implement procedures for summoning rescue and emergency services, for rescuing entrants from permit spaces, for providing necessary emergency services to rescued employees and for preventing unauthorized personnel from attempting a rescue

- 5.2.2.2.6. Entry Permit System - used to record critical data and serve as official entry authorization must be implemented and managed accordingly following the completion of permit space work.
- 5.2.2.2.7. Confined Space Entry Policy
- 5.2.2.2.8. A welding plan shall be developed by the subcontractor and reviewed by BNB site staff.
- 5.2.2.2.9. Welding personnel training, certification, monitoring, etc.
- 5.2.2.2.10. Proper PPE and equipment (SCBA) review
- 5.2.2.2.11. Additional ventilation methods for proper air circulation
- 5.2.2.2.12. PPE (including fall protection) cut sheets
- 5.2.2.2.13. Monitoring equipment cut sheets

**5.2.3. *The following confined space records must be maintained:***

- 5.2.3.1. A listing of confined spaces identified by name, location, description, real or potential hazards, and classification (permit or non-permit required confined space) using the Confined Space Inventory form
- 5.2.3.2. All atmospheric testing results
- 5.2.3.3. Completed hot work permits
- 5.2.3.4. Written project-specific confined space procedure

**5.2.4. *Personal Protective Equipment***

- 5.2.4.1. Hard Hats,
  - 5.2.4.2. Work boots (specific task type such as wet conditions)
  - 5.2.4.3. Gloves (task specific)
  - 5.2.4.4. Eye protection (task specific)
  - 5.2.4.5. Reflective vest or shirt
  - 5.2.4.6. Fall Protection/Arrest/Restraint
  - 5.2.4.7. Respirator (required per task specific)
  - 5.2.4.8. SCBA
- 5.2.5. Rescue equipment must consist of tripod with winch, full-body harness, and spreader bar attached to the lanyard (or D ring on front and back of harness).

**5.3. Training**

- 5.3.1. Subcontractors shall provide training to all employees who will engage in confined space work. Training shall result in an understanding of the hazards in the permit space and the methods used to isolate, control or in other ways protect employees from these hazards, and for those employees not authorized to perform entry rescues, in the dangers of attempting such rescues.

**5.4. Alternative Entry Procedures – Washington State**

- 5.4.1. ***In the State of Washington, you may enter permit-required confined spaces without a permit using alternative methods when you have monitoring and inspection data that supports the following:***

- 5.4.1.1. You have eliminated all the hazards; or
- 5.4.1.2. You have eliminated all of the physical hazards and continuous forced air ventilation controls the actual or potential hazardous atmosphere. You must also have monitoring data that demonstrates the use of continuous forced air ventilation will maintain the permit-required confined space for safe entry. In the event the ventilation system stops working, entrants can exit the space safely.

- 5.4.2. ***You must have written documentation for the entrants before each entry that includes the following information:***

- 5.4.2.1. The location of the space;
- 5.4.2.2. Date of entry;

- 5.4.2.3. Duration of the entry;
  - 5.4.2.4. The hazards of the space and the work;
  - 5.4.2.5. The specific measures used to eliminate the hazards;
  - 5.4.2.6. The ventilation system used to control atmospheric hazards, when applicable, direct reading instruments used to test the atmosphere, and results of the atmospheric testing that demonstrate the absence of a hazardous atmosphere;
  - 5.4.2.7. All conditions that required evacuation of the space; and
  - 5.4.2.8. The name, title, and signature of the entry supervisor ensuring safe entry procedures.
- 5.4.3. You must make sure all documentation produced is available to each affected employee and their authorized representative
- 5.4.4. You must make sure all monitoring and inspection data is documented and available to each affected employee and their authorized representative.
- 5.4.5. If you must enter prior to the completion of the hazard elimination, you must perform the entry according to BNB's permit-required confined space entry procedures. For example – To collect monitoring inspection data or apply hazard elimination measures

## **6. References**

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- 6.1. [FED / OSHA 1926 Subpart AA – Confined Spaced in Construction](#)
- 6.2. [Cal / OSHA CCR T8 Subchapter 4, Article 37 – Confined Spaces in Construction](#)
- 6.3. [WAC 296-809 – Confined Spaces](#)

## **7. Attachments**

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- 7.1. [Confined Space Entry Permit](#)
- 7.2. [Alternative Methods Confined Space Permit](#)
- 7.3. [Dig Permit](#)

# Cranes

## 1. Purpose

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1.1. The purpose of this program to ensure that cranes are safely erected, operated and dismantled.

## 2. Scope

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2.1. This standard applies to BNB projects where cranes are used by BNB or other contactors. For the purpose of this standard, cranes are those with a two thousand pound or greater capacity. Please also reference Material Handling & Rigging.

## 3. Responsibility

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### 3.1. Project Management

#### 3.1.1. Project Management is responsible for:

- 3.1.1.1. Developing a thorough Site Logistics Plan that addresses crane staging and operation.
- 3.1.1.2. Acquiring crane submittals in advance of crane mobilization.
- 3.1.1.3. Ensure that the crane: permits, planning documents, certifications and personnel are available on site.
- 3.1.1.4. Ensuring the crane supplier is contracted for the project with 10-million dollars insurance in place as applicable.
- 3.1.1.5. Ensuring cranes are operated in compliance with this procedure and all applicable Federal, State, and local standards.
- 3.1.1.6. Identifying scenarios when additional engineering is required (i.e., critical lifts).
- 3.1.1.7. Ensuring completion of pick plans for mobile and tower cranes. (Tower/Mobile crane pick plans to be developed for heaviest load configuration.)
- 3.1.1.8. Conduct a planning meeting before mobilization of equipment, with the A/D Director, operator, assembly/disassembly crew and the other workers who will be in the assembly/disassembly area to review the location of the power lines, terrain and other site specific features.
- 3.1.1.9. Reviewing crane inspections and certifications
- 3.1.1.10. Verifying qualifications of:
  - 3.1.1.10.1. riggers,
  - 3.1.1.10.2. operators,
  - 3.1.1.10.3. signal person,
  - 3.1.1.10.4. oilers, and
  - 3.1.1.10.5. other workers involved in crane activities.

### 3.2. Assembly/Disassembly (A/D) Director

#### 3.2.1. A/D Director is responsible for:

- 3.2.1.1. Understands and reviews the applicable assembly/disassembly procedures.
- 3.2.1.2. Immediately reviews the A/D procedures prior to the commencement.
- 3.2.1.3. Inspects components or attachments prior to assembly and ensures that it meets the manufacturer’s recommendations. Documentation of this inspection must remain at the jobsite while the equipment is in use.
- 3.2.1.4. Ensure that crew members understand the following:
  - 3.2.1.4.1. Their tasks
  - 3.2.1.4.2. Hazards associated with the tasks.
  - 3.2.1.4.3. The hazardous positions/locations that they need to avoid.

- 3.2.1.5. Ensure during assembly/disassembly operations, before a crew member takes on a different task, or when adding new personnel during the operations, the requirements in subsections 3.2.1.4. through 3.2.4.3. of this section shall be met.
- 3.2.1.6. Reviews and confirms that the tower crane foundation and structural supports are installed in accordance with manufacturer (or the Certified agent when in the state of CA) design criteria.
- 3.2.1.7. Ensure proper supervision of the assembly/disassembly operation and shall address the hazards associated with the operation which include but are not limited to:
  - 3.2.1.7.1. Site and ground bearing conditions
  - 3.2.1.7.2. Blocking material and proper location of blocking
  - 3.2.1.7.3. Verifying assist loads. When using an assist crane, the loads that will be imposed on the assist crane at each phase of assembly/disassembly shall be verified.
  - 3.2.1.7.4. Boom and jib pick points.
  - 3.2.1.7.5. Identify the center of gravity of the load that is necessary for the method used for maintaining stability.
  - 3.2.1.7.6. Ensure stability upon pin removal.
  - 3.2.1.7.7. Snagging
  - 3.2.1.7.8. Stuck by counterweights
  - 3.2.1.7.9. Boom hoist failure
  - 3.2.1.7.10. Loss of backward stability
  - 3.2.1.7.11. Wind speed and weather
- 3.2.1.8. Verifies all capacities of any equipment used, including rigging, lifting lugs, etc.
- 3.2.1.9. Ensures that the cantilevered boom section does not exceed the maximum cantilever set by either manufacturer or where these are unavailable, a RPE or CRPE familiar with the type of equipment involved must determine in writing which must not be exceeded.
- 3.2.1.10. Performs post assembly inspection in accordance with manufacturer’s requirements

### 3.3. Lift Director

#### **3.3.1. Lift Directors, when required by state regulations are responsible for:**

- 3.3.1.1. Lift directors must be both competent, qualified with supporting documentation and comply with Federal state, local regulations.
- 3.3.1.2. Ensuring that all cranes are operated, tested and maintained in accordance with manufacturers’ specifications or those of a professional engineer;
- 3.3.1.3. Ensuring that crane operations are coordinated with other project activities that will be affected by or will affect crane activities;
- 3.3.1.4. Verifying that all crane operators possess a valid operating certificate, as per all applicable Federal, State, and Local requirements, showing proficiency in the operation of cranes or an apprentice working under the control and supervision of such an operator;
- 3.3.1.5. Consulting the crane owner and end user to determine if any site preparation is required;
- 3.3.1.6. Participating in the development of lift plans;
- 3.3.1.7. Ensuring that there is adequate space is provided to safely assemble, erect, and operate the crane, as well as materials such as timber mats, cribbing and blocks;
- 3.3.1.8. Ensure cranes are placed in the optimum locations for capacity and clearance from obstacles.
- 3.3.1.9. Inform the crane operator or crane operator company (if applicable) of any hazardous site conditions, e.g. power lines, below grade structures, etc.;
- 3.3.1.10. Providing adequate traffic control to restrict unauthorized access and assure population and traffic control is in place prior to lifting.

- 3.3.1.11. Confirming the initial pick and final set locations;
- 3.3.1.12. Ensuring that the area needed for crane operations has been prepared before operations commence.
- 3.3.1.13. Ensuring that the rigger determined the load weight, center of gravity and maximum radius required for the lift;
- 3.3.1.14. To ensure/verify weight of loads to be handled or lifted.
- 3.3.1.15. Ensuring that each load is properly rigged, secured, and balanced before lifting;
- 3.3.1.16. To ensure that Qualified or Certified to perform rigging.
- 3.3.1.17. Assessing the weather conditions and forecasts (wind, temperature, precipitation, etc.) at the beginning of each shift and prior to lifts.
- 3.3.1.18. Communicating the load weight to the crane operator;
- 3.3.1.19. Checking the crane charts to verify the machines are rigged in the corresponding configuration;
- 3.3.1.20. Attend pre-lift meetings and ensure that plans are reviewed with all workers who will be involved with the operation.
- 3.3.1.21. Ensuring personnel involved understand their responsibilities, assigned duties, and associated hazards
- 3.3.1.22. Ensuring that the lift procedure and plan are followed explicitly and that any required changes to the plan are reviewed prior to implementing changes;
- 3.3.1.23. Assist in the development and communicating of a PTP/JHA and emergency procedures to personnel involved with the lift;
- 3.3.1.24. Appointing signal person(s) and ensuring they are qualified
- 3.3.1.25. Being present at the jobsite during lifting operations
- 3.3.1.26. Stop crane operations if altered to an unsafe condition
- 3.3.1.27. Ensuring precautions are implemented in special lifting operations

### 3.4. Workers

#### 3.4.1. Crane Operators are responsible for:

- 3.4.1.1. Being competent and certified to operate the crane;
- 3.4.1.2. Operating the crane only when physically, mentally and emotionally fit to do so;
- 3.4.1.3. Avoiding distractions that may divert their attention;
- 3.4.1.4. Not using mobile devices or phones during crane activities;
- 3.4.1.5. Advising supervision if a critical or engineered lift procedure is required;
- 3.4.1.6. Verifying that the use of tag lines will not create a hazard;
- 3.4.1.7. Attending the controls while a load is suspended except in the case of an emergency that requires the evacuation of the operator;
- 3.4.1.8. Immediately stopping the lifting operation in the event of imminent danger;
- 3.4.1.9. Confirming the load and rigging weight;
- 3.4.1.10. Selecting the appropriate boom, jib and crane configurations to meet lift requirements;
- 3.4.1.11. Determining the number of parts of line required;
- 3.4.1.12. Having a total understanding of the information in the crane's operating manual and the crane's limitations;
- 3.4.1.13. Knowing, understanding, and properly using the crane's load charts;
- 3.4.1.14. Inspecting the crane daily and performing daily maintenance as prescribed by the manufacturer;
- 3.4.1.15. Using appropriate lock out tag out procedures for maintenance;
- 3.4.1.16. Verifying operating aids and safety devices are operational (i.e.: load moment indicator, etc.)
- 3.4.1.17. Verifying that the site is adequately prepared for the crane;
- 3.4.1.18. Verifying that all hazards have been identified, e.g. powerlines, below grade structures, etc.;
- 3.4.1.19. Assembling, setting up, rigging and operating the crane in accordance with manufacturer's specifications;
- 3.4.1.20. Operating the crane in a safe, controlled and smooth manner;



- 3.4.1.21. Informing site supervision of any dangerous conditions observed before or during crane operations;
- 3.4.1.22. Assessing weather conditions (i.e. wind conditions) at time of lift to confirm lift can safely proceed;
- 3.4.1.23. Shutting down and securing the crane per manufacturer's specifications;
- 3.4.1.24. Verifying loads are not hoisted over people. In instances where this cannot be avoided, a hazard assessment is to be completed, along with written approval from BNB Project Management & Supervision;
- 3.4.1.25. Knowing standard hand/verbal signals.
- 3.4.1.26. Operators shall ensure all applicable inspections have been completed and documented and are available at the job site of operation.

**3.4.2. Owners are responsible for:**

- 3.4.2.1. Assigning appropriately sized equipment;
- 3.4.2.2. Providing competent workers to maintain, inspect, repair, transport, assemble and erect the lift equipment;
- 3.4.2.3. Providing supporting documentation to BNB;
- 3.4.2.4. Maintaining equipment in accordance with manufacturer's recommendations and specifications;
- 3.4.2.5. Establishing and following comprehensive preventative maintenance and inspection programs;
- 3.4.2.6. Providing support system to the operator for consultation regarding safety issues prior to and during the lift;
- 3.4.2.7. Maintaining current inspection and/or certification records for each crane;
- 3.4.2.8. Informing crane operator of known hazards or requirements, e.g., power lines, below grade structures, etc.;
- 3.4.2.9. Informing operator that safety features will not be bypassed, defeated or disabled; and
- 3.4.2.10. Informing the crane operator, client, and rigging superintendent of manufacturer's recommendations and limitations with ground stability, wind speed and temperature.

**3.4.3. Signal Persons are responsible for:**

- 3.4.3.1. Guiding equipment in and out of congested areas;
- 3.4.3.2. Safely directing the path of the lift;
- 3.4.3.3. Securing the lifting area;
- 3.4.3.4. Wearing appropriate personal protective equipment as required;
- 3.4.3.5. Determining the best communication methods for the operation; and
- 3.4.3.6. Signaling in a slow, smooth, and decisive manner.

**3.4.4. Riggers are responsible for:**

- 3.4.4.1. Rigging loads and equipment in accordance with manufacturer recommendations;
- 3.4.4.2. Being capable of reading and interpreting the sling charts and lift plans;
- 3.4.4.3. Identifying appropriate rigging components for the load to be lifted;
- 3.4.4.4. Visually inspecting rigging prior to each lift to verify compliance with appropriate Standards, Codes, Specific regulations and Procedures;
- 3.4.4.5. Knowing and understanding the operating parameters of cranes;
- 3.4.4.6. Being capable of identifying different rigging components and being knowledgeable in proper application;
- 3.4.4.7. Being capable of performing inspections of applicable rigging components to verify they are in an adequate condition to perform the lifting tasks;

- 3.4.4.8. Being knowledgeable of the different sling configurations available and knowing which to use on different load applications;
- 3.4.4.9. Knowing the approximate weight and center of gravity of the load(s) to be lifted;
- 3.4.4.10. Being knowledgeable and capable of using the hand signal chart for hoisting and moving loads;
- 3.4.4.11. Identifying overhead hazards and obstructions;
- 3.4.4.12. Identifying hazards associated with swing path, vehicular and pedestrian traffic;
- 3.4.4.13. Communicating with the crane operator throughout all stages of the rigging process;
- 3.4.4.14. Verifying that the use of tag lines will not create a hazard and are made of a non-conductive material
- 3.4.4.15. Wearing an identifier in order to be distinguished from other personnel (e.g. gauntlets, high visibility vest, gloves, etc.) as required.

**3.4.5. Lift Specialists (typically on behalf of Crane Suppliers) are responsible for:**

- 3.4.5.1. Applying knowledge, training, and experience in exchange for life and limb of companies, personnel, and the public;
- 3.4.5.2. providing technical support and resources for the planned lift;
- 3.4.5.3. investigating and understanding the nature of the lift including:
  - 3.4.5.3.1. Load size, weight, center of gravity, special conditions, etc.;
  - 3.4.5.3.2. The initial and final position, orientation, elevation, etc. of the load to be lifted;
  - 3.4.5.3.3. Any special weather/climate conditions or concerns;
  - 3.4.5.3.4. Any special ground or area conditions or concerns;
  - 3.4.5.3.5. Soil compaction, matting requirements to verify stable ground conditions for the crane; and
  - 3.4.5.3.6. The appropriate crane to be used as well as its availability.
- 3.4.5.4. Designing/planning the lift:
  - 3.4.5.4.1. Identify the optimum location for the cranes for capacity and clearance from obstacles;
  - 3.4.5.4.2. Determine if the crane(s) will have to travel or swing;
  - 3.4.5.4.3. Review drawings and/or site information to verify access, clearances, identify obstructions and eliminate interferences with respect to the lift;
  - 3.4.5.4.4. Verify lift lug information above and below the hook;
  - 3.4.5.4.5. Size the crane(s) to suit the requirements. Crane capacity must be calculated through each phase of the lift;
  - 3.4.5.4.6. Obtains load charts for the specific make, model, and configuration of the crane;
  - 3.4.5.4.7. Verify sufficient ground loading capacity for all cranes involved in the lift, i.e. tracks and outriggers;
  - 3.4.5.4.8. Size, quantify, design and/or detail of the rigging hardware to suit the lift;
  - 3.4.5.4.9. Verify crane charts, boom length, and accessories required; and
  - 3.4.5.4.10. Prepare drawings, plans and specifications as required.
- 3.4.5.5. Communicating the lift:
  - 3.4.5.5.1. Issue drawings, plans and specifications to the Lift Director (as required by state regulations); and
  - 3.4.5.5.2. Review, discuss and revise plans as required with the Lift Director (as required by state regulations).

**4. Definitions**

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- 4.1. **Anti-two-block device** - a device that, when activated, disengages all crane functions whose movement can cause two-blocking.
- 4.2. **ACC** – Accredited Crane Certifier

- 4.3. **Articulating boom crane** - a crane whose boom consists of a series of folding, pin connected structural members, typically manipulated to extend or retract by power from hydraulic cylinders.
- 4.4. **Assembly/disassembly** - the assembly and/or disassembly of components or attachments covered under this part. With regard to tower cranes, "erecting and climbing" replaces the term "assembly," and "dismantling" replaces the term "disassembly." Regardless of whether the crane is initially erected to its full height or is climbed in stages, the process of increasing height of the crane is an erection process.
- 4.5. **Assembly/Disassembly (A/D) Director**- a person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons.
- 4.6. **Attachments** - any device that expands the range of tasks that can be done by the crane/derrick. Examples include, but are not limited to: An auger, drill, magnet, pile-driver, and boom-attached personnel platform.
- 4.7. **Audible signal** - a signal made by a distinct sound or series of sounds. Examples include, but are not limited to, sounds made by a bell, horn, or whistle.
- 4.8. **Below-the-hook lifting device** - a device used for attaching loads to a hoist. The device may contain components such as slings, hooks, rigging hardware, and lifting attachments.
- 4.9. **Blocking (also referred to as "cribbing")** - wood or other material used to support equipment or a component and distribute loads to the ground. It is typically used to support latticed boom sections during assembly/disassembly and under outrigger and stabilizer floats.
- 4.10. **Boom (other than tower crane)** - an inclined spar, strut, or other long structural member which supports the upper hoisting tackle on a crane or derrick. Typically, the length and vertical angle of the boom can be varied to achieve increased height or height and reach when lifting loads. Booms can usually be grouped into general categories of hydraulically extendible, cantilevered type, latticed section, cable supported type or articulating type.
- 4.11. **Boom (tower cranes)** - If the "boom" (i.e., principal horizontal structure) is fixed, it is referred to as a jib; if it is moveable up and down, it is referred to as a boom.
- 4.12. **Boom angle indicator** - a device which measures the angle of the boom relative to horizontal.
- 4.13. **Boom hoist limiting device** - includes boom hoist disengaging device, boom hoist shut-off, boom hoist disconnects, boom hoist hydraulic relief, boom hoist kick-outs, automatic boom stop device, or derricking limiter. This type of device disengages boom hoist power when the boom reaches a predetermined operating angle. It also sets brakes or closes valves to prevent the boom from lowering after power is disengaged.
- 4.14. **Boom length indicator** - indicates the length of the permanent part of the boom (such as ruled markings on the boom) or, as in some computerized systems, the length of the boom with extensions/attachments.
- 4.15. **Boom stop** - includes boom stops (belly straps with struts/standoff), telescoping boom stops, attachment boom stops, and backstops. These devices restrict the boom from moving above a certain maximum angle and toppling over backward.
- 4.16. **Center of gravity** - the center of gravity of any object is the point in the object around which its weight is evenly distributed. If you could put a support under that point, you could balance the object on the support.
- 4.17. **Competent person** - one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- 4.18. **Counter jib (counterweight jib)** - a horizontal member of the tower crane on which the counterweights and usually the hoisting machinery are mounted.
- 4.19. **Counterweight** - weight used to supplement the weight of equipment in providing stability for lifting loads by counterbalancing those loads.
- 4.20. **Crane** - power-operated equipment used in construction that can hoist, lower, and horizontally move a suspended load. "Crane" includes, but is not limited to: Articulating boom cranes, such as knuckle-boom cranes; crawler cranes; floating cranes; cranes on barges; locomotive cranes; mobile cranes, such as wheel-mounted, rough-terrain, all-terrain, commercial truck mounted, and boom truck cranes; multipurpose machines when configured to hoist and lower by means of a winch or hook and horizontally move a suspended load; industrial cranes, such as

carry-deck cranes; dedicated pile drivers; service/mechanic trucks with a hoisting device; a crane on a monorail; tower cranes, such as fixed jib, hammerhead boom, luffing boom, and self-erecting; pedestal cranes; portal cranes; overhead and gantry cranes; straddle cranes; side-boom tractors; derricks; and variations of such equipment.

- 4.21. **Crawler crane** - equipment that has a type of base mounting which incorporates a continuous belt of sprocket driven track.
- 4.22. **Critical lift - a lift that:**
  - 4.22.1. Exceeds seventy-five percent of the crane or derrick rated load chart capacity; or
  - 4.22.2. Requires the use of more than one crane or derrick.
  - 4.22.3. CRPE – California Registered Professional Engineer
- 4.23. **Dismantling** - includes partial dismantling (such as dismantling to shorten a boom or substitute a different component).
- 4.24. **Ground conditions** - the ability of the ground to support the crane/derrick (including slope, compaction, and firmness).
- 4.25. **Ground crew** - those individuals who are involved in the personnel lift, other than the hoisting equipment operator and the platform occupants. These individuals include riggers, signal persons, and supervision.
- 4.26. **Hoist** - a mechanical device for lifting and lowering loads by winding rope onto or off a drum.
- 4.27. **Hoisting** - the act of raising, lowering or otherwise moving a load in the air with equipment covered by this standard. As used in this standard, "hoisting" can be done by means other than wire rope/hoist drum equipment.
- 4.28. **Hoisting equipment** - a machine for lifting and lowering a load and moving it horizontally. The machine may be fixed or mobile and be driven manually, by power, or by a combination of both.
- 4.29. **Jib** - an extension attached to the boom point to provide added boom length for lifting specified loads. The jib may be in line with the boom or offset to various angles in the vertical plane of the boom. For tower cranes, see boom (tower cranes).
- 4.30. **Jib stop (also referred to as a jib backstop)** - is the same type of device as a boom stop but is for a fixed or luffing jib.
- 4.31. **Lift Lug** – Shreve, wire rope, cable, ball (static and lifting)
- 4.32. **Lift Director**- A person who meets the criteria for both a competent person and a qualified person, or by a competent person who is assisted by one or more qualified persons.
- 4.33. **Load** - the weight of the object being lifted or lowered, including the weight of the load-attaching equipment such as the load block, ropes, slings, shackles, and any other auxiliary attachment.
- 4.34. **Load moment (or rated capacity) indicator** - a system which aids the equipment operator by sensing the overturning moment on the equipment, i.e., load X radius. It compares this lifting condition to the equipment's rated capacity and indicates to the operator the percentage of capacity at which the equipment is working. Lights, bells, or buzzers may be incorporated as a warning of an approaching overload condition.
- 4.35. **Load moment (or rated capacity) limiter** - a system which aids the equipment operator by sensing the overturning moment on the equipment, i.e., load X radius. It compares this lifting condition to the equipment's rated capacity, and when the rated capacity is reached, it shuts off power to those equipment functions which can increase the severity of loading on the equipment, e.g., hoisting, telescoping out, or luffing out. Typically, those functions which decrease the severity of loading on the equipment remain operational, e.g., lowering, telescoping in, or luffing in.
- 4.36. **Load ratings** - a set of rated loads for stipulated hoisting equipment configurations and operating conditions.
- 4.37. **Mobile cranes** - a lifting device incorporating a cable suspended latticed boom or hydraulic telescopic boom designed to be moved between operating locations by transport over the road.
- 4.38. **Operator** - is a person who is operating the equipment.
- 4.39. **Outriggers** - extendable or fixed members attached to the mounting base, which rests on supports at the outer ends, used to support the crane.

- 4.40. **Overhead/bridge and gantry cranes** - includes overhead/bridge cranes, cranes on monorails, under hung cranes, semi gantry, cantilever gantry, wall cranes, storage bridge cranes, launching gantry cranes, and similar equipment, irrespective of whether it travels on tracks, wheels, or other means.
- 4.41. **Proximity alarm** - a device that provides a warning of proximity to a power line that has been listed, labeled or accepted by a nationally recognized testing laboratory in accordance with CALOSHA TC8 CCR and L&I WAC 296-1565-52900.
- 4.42. **RPE** – Registered Professional Engineer
- 4.43. **RPEE** – Registered Professional Electrical Engineer
- 4.44. **RPSE** – Registered Professional Structural Engineer
- 4.45. **Qualified crane operator** - a crane operator who meets the requirements established by the department under RCW 49.17.430. or CAL OSHA TC8 CCR.
- 4.46. **Qualified person** - a person who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, successfully demonstrated the ability to solve/resolve problems relating to the subject matter, the work, or the project.
- 4.47. **Range control limit device** - a device that can be set by an equipment operator to limit movement of the boom or jib tip to a plane or multiple plane.
- 4.48. **Range control warning device** - a device that can be set by an equipment operator to warn that the boom or jib tip is at a plane or multiple plane.
- 4.49. **Rated capacity** - the maximum working load permitted by the manufacturer under specified working conditions. Such working conditions typically include a specific combination of factors such as equipment configuration, radii, boom length, and other parameters of use.
- 4.50. **Rated capacity indicator** - see load moment indicator.
- 4.51. **Rated capacity limiter** - see load moment limiter.
- 4.52. **Running wire rope** - a wire rope that moves over sheaves or drums.
- 4.53. **Side-boom crane** - a track-type or wheel-type tractor having a boom mounted on the side of the tractor, used for lifting, lowering, or transporting a load suspended on the load hook. The boom or hook can be lifted or lowered in a vertical direction only.
- 4.54. **Taglines** - a rope (usually fiber) attached to a lifted load for purposes of controlling load spinning and pendular motions or used to stabilize a bucket or magnet during material handling operations.
- 4.55. **Tower crane** - a type of lifting structure which utilizes a vertical mast or tower to support a working boom (jib) in an elevated position. Loads are suspended from the working boom. While the working boom may be of the fixed type (horizontal or angled) or have luffing capability, it can always rotate to swing loads, either by rotating on the top of the tower (top slewing) or by the rotation of the tower (bottom slewing). The tower base may be fixed in one location or ballasted and moveable between locations. Mobile cranes that are configured with a luffing jib and/or tower attachment are not considered tower cranes under this part.
- 4.56. **Travel** - the function of the hoisting equipment moving under its own power from one location to another.
- 4.57. **Two blocking** - a condition in which a component that is uppermost on the hoist line such as the load block, hook block, overhaul ball, or similar component, comes in contact with the boom tip, fixed upper block or similar component. This binds the system and continued application of power can cause failure of the hoist rope or other component.
- 4.58. **Working load** - the external load applied to the hoisting equipment, including the personnel lifting platform, its contents, and the load attaching equipment, such as lowered load block, shackles, and slings.

## 5. General Procedures

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### 5.1. Lift Categories



5.1.1. In order to categorize and specify requirements for safe lifting operations, all lifts will be categorized as "Standard", "Critical", or "Engineered" lifts. Project management, rigging superintendent or lift specialist may move the lift into a more stringent category.

**5.1.2. Reasons for this may include**

- 5.1.2.1. A lift that may involve a potential risk to human safety;
- 5.1.2.2. Complexities of the lift operation;
- 5.1.2.3. Operational considerations concerning risk management of the lift; and
- 5.1.2.4. Environmental factors or administrative considerations.

**5.1.3. Standard Lift Criteria**

- 5.1.3.1. All lifts that are not categorized as critical or engineered will be classified as standard except for personnel basket lifts.

**5.1.4. Critical Lift Criteria**

- 5.1.4.1. Critical lifts with mobile cranes can be extremely hazardous and require special care and attention. Before attempting lifts in this category, the project manager or superintendent must verify that a properly documented lift plan is prepared by a qualified person. The crane must be provided with a wind anemometer (or access to site wind speed indicator). The weight of the lifted object is verified prior to a critical lift.
- 5.1.4.2. Critical lifts include at least one of the following criteria:
- 5.1.4.3. Any lift exceeding 75% of the machine's maximum chart capacity at the specified lifting radius;
- 5.1.4.4. Lifts where loads must be maneuvered over existing facilities or where the boom or load does not maintain a minimum safe distance to objects as required by code and operating conditions at any stage during the lift operation;
- 5.1.4.5. Lifts that require unusual or complicated rigging and/or nonstandard crane configurations;
- 5.1.4.6. Lifts performed on undesirable ground conditions or during adverse weather conditions;
- 5.1.4.7. Lifts where cranes operate from barges;
- 5.1.4.8. Any lift involving two cranes lifting the same load simultaneously where the load on any one crane during its entire lift operation may exceed more than 75% of that crane's lifting capacity as measured on the lifting chart; and
- 5.1.4.9. All lifts where a crane must travel with a suspended load above 50% of the crane's capacity.

**5.1.5. Engineered Lift Criteria**

- 5.1.5.1. Engineered lifts with mobile cranes are defined as any lift exceeding 90% of the machine's maximum chart capacity at the specified lifting radius.
- 5.1.5.2. Engineered lifts are strongly discouraged.
- 5.1.5.3. Any lift over 95% of the machine's maximum chart capacity must be accompanied by notification to BNBuilders Regional operation manager and/or safety director
- 5.1.5.4. Before attempting lifts in this category, the project manager or superintendent must verify that a properly documented lift plan is prepared by a qualified individual and is approved by a professional engineer. Additionally, the lift operation must be attended on site by a qualified person.

**5.2. Assembly/Disassembly**

5.2.1. The erection, climbing (up & down) and dismantling of a fixed tower shall comply with the requirements 5.2 of this section and applicable state and local requirements.



- 5.2.2. Employees engaged in the erection and/or dismantling of tower cranes and the inspection, maintenance or repair related to such erection and/or dismantling, when working at elevations 6 feet or greater over ground or other surfaces shall be required to use fall protection.
- 5.2.3. When one or more employees to be under the boom, jib or other components when pins (or similar devices) are being removed, the AD director must implement procedures that minimize the risk of safety hazard, minimize duration and extent of exposure under the boom.
- 5.2.4. Before a crew member goes to a location out of view of the operator and is either in, on or under the equipment (or load), the crew member must inform the operator of the location and the operator shall not move any part of the equipment (or load) until the operator is informed in accordance with a prearranged system of communication that the crew member is in a safe location.

### **5.2.5. Foundation**

- 5.2.6. The controlling entity shall ensure that ground conditions are firm, drained, and graded to a sufficient extent so that, in conjunction (if necessary) with the use of supporting materials, the equipment manufactures specifications for adequate support and degree of level of the equipment are met. This requirement does not apply to marshes/wetlands.

## **5.3. Operations**

### **5.3.1. Cranes shall always be operated within the manufacturer's specifications and take into consideration the following elements:**

- 5.3.1.1. Proximity to power lines;
- 5.3.1.2. Underground structures;
- 5.3.1.3. Proximity to other cranes or structures;
- 5.3.1.4. Wind velocity;
- 5.3.1.5. Temperature extremes;
- 5.3.1.6. Ground conditions;
- 5.3.1.7. Level of crane;
- 5.3.1.8. Boom angle and working radius;
- 5.3.1.9. Weight of load including rigging;
- 5.3.1.10. Proximity of workers.
- 5.3.2. The operator of a crane that is lifting a load must verify the hoisting line is in a vertical position over the center of gravity of the load unless accounted for by the appropriate Lift Specialist (as in the case of fleeting of the load line).
- 5.3.3. Wind must not exceed the speed of 20 mph unless specified by the manufacture's recommendations or, where manufacturer does not specify this information, the speed is determined by a qualified person.
- 5.3.4. Any side load on a boom/jib shall be limited so that it is within the Manufacturer's specifications.
- 5.3.5. Anti-collision devices are to be onsite where there are more than two cranes being used where there is a potential for boom contact.
- 5.3.6. Baskets/containers that are hoisted must be designed and engineered for that purpose.
- 5.3.7. The operator shall not leave the controls while a load is suspended except in the case of an emergency that requires evacuation of the operator where the operator shall secure the load before leaving.
- 5.3.8. All loads shall be free and clear of obstructions to avoid the possibility of shock loading or impact loading of the crane.
- 5.3.9. No hoisting operation shall be performed during hours of darkness or poor visibility unless the crane operator has a clear and unobstructed view of the load, boom tip and operational area or is directed by the signal person who has a clear view and communicates with the operator.
- 5.3.10. Where feasible, hydraulic cranes shall be parked so that no damage would occur if the boom were accidentally lowered.

- 5.3.11. Swing radiuses must be barricaded off to prevent access to areas around cranes.
- 5.3.12. Personnel not associated with crane activities are to remain out of the area. When warning signals are sounded to signal a pick, personnel must ensure that they are not within an exclusion/controlled access zone.
- 5.3.13. All electrically operated cranes shall be effectively grounded, and protection must be provided against lighting per the manufacture's recommendations (or if not available, the RPEE when in the state of WA).
- 5.3.14. All power lines shall be assumed energized unless the utility owner/operator confirms that the power line has been and continues to be deenergized and visibly grounded.
- 5.3.15. Ensure that no part of the equipment, load line, or load (including rigging and lifting accessories), are operated in the equipment's maximum working radius of 360 degrees in the work zone or could get closer than 20 feet to a power line. (See Utility Avoidance minimum safe distance chart)
- 5.3.16. Crane Pick Plan Requirements:**
- 5.3.17. All crane activities require a documented pick plan. Contractors are required to use BNBuilders Crane Pick Plan template for all crane picks.
- 5.3.18. Crane pick plans must be developed based on the heaviest weight/highest percentage capacity pick to occur on the project.
- 5.3.19. Pre-Lift Meeting Requirements:**
- 5.3.20. A pre-lift meeting will be held prior to all crane activities.
- 5.3.21. The attendees will consist of the workers and supervision involved in the lift. During the meeting, the Lift Plan and responsibilities will be reviewed and documented.
- 5.3.22. A fire extinguisher is required on every crane
- 5.3.23. Crane Flagging and/or Barricading**
- 5.3.23.1. The swing radius of the crane's counterweight (tail swing) shall be barricaded. Only operators and oilers are permitted to enter this barricaded area.
- 5.3.23.2. If feasible, areas under/around lifts should be designated as exclusion/controlled access zones.
- 5.3.24. Requirements for Signal Persons**
- 5.3.24.1. Signaling is an important part of the crane operation. Trained signal persons shall be used when:
- 5.3.24.2. Loads are picked up at one point and lowered at another. Two signalers may be required – one to direct the lift and one to direct the descent.
- 5.3.24.3. Operators shall only take signals from the designated signaler identified during the pre-lift meeting. If the operators do not have a clear view of the designated signaler, they must use a radio and a designated radio channel.
- 5.3.24.4. Hand signals should be used only when the operator has a clear view of the signaler. The international hand signals for hoisting shall be used.
- 5.3.24.5. In all other cases, radio communications between signaler(s) and operator shall be used.
- 5.3.24.6. The signal person shall be clearly identified to the crane operator that he is the signaler. Signal persons must be able to speak clear English.
- 5.3.25. Auditory signals:**
- 5.3.25.1. Must be communicated by radio.
- 5.3.25.2. Must be determined during the pre-lift meeting.
- 5.3.25.3. Radios must be tuned to a frequency that does not interfere with other radio users.
- 5.3.25.4. Radios must be tested prior to the lift, and squelch adjustments made to attain the best possible reception.

- 5.3.25.5. Signal transmission must be through a dedicated channel except when one or more signal persons may share a dedicated channel for the purpose of coordinated operations.
- 5.3.25.6. Operators' reception of signals must be by a hands-free system.
- 5.3.25.7. Auditory signals must be given continuously during the lift procedure or when the load is lowered into, or raised out of, the blind lifting area.
- 5.3.25.8. ONLY applicable to Washington Projects: Radio communications systems without tone coded squelch are prohibited

### **5.3.26. Blind Lifts:**

- 5.3.26.1. Hoisting where the crane operator does not have a continuously clear view of the load or hook is considered a blind lift.
- 5.3.26.2. When the crane operator does not have clear line of sight to the signal person, then radios shall be used.
- 5.3.26.3. Communication between the signal person and the crane operator must be done by either visual (hand signals) or auditory means (radio communication).
- 5.3.26.4. The signal person must be positioned so load or hook is in clear view at all times while the hook, boom or load is moving. Signals must be given continuously during a lift or when the hook is being lowered into or raised out of the blind lifting area.
- 5.3.26.5. CAUTION: If radio contact is lost, the crane must immediately stop until communication is restored. Preferably, back-up radios/batteries should be available when blind lifts are encountered. Even a 2 or 3 second loss or lack of communication can be critical.
- 5.3.26.6. If at any time the auditory signals cease to be communicated, the crane operator must cease all movement of the hook or load and wait for further instructions.

### **5.3.27. Crane Travel**

- 5.3.27.1. Crane travel around the project site shall follow manufacturer, federal, state, and local requirements and will be planned in accordance with the site logistics plan.
- 5.3.27.2. The operator of a crane that is traveling with a load must verify that the load is secured and positioned as close to the ground or grade as possible.
- 5.3.27.3. Employer must ensure that boom and support system are lowered to meet requirements in sections 5.3.25.4. through 5.3.25.6.
- 5.3.27.4. The empty hook, headache ball, or block shall be restrained so that it cannot swing freely.
- 5.3.27.5. **Dedicated spotter** shall ensure If any part of the equipment while traveling will get closer than 20 ft to a power line, the employer must ensure that a dedicated spotter who is in continuous contact with the operator, be positioned to gauge clearance distance, use of equipment that enables communication directly with the Operator.
- 5.3.27.6. When traveling at night, or in conditions of poor visibility, the employer must ensure that power lines are illuminated or by another means of identification, ensure a safe path of travel is identified and used in addition to measures in 5.3.23.3 through 5.3.25.5
- 5.3.27.7. The travel routes will have appropriate 10 ft. clearance from other vehicles and equipment, structures, high lines, etc
- 5.3.27.8. Required power line clearances must be in accordance with Utility Avoidance policy and [CFR 1926.1408\(h\)](#), [WAC 296-155-53408](#), [CA Title 8-§2946](#).

### **5.3.28. Taglines:**

- 5.3.28.1. Tag lines should be used when required to control the load, provide worker separation from the load, and be made of a non-conductive material.
- 5.3.28.2. Operators of cranes shall verify tag lines are used to control loads.
- 5.3.28.3. The operator and riggers shall verify that tag lines do not create a hazard such as becoming caught on equipment/material during hoisting of any load.

- 5.3.28.4. As a best practice, taglines will be preferably bright red or yellow, min 5/8" standard manila or nylon rope with ends burned to prevent fraying.
- 5.3.28.5. All tagline length shall be sized for purpose to verify that it will not get entangled during lifting and also allow sufficient length to control the load.

**5.3.29. Outrigger Requirements:**

- 5.3.30. Where cranes are to be placed, the ground must be surveyed to determine stability. A geotechnical survey may be required to determine stability.
- 5.3.31. Cranes lifting beside excavations or adjacent to below grade structures shall be checked for ground and structure's stability prior to setting up the crane.
- 5.3.32. Where mobile cranes are to be placed on a structure, an analysis to determine the capacity of the structure to support the weight as well as shoring requirements must be undertaken. An analysis is required for all crane operations including when the crane is parked and in service as well as when the crane is in motion (travelling).
- 5.3.33. Where mobile cranes are situated adjacent to excavations or below grade structures, minimum clearance from the closest bearing edge of the crane to the excavation or structure should be maintained. If the project requirement calls for a mobile crane to be situated closer than outlined in the following sketches, a professional geotechnical engineer (and a professional structural engineer as required) should be consulted for guidance.
- 5.3.34. Outriggers or stabilizers shall be either be fully extended or, if manufacturer procedure permits, deployed as specified in the load chart. P.3/ p.75
- 5.3.35. Shall be set to remove the equipment weight from the wheels (This provision does not apply to stabilizers)
- 5.3.36. Outrigger floats shall be attached to the outriggers and stabilizer floats shall be attached to the stabilizers.
- 5.3.37. Stabilizers and outriggers shall be visible to the operator or a signal person during extension and setting.

**5.3.38. Load weights shall be determined by one of the following methods:**

- 5.3.38.1. Certified scale (if available);
  - 5.3.38.2. A calibrated load weight indicator;
  - 5.3.38.3. Calculated weight (manufacturer-supplied weight); or
  - 5.3.38.4. Published standard weight tables.
- 5.3.39. Hoisting operations shall be suspended at outdoor temperatures specified by the manufacturer.
  - 5.3.40. When operating in cold weather and when required by state regulations, the Lift Director shall verify that cold weather crane ratings are obtained from the manufacturer, posted, and made available when requested. These ratings shall be applied for lifting in cold weather conditions.
  - 5.3.41. At least one anemometer should be attached to the crane boom tip when using crane booms over 150 ft. long on a project. Alternately, a project wind speed indicator positioned at greater than 100 ft. elevation must be available and accessible by the crane operator.
  - 5.3.42. Load-monitoring devices shall be calibrated prior to starting work on a project, whenever the crane configuration changes, annually, or per manufacturer specifications-- whichever is more stringent.
  - 5.3.43. Hydraulic and conventional boom cranes shall be equipped with "Anti-two-block" and/or warning devices and shall have all load lines that are in use protected by these devices.
  - 5.3.44. An accurate method of measuring the crane radius must be provided.
  - 5.3.45. Printed copies of the crane charts and operator's manual shall be kept in the crane.

**5.4. Crane Inspections**

- 5.4.1. Crane and rigging inspections are to be documented daily prior to work starting. Copies of inspections must be submitted to the BNB Staff.

**5.4.2. Cranes shall be operated, inspected, and maintained per federal, state, and local requirements:**

- 5.4.2.1. Each crane that requires site assembly must receive a complete mechanical and structural inspection.
- 5.4.2.2. Cranes involved in incidents that result in shock loading of the boom or other components shall be removed from service and subjected to a complete inspection and recertification prior to resuming work.
  - 5.4.2.2.1. Annual inspections must be done by a third-party agency and a professional engineer must stamp the certificate of inspection.
  - 5.4.2.2.2. Mobile cranes used for short duration work with frequent access/egress from the project site will not be required to be certified every time it arrives to provide service. Note: This does not apply to conventional crawler or truck mounted lattice boom cranes requiring site assembly.
  - 5.4.2.2.3. The operator shall complete and document a daily inspection.

**5.4.3. Post-Assembly inspection.**

- 5.4.3.1. Upon completion of assembly, the equipment shall be inspected by a qualified person or a certifying agency to assure that it is configured in accordance with manufacturer equipment criteria. (Inspections for tower cranes in the state of WA must be inspected by an accredited crane certifier)
- 5.4.3.2. Where manufacturer equipment criteria are unavailable, a qualified person must determine if a registered professional engineer familiar with the type of equipment involved is needed to develop criteria for the configuration.

**5.4.4. Annual inspection**

- 5.4.4.1. At least every 12 months, equipment shall be inspected by a qualified person (and in the state of CA, a certifying agency) and shall be documented, maintained, and retained for a minimum of 12 months by the employer that conducts the inspection.

**5.4.5. Periodic Inspections**

- 5.4.5.1. Periodic inspections shall be conducted at least 4 times a year and an inspection record shall be maintained.
- 5.4.5.2. A qualified person shall visually inspect the cranes or derricks controls, rigging and operating mechanism prior to the first operation on any work shift.
- 5.4.5.3. Equipment that has had modifications or additions which affect the safe operation of the equipment or capacity shall be inspected by a certifying agent for the state of CA and an accredited crane certifier in the state of WA after such modifications or additions have been completed, prior to initial use.
- 5.4.5.4. Equipment that has had a repair or adjustment that relates to safe operation shall be inspected by a qualified person after such a repair or adjustment has been completed, prior to initial use. If manufacturer equipment criteria are unavailable, the qualified person shall determine if a RPE is needed to develop criteria for the repair/adjustment.  
Repairs to load sustaining members and critical crane and derrick parts shall be performed in accordance with the provisions of General Industry Safety Orders 5034

**5.4.6. Repairs**

- 5.4.6.1. All repairs or modifications to cranes shall be:
- 5.4.6.2. Performed per the manufacturer's specifications and inspected by a professional engineer; and
- 5.4.6.3. Tested and certified to be not less than the original capacity.

**5.5. Training****5.5.1. Crane Operator Certification**

5.5.2.Rigger/Signal Person Certification

5.5.3.Crane safety awareness training for personnel exposed to crane activities

## **6. Tower Cranes**

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### **6.1. Erecting, climbing & Dismantling**

- 6.1.1.All tower cranes in use must meet the applicable requirements for design, construction, installation, testing, maintenance, inspection, and operation as prescribed by the manufacture to include maintaining compliance with ASME B.30.3 to include local, federal, and state regulations.
- 6.1.2.**Dangerous areas (self-erecting tower cranes).** Employees shall not be in or under the tower, jib, or rotating portion of the crane during erecting, climbing and dismantling operations until the crane is secured in a locked position and the competent person in charge indicates it is safe to enter this area, unless the manufacturer instructions direct otherwise and only the necessary personnel are permitted in this area
- 6.1.3.**Foundations and structural supports.** Tower crane foundations and structural supports (including both the portions of the structure used for support and the means of attachment) shall be designed by the manufacture (or CAL OSHA- certified agent / WAC RPE).
- 6.1.4.The controlling entity shall ensure the tower crane foundations and structural supports are installed in accordance with the RPE/ engineer of record, manufacture (or a certified agent when in the state of CA) and shall provide a written statement/documentation of compliance to the erecting entity prior to erection or jump of the tower crane.
- 6.1.5.The top of the support/foundation shall be accessible and free of debris, materials and standing water. No materials shall be stored on the support unless approved by a qualified person. The foundation and fasteners must always remain accessible and visible for inspections.
- 6.1.6.**Plumb tolerance.** Towers shall be erected plumb to the manufactures tolerance and verified by a qualified person. Where the manufacture does not specify plumb tolerance, the crane tower shall be plumb to a tolerance of at least 1:500 (approximately 1 inch in 40 feet).
- 6.1.7.**Multiple Tower Cranes on Job Sites.** On Jobsites where one or more tower cranes is installed, you must locate the cranes such that no crane may come in contact with the structure of another crane. Cranes are permitted to pass over one another
- 6.1.8.Equipment shall not be erected, dismantled, or operated without the amount and position of counterweight and/or ballast in place as specified by the manufacture, a CAL OSHA certified agent or WAC manufactures specifications familiar with the equipment shall not be exceeded
- 6.1.9.**Counterweights/ballast.** Cranes superstructures and counter jibs (Counterweight jib) must be arranged to receive counterweights, made in accordance with the manufacture’s specifications (or Certified agent in the state the state of CA) for the specified jib or boom length, and hold them in position. You must provide means to guard against shifting or dislodgment during crane operation.
- 6.1.10. Manufacture specification (or Certified agent in the state of CA) specified counterweight weights are not to be exceeded.
- 6.1.11. **Climbing Procedures.** Prior to, and during, all climbing procedures (including inside climbing and top climbing), the employer shall:
  - 6.1.11.1. Comply with all manufacture’s prohibitions.
  - 6.1.11.2. Have a certified agent or RPSE for Washington verify that the host structure is strong enough to sustain the forces imposed through the braces, brace anchorages and supporting floors.
  - 6.1.11.3. For tower cranes in concrete structures, it may be necessary to test concrete cylinders or cores or to use on-site testing techniques for this purpose.

### **6.2. Signs**



- 6.2.1.. You must not install advertising signs or similar panels on the crane or tower crane unless the size, design, and positioning satisfy the manufacturer’s recommendations or obtain an RPE’s written approval.
- 6.2.2.For all projects in the state of California - the size and location of signs installed on cranes or tower cranes shall be in accordance with manufacture specifications. Where these are unavailable, a Certified agent familiar with the type of equipment involved shall approve in writing the size and location of any signs.
- 6.2.3.When leaving the superstructure free to weathervane unless provisions for non-weather vanning have been specified by the manufacturer or by a qualified person.

**6.3. Safety Devices**

- 6.3.1.Operations shall not begin unless the safety devices are in proper working order. The operator must safely stop operations and must not resume until the safety device is in proper working order. Alternative measures are not permitted to be used.
- 6.3.2.The following safety devices are required on all tower cranes unless otherwise specified:
- 6.3.3.Boom stops on luffing boom type tower cranes.
- 6.3.4.Jib stops on luffing boom type tower cranes if equipped with a jib attachment.
- 6.3.5.Travel rail end stops at both ends of travel rail.
- 6.3.6.Travel rail clamps on all travel bogies.
- 6.3.7.Integrally mounted check valves on all load supporting hydraulic cylinders.
- 6.3.8.Hydraulic system pressure limiting device.
- 6.3.9.The following brakes, which shall automatically set in the event of pressure loss or power failure, are required:
  - 6.3.9.1. A hoist brake on all hoists.
  - 6.3.9.2. Swing brake.
  - 6.3.9.3. Trolley brake.
  - 6.3.9.4. Rail travel brake.
- 6.3.10. Deadman control or forced neutral return control (hand) levers.
- 6.3.11. Emergency stop switch at the operator’s station.
- 6.3.12. Trolley end stops shall be provided at both ends of travel of the trolley.
- 6.3.13. Cameras may be installed on tower cranes-- especially if there is the potential for blind picks.

**6.4. Operational Aids**

- 6.4.1.Operations shall not begin unless operational aids are in proper working order, except where the employer meets the specified temporary alternative measures by the tower crane manufacture.
- 6.4.2.The operational aid devices listed below are required on all tower cranes covered by this part, unless otherwise specified.
  - 6.4.2.1. Trolley Travel Limiting Device
  - 6.4.2.2. Boom Hoist Limiting Device
  - 6.4.2.3. Anti-two-blocking Device
  - 6.4.2.4. Hoist Drum Lower Limiting Device
  - 6.4.2.5. Load Moment Limiting Device
  - 6.4.2.6. Hoist Line Pull Limiting Device
  - 6.4.2.7. Boom Hoist Drum Positive Locking Device and Control
  - 6.4.2.8. Boom Angle or Hook Radius Indicator
  - 6.4.2.9. Trolley Travel Deceleration Device
  - 6.4.2.10. Boom Hoist Deceleration Device
  - 6.4.2.11. Load Hoist Deceleration Device
  - 6.4.2.12. Wind Speed Indicator
  - 6.4.2.13. Load Indicating Device

## 6.5. Tower Crane Inspections

6.5.1. Sections 5.2 "Assembly/Disassembly" of this policy apply to tower cranes, except that the term "assembly" is replaced with "erection". All applicable rigging requirements found under the material handling policy of the FFD will apply to tower cranes.

### 6.5.2. Pre-erection Inspection

6.5.3. Before each crane component is erected, it shall be inspected by a qualified person for damage or excessive wear.

6.5.4. If the qualified person determines that a component is damaged or worn to the extent that it would create a safety hazard if used on the crane, that component shall not be erected on the crane unless it is repaired and, upon reinspection by the qualified person, found to no longer create a safety hazard.

### 6.5.5. Post erection Inspection

6.5.6. Monthly or per manufactures procedures, inspections shall be conducted for:

6.5.6.1. Tower (mast) bolts and other structural bolts (for loose or dislodged condition) from the base of the tower crane up or, if the crane is tied to or braced by the structure, those above the upper-most brace support.

6.5.6.2. The upper-most tie-in, braces, floor supports and floor wedges where the tower crane is supported by the structure, for loose or dislodged components.

6.5.7. Annual inspection shall be conducted for:

6.5.7.1. Turntable and tower bolts shall be inspected for proper condition and torque.

## 7. References

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- 7.1. [1926.1400 Cranes & Derricks in Construction](#)
- 7.2. [ASME B30.5 2007 Mobile & Locomotive Cranes](#)
- 7.3. [EM 385 1-1](#)
- 7.4. [CALOSHA – Title 8 Subchapter 7 Group 13 – Cranes and other Hoisting Equipment](#)
- 7.5. [L&I WAC 296-1565-52900 – Crane Scope](#)
- 7.6. [L&I WAC 296-24-21501 to 296-24-29431 – Material Handling, Storage, and Rigging](#)

## 8. Attachments

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- 8.1. [Crane Pick Plan](#)
- 8.2. [Rigging Inspection Checklist](#)
- 8.3. [Tower Crane Binder Templates](#)
- 8.4. [WA Binder Items](#)
- 8.5. [CA Binder Items](#)

## Crisis Management Program

Complete and post in the BNBuilders office areas, conference rooms, and other conspicuous locations

### 1. Purpose

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- 1.1. The following policy and protocols have been developed to help ensure that BNBuilders project teams and offices successfully respond to an emergency or event which involves serious injury, damage to property or disruption to operations.
- 1.2. Our company’s policy on emergency response is clear-- BNBuilders’ first priority is always protecting the safety of jobsite personnel and the public followed by minimizing impact to the company’s business activities. A successful response also protects the company’s brand and reputation and is carried out in a manner that is consistent with BNBuilders’ core values of excellence, leadership and integrity.

### 2. Scope

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- 2.1. A crisis is defined as anything that can endanger the life of an employee, fall under close government or media scrutiny, significantly interfere with normal business operations, jeopardize the company’s positive public image or threaten the company’s financial or legal condition. Time is a critical element-- shortage of time heightens the crisis situation. Availability of time enables the crisis to be handled as part of a normal business process.

### 3. Responsibility

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#### 3.1. Project Management

- 3.2. Preparation is the foundation of emergency management and the **Emergency Response Plan (ERP)** plays an important role. As part of the project team’s preparation, ERP responsibilities and assignments should be determined in advance along with designated back-ups.
- 3.3. Prior to mobilizing on a project, Project management will assign a member of the BNB Project Team must complete the Project-Specific ERP at the end of this document. The Safety Department may be used as a resource in completing these ERPs. Upon mobilizing, copies of this document and the completed ERP are to be located in a conspicuous location on site. It is the site’s senior manager’s responsibility to review the Crisis Management Program with staff employees and ensure that the ERP is posted and updated as needed. These requirements also apply to regional offices and satellite offices, where applicable.
- 3.4. Given that the project manager and superintendent are peers and operate collaboratively, they will determine ahead of time who is in charge during an emergency as the designated **on-site Senior Field Leader** and who will be the back- up. The on-site Senior Field Leader is responsible for ensuring that personnel are assigned to carry out all of the applicable emergency protocols.

#### 3.5. Where we operate in fixed facilities, the designated facility manager is responsible for:

- 3.5.1. Instituting access controls (i.e., keys, security system pass codes)
- 3.5.2. Distributing critical items to appropriate managers / employees, including floor plans, keys, facility personnel lists, and telephone numbers
- 3.5.3. Coordinating with the facility’s security department to ensure the physical security of the location
- 3.5.4. Assembling crisis kits containing radios, floor plans, staff roster, staff emergency contact numbers, first aid kits, and flashlights
- 3.5.5. Placing removable floor plans near entrances and exits for emergency responders
- 3.5.6. Ensuring that ERPs, evacuation instructions and any other relevant information address individuals with special needs and/or disabilities (Fixed BNB offices should be handicap-accessible and in compliance with ADA requirements)

### 4. Crisis Management Checklist

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- 4.1. The Crisis Management Checklist provides step-by-step protocols for notifying project personnel and other BNBuilders/owner representatives of an emergency, summoning outside emergency services, on-site actions to assist emergency services, making the incident scene safe, caring for injured, and evacuation of the project if appropriate.

**Senior Manager On-Site:** The senior manager in attendance at the scene of the crisis (i.e. the CEO/Founder, principal, project executive, project manager, sr. superintendent, field superintendent, project engineer, etc.) should take immediate steps to protect life and neutralize any threats to the safety of our employees or the public. The appropriate assistance, (i.e. ambulance, fire department, or police) should be called to assist in neutralizing the threat. **The senior manager (project executive/manager/superintendent) must take whatever steps seem appropriate in the immediate crisis situation to protect the safety of employees and the public without regard to other consequences.**

- \_\_\_\_\_ Contact emergency services. Mobilize necessary equipment or personnel to assist emergency services. Each gate or entry point should be manned to control access and to facilitate arrival of emergency vehicles.
- \_\_\_\_\_ Take control of the site and determine if the site should be shut down. Secure the job site and immediate accident scene. If necessary, direct field personnel to rally point and conduct head count. Determine if field personnel should shelter in place or leave the jobsite.
- \_\_\_\_\_ Establish a command center
- \_\_\_\_\_ Contact the Senior Field Leader and relay information relating to the crisis
- \_\_\_\_\_ Make certain that all employees are accounted for
- \_\_\_\_\_ Do not move anything that could be classified as evidence
- \_\_\_\_\_ Ensure telephone coverage at the site
- \_\_\_\_\_ Inform site personnel to direct requests for information from outside groups to you
- \_\_\_\_\_ Post workers to restrict entry to the site
- \_\_\_\_\_ Notify the safety director/manager
- \_\_\_\_\_ Notify the project executive and the executive leadership team
- \_\_\_\_\_ Notify the chair of the Crisis Communications Team (by office location). If unavailable, begin contacting the co-chairs/alternatives (Crisis Communications Teams by office location are listed near the end of this document in the section titled **"REGIONAL-SPECIFIC CRISIS COMMUNICATION TEAMS."**
- \_\_\_\_\_ Notify human resources, legal counsel, and insurance broker/company
- \_\_\_\_\_ Notify the owner/developer of the project
- \_\_\_\_\_ Review "Handling the Media" section of this document. Determine if a spokesperson is needed on site.
- \_\_\_\_\_ Act as temporary spokesperson until the designated spokesperson arrives. NOTE: Temporary spokesperson is only authorized to recite the APPROVED media statement on page 41.

### Senior Field Leader (Project Executive, Project Manager or Superintendent)

- \_\_\_\_\_ Determine the details of the crisis (who, what, when, where, how, why)
- \_\_\_\_\_ Identify and control potential spin-off crises
- \_\_\_\_\_ Advise the team administrator how to route calls
- \_\_\_\_\_ Assign team members and their responsibilities
- \_\_\_\_\_ Fill in for other team members as needed
- \_\_\_\_\_ Identify names of injured (if applicable). Coordinate notification of family with sub-contractors as necessary.
- \_\_\_\_\_ Notify human resources of names of injured.
- \_\_\_\_\_ Designate someone to stay with the injured worker(s) at the hospital until family members arrive
- \_\_\_\_\_ If there is an employee injury/fatality, determine who will notify spouse(s)/family(ies). (If the injury/fatality is a subcontractor's employee, it is the subcontractor's responsibility to notify the spouse/family). If a non- employee is hurt/killed, allow the authorities to make the notification
- \_\_\_\_\_ Inform any surrounding areas that may be affected by the incident
- \_\_\_\_\_ Instruct employees at the incident site to contact their families to let them know they are OK

### Safety Director/Manager

- \_\_\_\_\_ Debrief workers who witnessed the incident
- \_\_\_\_\_ Initiate a post-incident drug/alcohol test (check with legal counsel)
- \_\_\_\_\_ Notify all applicable governmental agency(ies). (Contact OSHA or local OSHA equivalent as required).
- \_\_\_\_\_ Document the incident in writing and with photos/videos

- \_\_\_\_\_ Interview witnesses
- \_\_\_\_\_ Serve as a liaison to the medical facilities
- \_\_\_\_\_ Provide information to the Senior Field Leader and spokesperson

## Spokes Person

- \_\_\_\_\_ Designate an informed person to screen calls from the news media
- \_\_\_\_\_ Complete the media log sheets (*Media section*)
- \_\_\_\_\_ Anticipate media questions. If possible, role-play a media interview with a colleague before going live
- \_\_\_\_\_ Assemble necessary background information and literature on company and incident
- \_\_\_\_\_ Do not allow media on the project site unless approved by the chair of the Crisis Communications Team, or the communications manager. If approved, make certain that the area is safe and that they are escorted by a company representative. Issue applicable personal protective equipment and require a hold-harmless agreement be signed, if necessary
- \_\_\_\_\_ Instruct reporters on your safety procedures before going onsite. If they violate any of the procedures, you have the right to ask them to leave
- \_\_\_\_\_ Advise reporters of a time and place for future updates
- \_\_\_\_\_ Work with communications manager on additional media inquiries
- \_\_\_\_\_ Manage all communications from the division to the general public (through the media)
- \_\_\_\_\_ Track media coverage via a monitoring service and the Internet

## Senior Field Leader/Human Resources

- \_\_\_\_\_ Identify the audiences that need to be contacted for update purposes
- \_\_\_\_\_ E-mail/voicemail all employees and job sites to notify them of the incident and tell them to whom they should direct media/general information calls. Provide on-going updates
- \_\_\_\_\_ Secure and offer critical-incident stress counseling for employees who witnessed the incident (if necessary)
- \_\_\_\_\_ Provide the Senior Field Leader with information on the injured/victim(s)

## Project Executive and Regional Leadership Team (RLT)

- \_\_\_\_\_ The project executive may assist the site's senior manager by contacting the CEO/Founder, owner's representative, legal counsel, human resources and the BNBuilders' communications leader.
- \_\_\_\_\_ the executive leadership team will direct human resources to notify all BNBuilders employees if necessary.
- \_\_\_\_\_ Allocate time to stay on-top of the emergency until its conclusion and assist wherever necessary.
- \_\_\_\_\_ Approve statements prior to release.
- \_\_\_\_\_ Direct human resources to notify all BNBuilders' employees if necessary.

## Project Manager/Superintendent

- \_\_\_\_\_ Be aware of the need for bi-lingual capabilities
- \_\_\_\_\_ Provide project information to the Senior Field Leader and spokesperson, if applicable
- \_\_\_\_\_ Manage the job-site during the emergency

## Team Administrator (assigned by Senior Field Leader)

- \_\_\_\_\_ Provide support to the crisis team, e.g., screening phone calls, making travel arrangements, clerical support, assisting the family in the event of an injury or fatality.

## Legal Counsel (Designated Law Firm on Retainer)

- \_\_\_\_\_ Advise decisions during a crisis

## 5. Crisis Listing

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A crisis can include, but is not limited to the following:

### Natural Disaster

- Lightning
- Earthquake
- Extended severe cold/heat
- Extreme snow/ice conditions
- Flood/drought
- Hurricane/Tornado/Tsunami

### Operations

- Incident involving a company vehicle
- Bomb threat
- Data/telecommunications failure/loss of critical data
- Explosion
- Fire
- Major utility failure
- Neighborhood/community group opposition to a project
- Structural/subsidence collapse

### Environmental Incidents/Liabilities

- Groundwater contamination
- Air quality problem
- Gas leak
- Long-term exposure of toxic chemicals to the community
- Release of toxic chemicals into the air or waterways

### Employee Safety and Health

- Chronic safety problem
- Exposure to carcinogens
- Injury/fatality of an employee or non-employee
- Personal injury suit
- Regulatory citations

### Labor Relations

- Organizing drive
- Unfair labor practices
- Violent strike/ work stoppage

### Management Issues

- Crisis in the same industry
- Someone else's crisis on your property (guilt by association)
- Kidnap, ransom, extortion
- Murder
- Negative publicity due to rumors
- Negative publicity relating to political contributions
- Death of owner or key employee
- Suicide
- Terrorism

### Employee/Management Misconduct

- Active shooter
- Disgruntled employee
- Lawsuits from discrimination, sexual/racial harassment
- Murder
- Sabotage
- Scandal involving top management
- Slander
- Suicide
- Theft/Vandalism
- Workplace violence

### Government Affairs

- Legislation that could affect business
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## **6. Specific Crisis Guidelines**

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### **6.1. Site / Building Evacuation**

- 6.1.1. Provide notification via the evacuation alert system (horn blast or public announcement system) if an evacuation of the project/building is deemed necessary.
- 6.1.2. Workers should move quickly and cautiously to a designated rally (muster) point and remain there for a headcount and further instructions.
- 6.1.3. Workers should not leave the site or return to work areas until instructed to do so. Contact information (phone number/website) should be provided to workers so they can find out when the site will reopen, if closed.
- 6.1.4. It is difficult to establish a complete plan for events such as structural failures, earthquakes, explosions, or terrorist events. It is possible that workers may have to act on their own use their best judgment to protect themselves and those workers around them. Once judged safe to move around, workers should report to a designated rally point or other location, at which time the situation will be assessed, and further instructions will be given.
- 6.1.5. Subcontractor reps should assist, and report results to a BNBuilders' point of contact that has been identified ahead of time.
- 6.1.6. Do not allow anyone to return to work until the structural engineer has given approval

### **6.2. Injuries and Medical Emergencies**

- 6.2.1. Assess the incident scene and secure as warranted to ensure the safety of site personnel, injured persons and emergency services personnel.
- 6.2.2. Do not move a seriously injured person unless necessary for their safety.
- 6.2.3. Render first aid to the injured (if applicable) as willing and trained to do so until emergency services arrive. Call emergency services and state clearly the name and address of the jobsite where you are located.
- 6.2.4. Give a detailed description of the incident and extent of damage or injury (high rise fire, fall from height with head injury, etc.).
- 6.2.5. Specify the best access to site location, the incident location within the site and that they will be met for guidance upon arrival.
- 6.2.6. Give call back number and/or maintain communication for questions or instructions.
- 6.2.7. Direct someone to meet the emergency services at the designated site access point – with the emergency action/site logistics plan if applicable/possible and attempt to staff all site access points to monitor/control access to and from the site.
- 6.2.8. Ensure the emergency services route through the project is cleared and safe.
- 6.2.9. Escort/direct emergency services to incident location and provide assistance as requested. Have a BNBuilders representative accompany the injured to the emergency care facility.
- 6.2.10. Preserve evidence (if applicable and as practical) until an incident investigation can be conducted.
- 6.2.11. Ensure that the injured employee's belongings are secured. Ensure that a family member is notified.
- 6.2.12. Initiate notification protocols (refer to the Emergency Response plan)
- 6.2.13. For a BNBuilders employee injury, notify BNBuilders worker's compensation safety manager and send incident report to them.
- 6.2.14. Consult legal considerations, public communications and media statement sections of the BNBuilders' Emergency Response Plan (ERP).
- 6.2.15. Start incident investigation.
- 6.2.16. Accompany injured personnel to hospital and stay until family members arrive.
- 6.2.17. During the process of securing the job site and immediate accident scene, the project team should not disturb any materials that could be considered evidence or be useful to the post-accident investigation team.
- 6.2.18. Take photos and/or video of the accident scene.
- 6.2.19. Identify and interview witnesses.
- 6.2.20. If necessary, initiate a post-accident drug/alcohol test.
- 6.2.21. Out of respect for the injured and their families, public transmission of web cam video should cease; however, recording of site activity should continue in order to avoid any potential legal issues such as tampering with evidence.
- 6.2.22. Coordinate post-accident investigation with appropriate officials/agencies.

### **6.3. In the event of a serious employee injury:**

- 6.3.1. Determine the extent and nature of the injuries.

- 6.3.2. Follow the flowchart found in the Emergency Medical Services Plan at the end of this document.
- 6.3.3. Find out immediately where the person is being taken.
- 6.3.4. The company President or his designated representative will determine the most appropriate person to call the spouse/family. That individual explains that there has been an incident and that the employee has been injured but does not discuss the severity of the injuries. If the spouse/family asks about the severity of the injuries, the response should be: "We can't be certain of the extent of the injuries until we hear from a doctor." Advise the family that a cab is arriving momentarily to take them to the medical facility. Discourage anyone from driving himself or herself unless someone absolutely insists.
- 6.3.5. If necessary, send an employee to the injured employee's house to lend assistance. This help may include offering a ride to the hospital (if a cab was not used) or finding someone to watch the children (if applicable).
- 6.3.6. A member of the safety department will stay in contact with the hospital to monitor the injured person's condition.
- 6.3.7. Review "Handling the Media" section and prepare buy time statement in conjunction with BNBuilders' Spokesperson.
- 6.3.8. **NOTE:** If the injury involves a non-employee, the authorities should be consulted about notification procedures. Contact your insurance company and legal counsel as soon as possible.

**6.4. In the event of an employee fatality:**

- 6.4.1. A member of the company's executive leadership team (ELT) makes a "best effort" to inform the spouse/family in person of the incident. If it is not possible to make a face-to-face notification, a member of clergy or a police officer may be a possible candidate. The goal is to notify the spouse/family quickly...a phone call is a last resort because of its impersonal nature. (See the following pages for more detail.)**NOTE:** Executive Leadership Team member may decide to treat the notification in the same manner as an injury situation (as described on the previous page) in order to get the spouse/family to the medical facility as quickly as possible. Once the spouse/family arrives at the medical facility, the attending physician can deliver the news. A member of the company's executive leadership team should be there to provide support.
- 6.4.2. The designated company representative remains at the employee's home until other family members arrive or for as long as he or she can.
- 6.4.3. The media may attempt to contact a family member. You cannot prevent them from talking to the media. It is their right to speak to the media if they wish.
- 6.4.4. Review "Handling the Media" section and prepare buy time statement in conjunction with BNBuilders' Spokesperson.
- 6.4.5. Determine whether the employee's family is in need of money to cover small expenses. If so, it may be appropriate to provide assistance in this area. **NOTE:** If the fatality involves a non-employee, the authorities should be consulted about notification procedures. Contact your insurance company and legal counsel as soon as possible.

**6.4.6. Fatality Notification**

- 6.4.6.1. This is a traumatic event for both the relative and you. Here are some guidelines to help with this process.
- 6.4.6.2. **Do your homework.** Obtain the full name, address and social security number of the deceased. Next, get the full name of the next of kin, the relationship (wife, brother, mother, etc.) and determine if the family members are English speaking. Find out if the family member has any health problems that could be exacerbated upon notification. If so, bring a health-care professional along with you. Gather all information relative to the case so you can provide an explanation.
- 6.4.6.3. **Determine where you will meet.** Will the contact be at home, work, or school? If it is outside of the home, arrange with the relative's employer or school for a private place to meet. Verify that you are talking to the correct person, i.e. "Are you Sandy Johnson's sister?"
- 6.4.6.4. **Do not go alone.** Take a fellow employee, friend of the deceased, member of the clergy, or police or fire official to support you.
- 6.4.6.5. **Decide in advance what you will say.** There is no easy way to say that someone has died. Speak simply and directly. Using terms like "mortally wounded" only confuses people. While it is not necessary to be blunt or cold, at some point it is necessary to say "dead" or "died". Example: "Mrs. Jones, there was a very bad incident this morning at the project. Charlie was moving a ladder and fell over a guardrail. The paramedics did everything they could, but unfortunately he died."
- 6.4.6.6. **Do not lie.** If you tell a mother that her son died with her name on his lips, but she later learns his death was immediate, there is a conflict. It may not be necessary to offer all of the details. Example: If

the spouse asks, "Did he suffer much?" an appropriate answer might be, "I don't think so."

- 6.4.6.7. **Be prepared for emotions.** There will be shock, denial, grief, numbness, and anger. These emotional reactions will be directed at the deceased, at you, and at the medical staff. Let the relative vent these feelings. Use common sense and do what seems appropriate at this time. Some people will appreciate a touch of a hand; others will not.
- 6.4.6.8. **Decide what not to say.** By not preparing what to say, you may end up saying things that you will later regret. Example: In an effort to offer words of comfort, do not say, "He's with God now," or "You're young and will find someone else." Instead, say, "I'm so sorry this has happened to you," or "What can I do to help you right now?"
- 6.4.6.9. **Always listen.** The formula is 90% listening and 10% talking. If the relative needs to go to the hospital or funeral home, you may offer to drive or get a cab. If there are children involved, help arrange for a sitter or have a friend to look after them. When appropriate, offer assistance in getting in touch with the life insurance company, social security and so forth.
- 6.4.6.10. **When it is over.** You have gone through an extremely stressful event. Take care of yourself now. Use your critical-incident stress counselor to review the difficult process you went through. No one ever gets comfortable with this part of the job.

## 6.5. Active Shooter

- 6.5.1. An active shooter is defined by the U.S. Department of Homeland Security as "an individual actively engaged in shooting or attempting to shoot people in a confined and populated area." Active shooter situations are unpredictable and evolve quickly. Typically, the immediate deployment of law enforcement is required to stop the shooting and mitigate harm to victims. Because active shooter situations are often over within 10 to 15 minutes, before law enforcement arrives on the scene, individuals must be prepared both mentally and physically to deal with an active shooter situation.
- 6.5.2. An active shooter in your workplace may be a current or former employee, or an acquaintance of a current or former employee. Intuitive managers and coworkers may notice characteristics of potentially violent behavior in an employee. Alert your Human Resources Department if you believe an employee or coworker exhibits potentially violent behavior.

### 6.5.3. Active Shooter – Best Practices

- 6.5.3.1. Always be aware of your environment and any possible dangers Take note of the two nearest exits in any facility you visit
- 6.5.3.2. Ensure that your facility (i.e., trailer, office, etc.) has at least two evacuation routes. Post evacuation routes in conspicuous locations throughout the facility.
- 6.5.3.3. Check your office/workspace's doors and see if they can lock from the inside and plan ahead accordingly.
- 6.5.3.4. Quickly determine the most reasonable way to protect your own life. Customers and clients are likely to follow the lead of employees and managers during an active shooter situation.
- 6.5.3.5. Include local law enforcement and first responders during training exercises. Encourage law enforcement, emergency responders, SWAT teams, K-9 teams, and bomb squads to train for an active shooter scenario at your location
- 6.5.3.6. Please watch the attached video to Help Prepare for An Active Shooter. [Click Here](#)

### 6.5.4. Reacting to an Active Shooter

**6.5.5. If you find yourself in an area with an active shooter you have three basic options:**

#### 6.5.6. Evacuate

- 6.5.6.1. Have an escape route and plan in mind
- 6.5.6.2. If you are in the building where the active shooter is present, evacuate the building immediately if safe to do so.
- 6.5.6.3. If you are outside a building when an Active Shooter event occurs, you should take immediate cover, preferably inside another building or evacuate off campus.
- 6.5.6.4. Look and listen to where the threat is. If you see members of the campus community fleeing from a particular area, this is a clear indication that the threat is in that area and may be coming toward you. Move away from the threat, away from the noise and commotion.

- 6.5.6.5. Evacuate regardless of whether others agree to follow Leave your belongings behind
- 6.5.6.6. Help others escape, if possible
- 6.5.6.7. Prevent individuals from entering an area where the active shooter may be Keep your hands visible
- 6.5.6.8. Follow the instructions of any police officers
- 6.5.6.9. Do not attempt to move wounded people
- 6.5.6.10. Call 911 when you are safe

**6.5.7. Lockdown and Shelter-in-Place**

- 6.5.7.1. Go to the nearest room or office (preferably one that locks from the inside)
- 6.5.7.2. Close and lock the door. If the door does not lock, then barricade it with large, heavy objects to make entry as difficult as possible (desks, tables, file cabinets, furniture, books, etc.)
- 6.5.7.3. Cover any windows in the door
- 6.5.7.4. Draw blinds on windows to darken the room
- 6.5.7.5. Turn off radios, televisions, computer monitors, etc.
- 6.5.7.6. Silence cell phones and remain as quiet as possible. In a dark location, cell phone illumination may draw attention: Darken cell phone screens to prevent them from making you a target
- 6.5.7.7. Keep yourself out of sight. If you can see the shooter, they may be able to see you
- 6.5.7.8. Locate an area with ballistic cover, not just visual concealment. Cover stops and slows bullets while concealment does not (i.e., soda machines, copy machines, etc.)
- 6.5.7.9. Keep quiet and act as if no one is in the room DO NOT answer the door
- 6.5.7.10. Notify 911
- 6.5.7.11. Notify security if applicable
- 6.5.7.12. If for some reason you are caught in an open area such as a hallway or lounge, try to hide, but make sure it is a well- hidden space. Remain as quiet and calm as possible or "play dead" to avoid detection
- 6.5.7.13. Avoid hiding in restrooms, as they typically cannot be secured. If you are near an office, classroom or other room that can be locked or barricaded, then go to one of those locations
- 6.5.7.14. **NOTE:** if evacuation and sheltering in place are not possible: Remain calm
- 6.5.7.15. Dial 911, if possible, to alert police to the active shooter's location
- 6.5.7.16. If you cannot speak, leave the line open and allow the dispatcher to listen, but turn the volume down to limit
- 6.5.7.17. sounds from the operator's end
- 6.5.7.18. Prior to unlocking any doors when an active shooter is at large, consider risks before un-locking rooms Typically, the police will go from room to room to ensure that there are no other shooters present Wait until trusted emergency personnel give you an "all clear!"

**6.5.8. Confront the Shooter**

- 6.5.8.1. When the shooter is at close range and you cannot flee, your chance of survival is much greater if you try to incapacitate him/her by quickly overpowering the individual with force in the most violent manner possible. If other people are with you, work as a collective group to overcome the shooter. The attacker will continue to shoot victims unless they are stopped.
- 6.5.8.2. As a last resort, and only when your life is in imminent danger, attempt to disrupt and/or incapacitate the active shooter by:
- 6.5.8.3. Acting as aggressively as possible against him/her
- 6.5.8.4. Throwing items at the shooter's head
- 6.5.8.5. Attacking the shooter with improvised weapons (i.e., fire extinguisher, scissors, chairs, etc.).
- 6.5.8.6. Grabbing the shooter's weapon
- 6.5.8.7. Tackling and holding down the shooter for police
- 6.5.8.8. Yelling (i.e., "GUN!")
- 6.5.8.9. Committing to your actions

**6.5.9 Contacting Authorities**

**6.5.10. Information to provide law enforcement or 911 operator:**

- 6.5.10.1. Your specific location (i.e., address, building name, office/room number, floor level, etc.).
- 6.5.10.2. Location of the active shooter(s)
- 6.5.10.3. Number of shooters, if more than one Identity of shooter(s) if known
- 6.5.10.4. Physical description of shooter(s) (i.e., race, gender, height, weight, clothing, physical features)

- 6.5.10.5. Number and type of weapons held by the shooter(s) (i.e., long gun, hand gun, bombs, backpacks, etc.)
- 6.5.10.6. Number of potential victims and types of injuries
- 6.5.10.7. Total number of people at your specific location
- 6.5.10.8. Identify any explosions

**6.5.11 First Responders – Authorities**

- 6.5.11.1. Police are trained to respond to an active shooting incident by entering the building as soon as possible and proceeding to the area of the shooter(s) or to the area in which the last shots were heard. They will move quickly and directly. Early on in an incident, they may not be able to rescue people because their main goal is to get to the shooter(s) and engage them immediately. People need to try to remain calm and patient during this time, so as not to interfere with police operations.
- 6.5.11.2. Normally, a rescue team is formed shortly after the first responding officers enter the building. They will be the officers who will search for injured parties and get everyone safely out of the building. Officers usually arrive in teams of four, may wear regular patrol uniforms or external bulletproof vests, Kevlar helmets, and other tactical equipment. Officers may be armed with rifles, shotguns, and handguns. Officers may use pepper spray or tear gas to control the situation, shout commands, and may push individuals to the ground for their safety.
- 6.5.11.3. The first officers to arrive at the scene will not stop to help injured persons: Expect rescue teams comprised of additional officers and emergency medical personnel to follow the initial officers. These rescue teams will treat and remove any injured persons and may also call upon able-bodied individuals to assist in removing the wounded from the premises.
- 6.5.11.4. Once you have reached a safe location or an assembly point, you will likely be held in that area by law enforcement until the situation is under control, and all witnesses have been identified and questioned. Do not leave the safe location or assembly point until law enforcement authorities have instructed to do so.

**6.5.12. How to react when law enforcement arrives:**

- 6.5.12.1. Remain calm and follow the instructions from emergency personnel when evacuating
- 6.5.12.2. Proceed to the designated re-assembly location/muster area
- 6.5.12.3. Keep hands out, open, above your head, visible at all times, and EMPTY
- 6.5.12.4. Do not attempt to run towards or grab onto officers
- 6.5.12.5. Avoid making quick movements toward officers such as attempting to hold on to them for safety
- 6.5.12.6. Avoid pointing, screaming, and/or yelling
- 6.5.12.7. Do not stop to ask officers for help or direction when evacuating, just proceed in the direction from which officers are entering the premises

**6.5.13 What to Do After an Active Shooter Event**

- 6.5.13.1. After the active shooter has been incapacitated and is no longer a threat, human resources and/or management should engage in post-event assessments and activities, including:
- 6.5.13.2. An accounting of all individuals at a designated assembly point to determine who, if anyone, is missing and potentially injured
- 6.5.13.3. Determining a method for notifying families of individuals affected by the active shooter, including notification of any casualties
- 6.5.13.4. Assessing the psychological state of individuals at the scene, and referring them to health care specialists accordingly
- 6.5.13.5. Identifying and filling any critical personnel or operational gaps left in the organization as a result of the active shooter
- 6.5.13.6. To facilitate effective planning for future emergencies, it is important to analyze the recent active shooter situation and create an after-action report. The analysis and reporting contained in this report is useful for:
  - 6.5.13.6.1. Serving as documentation for response activities
  - 6.5.13.6.2. Identifying successes and failures that occurred during the event
  - 6.5.13.6.3. Providing an analysis of the effectiveness of the existing ERP
  - 6.5.13.6.4. Describing and defining a plan for making improvements to the ERP

**6.6 Bomb Threat**

- 6.6.1. If you receive a bomb threat and contact your local police department, they will dispatch only one uniformed officer because of the high number of bomb threats received by police departments throughout the United States. The only exception is if you find a suspicious object; then a bomb squad will be dispatched.



6.6.2. Bomb threats can be made by pranksters, political terrorists, cranks, criminal extortionists, disgruntled employees or even an employee looking for a few hours off work. The threat can arrive over the telephone, in the mail, or in a written message. All threats must be taken seriously. If the threat comes on a piece of paper, do not handle it any more than necessary and use gloves, a handkerchief, tongs, etc. to avoid ruining fingerprints.

**6.6.3. Crisis Procedures in The Event of a Phoned-In Bomb Threat**

- 6.6.3.1. Keep the caller on the line for as long as possible. If possible, ask the following questions:
- 6.6.3.2. When will the bomb go off?
- 6.6.3.3. Where is the bomb located?
- 6.6.3.4. What type of bomb is it?
- 6.6.3.5. How is the bomb activated?
- 6.6.3.6. Why are you doing this?
- 6.6.3.7. Take note of the following:
- 6.6.3.8. Time of call?
- 6.6.3.9. Exact words of caller?
- 6.6.3.10. Male or female?
- 6.6.3.11. Accent?
- 6.6.3.12. Familiar voice?
- 6.6.3.13. Background noises?
- 6.6.3.14. Did the caller seem to be familiar with the building or location?
- 6.6.3.15. Immediately notify a member of the regional leadership team and/or the Senior Field Leader who will determine whether or not to evacuate the premises.
- 6.6.3.16. Immediately notify the local police and cooperate fully with their instructions.
- 6.6.3.17. Do not allow anyone except authorized personnel to enter the job site. All visitors should be escorted from the job site but remain available for questioning.
- 6.6.3.18. Review "Handling the Media" section and prepare buy time statement in conjunction with divisional spokesperson.
- 6.6.3.19. Notify the project owner/developer.

**6.6.4 Search Guidelines**

- 6.6.4.1. Do not turn on the lights, throw any switches, or use the telephone in a search area because a bomb could be attached. Turn off radio transmitters in the area because some bombs can be triggered by radio waves. An ample number of flashlights should be available to aid with the search.
- 6.6.4.2. The police, fire department or other officials normally will not help search for a bomb on private property. The most senior manager on site will determine which personnel will be asked to initiate a search.
- 6.6.4.3. Visually search a room in sections starting at floor level and going around the room in one direction. Then search at waist level around the room again, and finally, search the upper walls and ceiling areas around the room. Listen for any unusual noises.
- 6.6.4.4. If an object is found, have all personnel evacuate the area. Immediately notify the authorities giving the location, size, and shape of the object. Do not touch or move the item. Never place anything directly on the item and do not immerse it in water.
- 6.6.4.5. The Senior Field Leader will determine if an evacuation should take place. If an evacuation is ordered, employees should stay a minimum of 300 feet from the building and be prepared to find cover immediately.

**6.7 Workplace Violence**

**6.7.1. Employees typically do not just "snap," but display indicators of potentially violent behavior over time. If these behaviors are recognized, they can often be managed and treated. Potentially violent behaviors by an employee may include one or more of the following (this list of behaviors is not comprehensive, nor is it intended as a mechanism for diagnosing violent tendencies):**

- 6.7.1.1. Increased use of alcohol and/or illegal drugs
- 6.7.1.2. Unexplained increase in absenteeism; vague physical complaints
- 6.7.1.3. Noticeable decrease in attention to appearance and hygiene
- 6.7.1.4. Depression / withdrawal
- 6.7.1.5. Resistance and overreaction to changes in policy and procedures
- 6.7.1.6. Repeated violations of company policies
- 6.7.1.7. Increased severe mood swings



- 6.7.1.8. Noticeably unstable, emotional responses
- 6.7.1.9. Explosive outbursts of anger or rage without provocation
- 6.7.1.10. Suicidal; comments about "putting things in order"
- 6.7.1.11. Behavior which is suspect of paranoia ("everybody is against me")
- 6.7.1.12. Increasingly talks of problems at home
- 6.7.1.13. Escalation of domestic problems into the workplace; talk of severe financial problems
- 6.7.1.14. Talk of previous incidents of violence
- 6.7.1.15. Empathy with individuals committing violence
- 6.7.1.16. Increase in unsolicited comments about firearms, other dangerous weapons and violent crimes

**6.7.2 Crisis Procedures When Workplace Violence Is Threatened**

The following checklist has been developed to help you to reduce the risk that a violent incident will occur once a threat has been reported. This is not intended to replace our company policy, but rather to be used as a supplement to help you respond quickly to threats of violence.

**Step One -- Verify Information**

\_\_\_\_\_ Conduct a brief preliminary interview of the employee(s) who reported the allegation to determine as much of the following information as possible:

- What was the threat?
- Who made the threat?
- When was the threat made?
- Could it have been a joke?
- Who or what was the threat directed at?
- Why was the threat made?
- Were there any other witnesses?
- Does the employee want his/her identity known to the person who is accused of making or behaving in a threatening manner?

\_\_\_\_\_ Verify the information through further interviews with witnesses or a site visit.

**Step Two -- Access Risk**

\_\_\_\_\_ Determine whether there is imminent danger to employees and/or the site.

\_\_\_\_\_ Determine if the threatening employee is still onsite.

**Step Three -- Contain Situation**

\_\_\_\_\_ If confronted by a potential aggressor, lower your voice, speak slowly and clearly. Minimize your gestures and avoid getting into an argument. **Immediately call 911 if you feel in danger!**

\_\_\_\_\_ If possible, remove the employee from the workplace until the situation has been resolved.

\_\_\_\_\_ Decide whether additional security precautions are necessary to protect employees and/or property.

**Step Four -- Conduct a Thorough Investigation**

\_\_\_\_\_ Conduct a thorough investigation by re-interviewing all witnesses to the threat.

\_\_\_\_\_ Make arrangements to interview the alleged threatening employee.

\_\_\_\_\_ Decide which personnel should be present to interview the alleged threatening employee.

\_\_\_\_\_ Determine where to hold the interview and whether security precautions should be taken.

- \_\_\_\_\_ Decide whether to reveal the name of the employee who reported the threatening remarks or behavior.
- \_\_\_\_\_ Present allegations to the employee.
- \_\_\_\_\_ Notify the applicable Union the worker belongs to.

**Step Five- Monitor and Assess Situation**

- \_\_\_\_\_ Monitor the situation to determine whether there is a continued risk to employees and/or the site.
- \_\_\_\_\_ Decide whether to continue to maintain extra security precautions.
- \_\_\_\_\_ Decide whether to consult local law enforcement authorities.
- \_\_\_\_\_ Provide counseling support for employees who were impacted by threatening behavior or remarks.

**Step Six -- Media**

- \_\_\_\_\_ Review “Handling the Media” section and prepare buy time statement in conjunction with Divisional Spokesperson.

**6.8 Natural Disasters**

- 6.8.1. Employees should take shelter in the lowest part of the building, stairwells, interior structures, or a basement area of the building and stay in place until it is safe to move about. When the inclement weather has passed, workers should report to a designated rally point or other location as directed for a headcount and further instructions.
- 6.8.2. The following are some common-sense steps recommended by the Federal Emergency Management Administration (FEMA), to plan for a natural disaster. FEMA is the federal government agency that is responsible for reducing risks, strengthening support systems, and helping people and their communities prepare for and cope with disasters.

**Step One: Assessing Your Risk for Natural Disasters**

- \_\_\_\_\_ Determine whether your company or its projects are located in an area that is at high risk of a natural disaster. The community's local emergency management or the local American Red Cross will be able to provide this information to you if you are unsure.

**Step Two: Developing Disaster Response procedures**

- \_\_\_\_\_ Contact the local emergency management office or local American Red Cross chapter for a copy of the community evacuation plan. This plan should include information on the safest routes to shelters and away from the area.

**Note:** If you are located in a flash flood area, your company should have several alternative routes.

- \_\_\_\_\_ Invite local public and private emergency response agencies to your company or site to see where the turn- off switches are for specific items such as water and electricity.
- \_\_\_\_\_ Designate an employee (or more than one person, if necessary) to monitor weather conditions. If necessary, this employee should also make arrangements to:
  - Check emergency supplies.
  - Fuel company vehicles.
  - Secure buildings by closing and boarding up windows. Remove outside antennas.

- \_\_\_\_\_ Develop an emergency communication plan. Ensure that all employees know:
- What the emergency evacuation signal sounds like (this could be a bullhorn, a siren, even a paging system).
  - Where exit routes are located.
  - Where to go in the event of a natural disaster and what to do after a natural disaster has occurred (i.e., someone should be appointed to do a head count of all employees).
- \_\_\_\_\_ Have the following disaster supplies on hand:
- Flashlights and extra batteries.
  - Portable, battery-operated radio and extra batteries.
  - First aid kit and manual.
  - Emergency food and water.
  - Non-electric can opener.

### Step Three: Understanding Specific Natural Disasters

The following information is drawn from FEMA and applies to the most common natural disasters. This information is meant to provide you with general guidelines only and should be supplemented with employee education and training.

#### HURRICANES

A hurricane watch is issued when there is a threat of hurricane conditions within 24-36 hours. A hurricane warning is issued when hurricane conditions (winds of 74 miles per hour or greater or dangerously high water and rough seas) are expected in 24 hours or less.

If your office or its projects are located in an area that is prone to hurricanes, FEMA recommends the following.

#### **Before:**

- Turn off gas, electricity, and water at your office or at the site.
- Protect windows by putting up plywood panels. Use 1/2-inch plywood--marine plywood cut to fit each window. Pre-drill holes every 18 inches for screws.
- If trees are located near your company's property or on a construction site, you may want to consider trimming back dead or weak branches, which will break easily during a hurricane.
- If your company uses a mobile home as an office on its project site, check tie-downs and evacuate immediately.
- Store all paperwork and other valuables in a waterproof container on the highest level of your office.
- Leave as soon as possible. Avoid flooded roads and watch for washed-out bridges.

#### **During:**

- Stay inside, away from windows, skylights and glass doors.
- Avoid open flames, such as candles and kerosene lamps, as a source of light.
- Avoid elevators.
- If power is lost, turn off office machines to reduce power "surge" when electricity is restored.

#### TORNADOES

Ensure that employees understand the difference between a "tornado watch" and a "tornado warning." A watch is when conditions could lead to a tornado, whereas a warning is issued if a tornado has been sighted or indicated by weather radar. In areas that are prone to tornadoes, FEMA recommends designating an area in the building where all employees can go in the event of a tornado threat. If the room is not large enough to fit all employees, designate more than one room.

- Tornado danger signs:

- An approaching cloud of debris can mark the location of a tornado even if a funnel is not visible.
- Before a tornado hits, the wind may die down and the air may become very still.
- Tornadoes generally occur near the trailing edge of a thunderstorm. It is not uncommon to see clear, sunlit skies behind a tornado.

**During:**

- Many construction sites use mobile homes as project centers. These are particularly vulnerable during a tornado since they overturn easily even if precautions have been taken to tie down the unit.
- When a tornado warning is issued, take shelter in a building with a strong foundation. If shelter is not available, lie in ditch or low-lying area a safe distance away from the unit.
- If possible, go to the basement or to an inside hallway at the lowest level of the building. Avoid places with wide-span roofs such as auditoriums, cafeterias, large hallways, or shopping malls.
- Take shelter under a piece of sturdy furniture such as a workbench or heavy table or desk and hold on to it.
- Use arms to protect head and neck.

**If you are outdoors:**

- If shelter is not available or there is no time to get indoors, lie in a ditch or low-lying area or crouch near a strong building. However, be aware that there is a potential for flooding in ditches.

**If you are in a car:**

- Never try to out-drive a tornado in a car or truck. Tornadoes can change direction quickly and can lift a car or truck and toss it through the air.
- Get out of the car immediately and take shelter in a nearby building or lie in a ditch or low-lying area away from the vehicle.

**FLOODS**

If your office is doing business in an area that is prone to flooding, FEMA recommends the following steps:

Learn flood-warning signs and your community alert signals. Request information on preparing for floods and flash floods.

**During:****If indoors:**

- Turn on battery-operated radio or television to get the latest emergency information.
- Get your pre-assembled emergency supplies.
- If told to leave, do so immediately.

**If outdoors:**

- Climb to high ground and stay there.
- Avoid walking through any floodwaters. If it is moving swiftly, even water several inches deep can sweep you off your feet.

**If in a car:**

- If you come to a flooded area, turn around and go another way. Do not attempt to move a car that has stalled. Instead abandon the vehicle immediately and climb to higher ground. Many deaths have resulted from attempts to move stalled vehicles.

**EARTHQUAKES**

Unlike tornadoes, hurricanes and floods, earthquakes strike suddenly, violently and without warning. Therefore, FEMA recommends that individuals located in an area that is prone to earthquakes understand what to do should an earthquake strike.

**Before:**

- Fasten shelves securely to walls.

- Place large or heavy objects on lower shelves.
- Hang heavy items such as pictures and mirrors away chairs, couches and anywhere people sit.
- Brace overhead light fixtures.
- Identify safe places in each room: under sturdy furniture such as a heavy desk or table; against an inside wall; away from where glass could shatter around windows, mirrors, pictures or where heavy bookcases or other heavy furniture could fall over.
- Locate safe places outdoors: in the open, away from buildings, trees, telephone and electrical lines, overpasses, or elevated expressways.

**During:**

Stay inside. The most dangerous thing to do during the shaking of an earthquake is to try to leave the building because objects can fall on you.

**If outdoors:**

- Move into the open, away from buildings, streetlights and utility wires. Once in the open, stay there until the shaking stops.

**If in a moving vehicle:**

- Stop quickly and stay in the vehicle. Move to a clear area away from buildings, trees, overpasses or utility wires.
- Once the shaking has stopped, proceed with caution. Avoid bridges or ramps that might have been damaged by the quake.

**After:**

- Be prepared for aftershocks. Although smaller than the main shock, aftershocks cause additional damage and may bring weakened structures down. Aftershocks can occur in the first hours, days, weeks, or even months after the quake.

**Post-Natural Disaster Procedure**

After a natural disaster has occurred, personnel should review the procedures for “Handling the Media” and be prepared for media inquiry.

**6.9 Utility Emergencies**

- 6.9.1. Stay Calm
- 6.9.2. Contact your Senior Field Leader.
- 6.9.3. Determine if emergency services are necessary. If an injury/ incident occurs, refer to Injury/Incident section.
- 6.9.4. Secure the site.
- 6.9.5. Identify the impact to adjacent facilities - coordinate efforts with others as needed.
- 6.9.6. Review “Handling the Media” section and prepare buy time statement in conjunction with Divisional Spokesperson.

**6.9.7. Electrical Power**

- 6.9.7.1. Call Public Utilities
- 6.9.7.2. Call Power Company
- 6.9.7.3. Call City officials

**6.9.8. Gas Line Break - Top Priority: No Smoking**

- 6.9.8.1. Clear immediate area
- 6.9.8.2. Shut off gas if possible
- 6.9.8.3. Evacuate building if necessary
- 6.9.8.4. Call gas co.
- 6.9.8.5. Call Fire Department
- 6.9.8.6. Call Police
- 6.9.8.7. Call City officials

## 6.9.9. Water Main Break

- 6.9.9.1. Call Public Utilities
- 6.9.9.2. Evacuate people & equipment where possible
- 6.9.9.3. Secure the area if possible
- 6.9.9.4. Call city officials

## 6.10 Structural Damage

- 6.10.1. Stay Calm.
- 6.10.2. Sound alarm to warn people.
- 6.10.3. Contact your Senior Field Leader.
- 6.10.4. Immediately determine the extent of damage.
- 6.10.5. If an injury has occurred, refer to Injury/Incident section.
- 6.10.6. Call Emergency Response if warranted.
- 6.10.7. Evacuate people within 500 ft. and out of way emergency vehicles.
- 6.10.8. Take attendance in conjunction with Subcontractors.
- 6.10.9. Notify companies/vendors, with necessary equipment who might help.
- 6.10.10. Clear and maintain access road for emergency vehicles.
- 6.10.11. Secure area from public.
- 6.10.12. Review “Handling the Media” section and prepare buy time statement in conjunction with Divisional Spokesperson.
- 6.10.13. Do not allow employees to return to the area without debriefing once the area is declared safe.

## 6.11 Fire

- 6.11.1. Stay Calm.
- 6.11.2. Sound alarm to warn people in the immediate area.
- 6.11.3. Notify the Fire Department and call 911.
- 6.11.4. Contact your Senior Field Leader.
- 6.11.5. Attempt to contain the fire if safe to do so.
- 6.11.6. Evacuate building at least 500 ft. and out of way of Fire Department or emergency vehicles way.
- 6.11.7. Render first aid treatment if necessary.
- 6.11.8. Notify Public Utilities.
- 6.11.9. Shut off gas if necessary.
- 6.11.10. Keep access roads open for emergency vehicles.
- 6.11.11. Take attendance.
- 6.11.12. Do not allow employees to return to the area until the Fire Department declares the area safe.
- 6.11.13. Review “Handling the Media” section and prepare buy time statement in conjunction with Divisional Spokesperson.
- 6.11.14. Remind workers to use stairs – not elevators to evacuate in the event of a fire
- 6.11.15. Call 911 first. Project personnel should use the temporary, general duty, portable fire extinguishers or hose provided by BNBuilders or the subcontractor to attempt to extinguish small fires only as they are willing and able to do so without endangering themselves or others.
- 6.11.16. Extinguisher users should remember **PASS**: **P**ull the pin; **A**im at base of fire; **S**queeze the handle; **S**weep side to side until fire is extinguished.

## 6.12 Contractual Disputes

- 6.12.1. The Crisis Management Team Spokesperson (refer to the applicable regional organization chart) will prepare, in coordination with the officials, statements to the media and communication for all employees of an appropriate response. All inquiries should be handled by the Crisis Management Team.



### 6.13 Environmental Damage

- 6.13.1. Whether the incident occurs at the site or the site is notified by the authorities, follow the same procedures.
- 6.13.2. Stay Calm.
- 6.13.3. Contact your Senior Field Leader
- 6.13.4. Determine if Emergency Response is necessary for the situation and notify if warranted.
- 6.13.5. Provide first aid.
- 6.13.6. Determine the need to evacuate.
- 6.13.7. If evacuation is necessary, move crosswind, not directly with, or against the wind which may be carrying fumes.
- 6.13.8. Secure the area from the public and control the area to minimize further contamination.
- 6.13.9. Do not allow employees to return to the site until the Fire Department or other officials have declared the area to be safe.
- 6.13.10. Review "Handling the Media" section and prepare buy time statement in conjunction with Divisional Spokesperson.

### 6.14 Subcontractor Emergency

- 6.14.1. If the emergency was caused by a subcontractor, it becomes BNB's responsibility to initiate its crisis management program.
- 6.14.2. All subcontractors must be notified that they are to contact BNB's most senior manager onsite in the event of any emergency.
- 6.14.3. Notification to the family and/or spouse of injury/fatality is the responsibility of the subcontractor's management team. If the subcontractor's management team cannot be located, BNB's management team will make the notification in a timely manner.

## 7.0 Handling the Media

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### 7.1 Public Communications

- 7.1.1. Staffs should direct any media inquiries to the designated spokesperson. Given his/her other duties, it is strongly recommended that the on-site Senior Field Leader avoid also taking on the role of designated spokesperson, if possible. The project manager and superintendent should discuss these assignments as part of emergency prep.
- 7.1.2. Designated spokesperson and back-up should attend spokesperson training as part of emergency prep. Contact the communications manager for training opportunities.
- 7.1.3. The on-site designated spokesperson is authorized to give a prepared response (see media statement at the end of this section).
- 7.1.4. All media inquiries should be directed to the BNBuilders' communications manager (refer to the regional org chart)
- 7.1.5. The client should be apprised of the prepared statement as part of emergency response preparation.
- 7.1.6. Keep a list of on-site media inquiries with reporters' contact information in case follow up is needed.
- 7.1.7. BNBuilders communications manager (refer to the regional org chart) will monitor and assess print and electronic media coverage and provide feedback to senior management and the corporate communications leader (refer to the regional org chart).
- 7.1.8. BNBuilders communications manager will also monitor social media activity and recommend what, if any, response is needed.
- 7.1.9. BNBuilders communications manager will draft and obtain approval for any additional statements as events unfold.
- 7.1.10. BNBuilders communications manager should serve as liaison with the client's PR staff.
- 7.1.11. It is very likely that subcontractors involved in an accident will also be contacted by the media. Subcontractors should be directed to refer all media inquiries to the designated spokesperson.

In order to mitigate risk to the company, staff should NEVER officially respond to the media or other organization. The following is the communication protocol for the designated spokesperson:

**7.2 Media Statement**

7.2.1. "We are getting the situation under control. As always, our highest priority is the safety of the workers and the public, and our team is working closely with local officials to respond to the situation. We also are in the process of gathering information to determine the cause of the accident. It's necessary to get the facts—we don't want to speculate. We will provide additional information when it is available."

**The following is the protocol for managing media inquiries in a crisis:**

**7.2.2. Staff write down the following:**

- 7.2.2.1. Reporter's name
- 7.2.2.2. Media outlet
- 7.2.2.3. Request
- 7.2.2.4. Deadline

7.2.3. **Staff notifies supervisor.** (If the supervisor is unavailable, staff contacts the receptionist at applicable Regional Office until live contact is made with the chair and/or co-chairs of the Crisis Communication Team and the Communications Manager.

7.2.4. Supervisor notifies the chair, applicable co-chair, and the Communications Manager (refer to the regional org chart).

7.2.5. If the media request occurs after business hours, and live contact cannot be made with one of the individuals listed above, refer to complete listing of Crisis Communications Team listed on pages 47- 50 Go through the list until live contact is made with one of them.

7.2.6. If warranted, applicable Crisis Communication Team Chair (or designee) sends an email to all members of the crisis management team alerting them about the media request.

**8.0 Media Log Sheet**

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(To be completed with each media call)

Date/Time of Call: \_\_\_\_\_

Publication/Station: \_\_\_\_\_

Reporter: \_\_\_\_\_

Reporters Deadline: \_\_\_\_\_

Phone Number: \_\_\_\_\_ Email: \_\_\_\_\_

Date/Time Call Rec'd: \_\_\_\_\_

Our Response: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

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Follow-Up Promised \_\_\_\_\_

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**9.0 Foreign Language Expertise**

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In the event of an injury or fatality, the spouse/family must be contacted as quickly as possible. If English is not their primary language, you'll need someone to communicate for you.

Please list any employees with foreign language expertise.

Language: \_\_\_\_\_  
Employee: \_\_\_\_\_  
Office#: \_\_\_\_\_  
Home#: \_\_\_\_\_

Language: \_\_\_\_\_  
Employee: \_\_\_\_\_  
Office#: \_\_\_\_\_

Home#: \_\_\_\_\_  
\_\_\_\_\_

Language: \_\_\_\_\_

Employee: \_\_\_\_\_

Office#: \_\_\_\_\_

Home#: \_\_\_\_\_  
\_\_\_\_\_

Language: \_\_\_\_\_

Employee: \_\_\_\_\_

Office#: \_\_\_\_\_

Home#: \_\_\_\_\_  
\_\_\_\_\_

**10.0 Post-Crisis Evaluation Form**

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This evaluation should be completed by all members of the crisis-management team within one week after the outset of the crisis. The goal of effective crisis management is to learn from experience and apply that knowledge to strengthen the existing crisis-management program and team.

Your name:

Date:

Your role on the team?

Were you notified in a timely manner? If not, how can the notification system be improved?

On a scale of 1 (poor) to 10 (excellent), how would you rate the way our company managed the incident?

What were our weaknesses?

What are your recommendations for improvement?

What were our strengths?

### **11.0 Post-Crisis Evaluation Questionnaire**

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Should any changes be made to the crisis-management team?

Do any members of the crisis-management team need additional training? If so, what type of training should be conducted?

Does the crisis-management program need to be improved or revised? If so, what recommendations would you make?

On a scale of 1 (poor) to 10 (excellent), how well did we communicate with our employees? If your score below was a 7, what improvements would you recommend?

(Score)

On a scale of 1 (poor) to 10 (excellent), how well did we communicate with all of our audiences? If your score was below a 7, what improvements would you recommend?

(Score)

If there was media coverage, was it reported in a balanced fashion? If not, what needs to be done to set the record straight with the media and/or our audiences?

Did our spokesperson(s) communicate our key message(s) effectively? What recommendations would you make for our spokesperson should another crisis occur?

Which of our audiences were affected by this crisis? How do we re-establish positive contact with them?

Who should be thanked for their assistance and what form should that take?

What suggestions would you make to prevent a reoccurrence of this incident?

Any other suggestions?



## Regional- Specific Crisis Communication Teams

| SEATTLE  |  |   |
|--|--|---|
| <b>Jason Limp</b><br><br>Work: 206-382-3443<br>Cell Phone: 206-719-6009                            | <b>Jeff Sebenik</b><br><br>Work: 206-382-3443<br>Cell Phone: 206-719-6169                                      | <b>Dan Huber</b><br><b>Member (Ops)</b><br><br>Work: 206-382-3443<br>Cell Phone: 206-465-7437             |
| <b>Leary Jones</b><br><b>Member (Safety)</b><br><br>Work: 858-550-9433<br>Cell Phone: 619-572-8846 | <b>Steve Leigh</b><br><b>Member (Safety)</b><br><br>Work: 206-382-3443<br>Cell Phone: 206-953-1652             |   |
| <b>Jim Charpentier</b><br><b>Member (Communications)</b><br><br>Work: 206-382-3433<br>Cell Phone:  | <b>Prema Krishnan</b><br><b>Member (Human Resources)</b><br><br>Work: 206-382-3443<br>Cell Phone: 425-877-5392 | <b>Roy Lundin</b><br><b>Member (Communications)</b><br><br>Work: 206-382-3443<br>Cell Phone: 206-930-4658 |
| Alternative Team Members (If above members are unavailable)  |  |   |
| <b>Casey Blake</b><br><b>Alternate (Ops)</b><br><br>Work: 206-382-3443<br>Cell Phone: 206-718-4268 | <b>TBD</b><br><b>Alternate (Ops)</b><br><br>Work:<br>Cell Phone:   |   |
| <b>Seattle Office Receptionist: 206-382-3443</b>   |  |   |

| <b>BAY AREA</b>  |  |   |
|--|--|---|
| <p><b>Neil Howry</b><br/><b>Ops Manager</b><br/>Cell: 650-445-5194</p>                                   | <p><b>Janelle Lamb</b><br/><b>Sr. Project Executive</b><br/>Cell: 650-773-2336</p>                                   | <p><b>Jeff Sebenik</b><br/><br/>Work: 206-382-3443<br/>Cell Phone: 206-719-6169</p>                             |
| <p><b>Steve Leigh</b><br/><b>Member (Safety)</b><br/>Work: 206-382-3443<br/>Cell Phone: 206-953-1652</p> | <p><b>Leary Jones</b><br/><b>Member (Safety)</b><br/>Work: 858-550-9433<br/>Cell Phone: 619-572-8846</p>             |   |
| <p><b>Jim Charpentier</b><br/><b>Member (Communications)</b><br/>Work: 206-382-3433<br/>Cell Phone:</p>  | <p><b>Prema Krishnan</b><br/><b>Member (Human Resources)</b><br/>Work: 206-382-3443<br/>Cell Phone: 425-877-5392</p> | <p><b>Roy Lundin</b><br/><b>Member (Communications)</b><br/>Work: 206-382-3443<br/>Cell Phone: 206-930-4658</p> |
| <b>Alternative Team Members (If above members are unavailable)</b>                                       |  |   |
| <p><b>Jason Limp</b><br/><br/>Work: 206-382-3443<br/>Cell Phone: 206-719-6009</p>                        | <p><b>Casey Blake</b><br/><b>Alternate (Ops)</b><br/>Work: 206-382-3443<br/>Cell Phone: 206-718-4268</p>             |   |
|  |  |   |

| LOS ANGELES/ ORANGE COUNTY   |   |  |
|--|---|--|
| <b>Blair Jones</b><br><b>Ops Manager</b><br>Work: 714-989-7440<br>Cell Phone: 949-244-3429                 | <b>Brian Dague</b><br><b>Project Executive</b><br>Work: 310-905-2180<br>Cell Phone: 714-357-0477      | <b>Jim Charpentier</b><br><b>Member (Communications)</b><br>Work: 310-905-2180<br>Cell Phone: 206-962-7513 |
| <b>Casey Blake</b><br><b>Alternate (Ops)</b><br>Work: 206-382-3443<br>Cell Phone: 206-718-4268             | <b>Leary Jones</b><br><b>Member (Safety)</b><br>Work: 858-550-9433<br>Cell Phone: 619-572-8846        | <b>Matt Garcia</b><br><b>Member (Safety)</b><br>Work Phone: 714-989-7440<br>Cell Phone: 760-637-4839       |
|  |   |  |
| <b>Alternative Team Members (If above members are unavailable)</b>   |   |  |
| <b>Prema Krishnan</b><br><b>Member (Human Resources)</b><br>Work: 206-382-3443<br>Cell Phone: 425-877-5392 | <b>Roy Lundin</b><br><b>Member (Communications)</b><br>Work: 206-382-3443<br>Cell Phone: 206-930-4658 | <b>Jason Limp</b><br><b>Alternate (Ops)</b><br>Work: 206-382-3443<br>Cell Phone: 206-719-6009              |
| <b>LA/OC Office Receptionist: Irvine -714-989-7440 LA- 310-905-2180</b>                                    |   |  |

| <b>SAN DIEGO</b>   |  |   |
|--|--|---|
| <b>James Awford</b><br><b>Chair</b><br>Work: 858-550-9433<br>Cell Phone: 619-871-9805          | <b>Ross Brown</b><br><b>Co-Chair</b><br>Work: 858-550-9433<br>Cell Phone: 858-735-7012                     | <b>Dave Ripley</b><br><b>Co-Chair</b><br>Work: 858-550-9433<br>Cell Phone: 619-838-1052               |
| <b>Leary Jones</b><br><b>Member (Safety)</b><br>Work: 858-550-9433<br>Cell Phone: 619-572-8846 | <b>Robert Sahagun</b><br><b>Member (Safety)</b><br>Work Phone: 858-550-9433<br>Cell Phone: 619-214-4373    |   |
| <b>Jim Charpentier</b><br><b>Member (Communications)</b><br>Work: 206-382-3433<br>Cell Phone:  | <b>Prema Krishnan</b><br><b>Member (Human Resources)</b><br>Work: 206-382-3443<br>Cell Phone: 425-877-5392 | <b>Roy Lundin</b><br><b>Member (Communications)</b><br>Work: 206-382-3443<br>Cell Phone: 206-930-4658 |
| <b>Alternative Team Members (If above members are unavailable)</b>                             |  |   |
| <b>Jason Limp</b><br>Work: 206-382-3443<br>Cell Phone: 206-719-6009                            | <b>Casey Blake</b><br><b>Alternate (Ops)</b><br>Work: 206-382-3443<br>Cell Phone: 206-718-4268             |   |
| <b>San Diego Office Receptionist: 858-550-9433</b>   |  |   |

## 12. First Hour Checklist

---

| CHECKLIST   | √ |
|---|---|
| 1. Care for the injured.  |   |
| 2. Notify appropriate emergency response services.                                  |   |
| 3. Coordinate site access for emergency response.                                   |   |
| 4. Provide emergency medical and account for all employees                          |   |
| 5. Secure the site.   |   |
| 6. Maintain a time sequence diary of events as they unfold                          |   |
| 7. Notify Corporate Officer and/or Operations Manager                               |   |
| 8. Notify Corporate Crisis Management Team.   |   |
| 9. Notify Construction Executive.   |   |
| 10. Notify Owner's Representative.  |   |
| 11. Notify injured worker's family. (someone from management team)                  |   |
| 12. Determine if project should be shut down.                                       |   |
| 13. Keep communication lines open; log all messages and inquiries.                  |   |
| 14. Do not discuss with media. Refer all media requests to Company Office.          |   |
| 15. Under direction of Risk Manager coordinate with BN Builders insurance carriers. |   |
| 16. Cooperate with local public authorities (police, fire, OSHA, etc.).             |   |

# Demolition

## 1.0 Purpose

---

- 1.1. Demolition is a potentially hazardous task that may expose personnel and the public. The primary hazards associated with demolition are falls from elevated work surfaces; exposure to hazardous air contaminants; being struck by falling or collapsing structures; potential sources of energy; and utility hazards. When demolition will occur on a BNB project, proper preplanning and execution must be carried out to prevent exposing personnel and the public. Safe dismantling and removal of building components and material is essential.

## 2.0 Scope

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- 2.1. For the purpose of this standard, demolition refers to any task where a building or structure or a portion of a building or structure is torn down.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. BNB Project Management & Supervision are responsible for ensuring that a Qualified Person has conducted a survey and created a plan for demolition activities. Appropriate procedures must be followed if the ground is to be penetrated. In addition to typical submittals, BNB Project Management & Supervision must ensure that additional HS&E documents such as air monitoring, fit testing, medical evaluations, abatement programs, equipment operator certifications, etc. are submitted by demolition contractors. BNB Project Management & Supervision are responsible to attain a permit issued by Cal OSHA for the demolition of structures greater than 36’.

### 3.2 Worker Supervision

- 3.2.1. Supervisors of workers must ensure that a demolition plan is submitted to BNB prior to performing demolition work. At all times, demolition work shall be under the immediate supervision of a qualified person with the authority to ensure safety for anyone who may be potentially exposed to the activity. The supervisor must ensure that the demolition plan is in place, adequate, and followed by all personnel engaged in the activity.

### 3.3 Workers

- 3.3.1. Workers involved in demolition should follow the demolition plan and report any unsafe condition(s) to supervision as they become apparent. Deviation from the demolition plan shall not be made unless reviewed and approved by qualified personnel. Also, workers engaged in demolition must wear adequate PPE as directed by their employer.

## 4.0 Definitions

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- 4.1. **Competent Person** - One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- 4.2. **Hazardous Substance** - One which by reason of being explosive, flammable, extremely flammable, poisonous, corrosive, oxidizing, irritant, or otherwise harmful is likely to cause injury.
- 4.3. **Qualified Person, Attendant or Operator** - A person designated by the employer who by reason of training, experience or instruction has demonstrated the ability to safely perform all assigned duties and, when required, is properly licensed in accordance with federal, state, or local laws and regulations.

## 5.0 Procedure

---

### 5.1 Hazards



- 5.1.1. Demolition may result in an uncontrolled release of energy, fire, explosion, and/or unplanned collapse of a structure resulting in adjacent property damage or injury to personnel or the public. Other hazards associated with demolition may be the exposure to hazardous building materials like asbestos, struck-by injury from contact with moving equipment/falling material, lacerations to hands/forearms, trip hazards from debris, and more. Also, construction equipment may emit hazardous gases such as Carbon Monoxide/Dioxide which must be monitored to prevent potential exposure to personnel.
- 5.1.2. An engineered survey by a Qualified Person of the structure must be completed to determine the structure layout, the condition of the framing, floors, walls, the possibility of unplanned collapse of any portion of the structure (any adjacent structure where personnel or property may be exposed shall be similarly checked), and the existence of other potential or real demolition hazards.
- 5.1.3. A demolition plan is essential and should be completed by the RPE and based on lead and asbestos surveys. All utilities to the structure being demolished must be turned off or protected from damage. It shall also be determined if any type of hazardous chemicals, gases, explosives, flammable materials, or similarly dangerous substances have been used in any pipes, tanks, or other equipment on the property. When the presence of any such substances are apparent or suspected, testing and purging shall be performed, and the hazard eliminated before demolition is started.
- 5.1.4. Other considerations should include the securing of entrances, the sequencing of demolition from top to bottom, continuous checks for hazards created by weakening structural members, securing of unprotected floor and upper wall openings, the placement of barricades or fences outside exterior walls, and warning signage due to the potential of falling debris.

**5.1.5. The attached Demolition checklist may be used to develop a demolition plan. Also, as a guideline, the following items may be addressed to establish demolition plans:**

- 5.1.5.1. Anticipated sequence of work
- 5.1.5.2. Equipment known or anticipated to be used
- 5.1.5.3. Lead, asbestos or PCB issues
- 5.1.5.4. Utility decommissioning/shut-off
- 5.1.5.5. Utilities to be maintained during demolition
- 5.1.5.6. Dust control
- 5.1.5.7. Clean-up operations
- 5.1.5.8. Protected trash chutes
- 5.1.5.9. Fall protection for exposed employees
- 5.1.5.10. Public Protection measures
- 5.1.5.11. Traffic control measures
- 5.1.5.12. Protection of adjacent buildings, structures and businesses
- 5.1.5.13. Temporary shoring of structures
- 5.1.5.14. Noise

## 5.2 Hazard Controls

### 5.2.1 Engineering Controls

- 5.2.1.1. If possible, it is best to eliminate demolition hazards during the planning phase. To accomplish this, stake holders involved in the work need to be present during the design and review of the demolition plan.
- 5.2.1.2. Prior to the demolition of building components, adequate shoring shall be in place to prevent potential structural-member collapse.

- 5.2.1.3. The structure and its surrounding area should be surveyed via ground penetrating radar (or similar method) to identify any unknown utilities which may affect demolition activities.
- 5.2.1.4. Barricades and signage should be erected when possible to separate personnel and the public from demolition activities. Adequate screening should be in place on the barricades.
- 5.2.1.5. Methods of demolition which create less dust should be employed if feasible. Tools fitted with water-emitting or vacuum attachments may be used to control potential dust exposures.
- 5.2.1.6. Negative air filtration should be utilized to filter dust from the air when feasible.
- 5.2.1.7. Asbestos, lead, mercury, and PCBs shall be abated by a licensed/qualified contractor prior to initiation of demolition operations. A clearance letter is to be provided prior start of demolition.
- 5.2.1.8. CFCs, halons, and other refrigerants shall be removed from the site in accordance with legislative requirements. Proper chain of custody forms are to be used by the abatement contractor. These are not to be removed by any BNB employee.
- 5.2.1.9. Masonry walls shall not be permitted to fall upon the floor of the building when the impact may exceed the safe carrying capacities of the floors. This is to be determined by the competent person.
- 5.2.1.10. No wall section more than one story in height shall be permitted to stand alone without lateral bracing.
- 5.2.1.11. All roof cornices or other such ornamental stonework shall be removed prior to pulling walls over.
- 5.2.1.12. When pulling walls over, all steel members affected shall have been previously cut free. Floors and supporting structures should be checked to determine if they act as diaphragms or in any way provide support to other parts of the structure.
- 5.2.1.13. All glass and windows on the exterior walls of the building or structure and adjacent to public walkways are removed prior to demolition.
- 5.2.1.14. If tensioned steel cables or bars are known to be in the building or structure, demolition procedures are carried out under the direction of a professional engineer.

### **5.2.2 Administrative Controls**

- 5.2.2.1. Prior to starting demolition operations, all structural or other hazardous deficiencies noted during the survey shall be shored, braced or otherwise corrected as recommended in the survey.

### **5.2.3. The engineering and structure review should include:**

- 5.2.3.1. The potential effect of the removal of any part or parts of any structure prior to removal;
- 5.2.3.2. Wall to be examined to determine if they are load bearing or if they act as ties or braces to other parts of the structure.
- 5.2.3.3. The structure will be examined to determine if any part is suspended from another structure.
- 5.2.3.4. A review will be made to determine if there are any cantilevered construction in the structure to be demolished. The nature of the stability of any cantilevered construction should be determined before demolition proceeds.
- 5.2.3.5. The effects of soil, water, and other lateral pressures on retaining and foundation walls resulting from the demolition of other elements should be evaluated and, where necessary, appropriate measures should be taken.
- 5.2.3.6. Damaged or deteriorated structures shall be inspected, and the strength and stability shall be determined before demolition.
- 5.2.3.7. All vessels and piping are to be examined for hazardous chemicals prior to any demolition.
- 5.2.3.8. Documentation shall be reviewed prior to any demolition with all parties involved.
- 5.2.3.9. If the demolition may affect the stability of an adjoining building or structure, the demolition will be carried out in accordance with procedures certified by a professional engineer that safeguard the stability of the adjoining structure.
- 5.2.3.10. Walls, which serve as retaining walls to support earth or adjoining structures, shall not be demolished until the hazard from moving ground has been eliminated by sloping, shoring or, where necessary, adjoining structures have been properly underpinned.

- 5.2.3.11. Walls, which are to serve as retaining walls against which debris will be piled, shall not be so used unless determined to be capable of safely supporting the imposed load.
- 5.2.3.12. During demolition, continuous inspections shall be made as the work progresses to detect hazards resulting from weakened or deteriorated floors or walls, or loosened material.
- 5.2.3.13. Personnel shall not be permitted to work where such hazards exist until they are corrected by shoring, bracing, or other effective means.
- 5.2.3.14. All persons on demolition projects shall be protected from falling material at employee entrances to multi-story structures being demolished, by sidewalk sheds or canopies or both, providing protection extending from the face of the building for a minimum of 8 feet.

#### **5.2.4 Personal Protective Equipment**

- 5.2.4.1. Workers engaged in demolition activities must wear personal protective equipment as required by their employer for the exposures they will face.

#### **5.2.5. Some typical PPE for demolition may be:**

- 5.2.5.1. Cut, puncture, and abrasion resistant gloves & forearm sleeves
- 5.2.5.2. Hard-soled and high-top leather boots
- 5.2.5.3. Hard hats
- 5.2.5.4. Safety glasses, goggles, face shield
- 5.2.5.5. Respiratory protection
- 5.2.5.6. Leg protection/chaps
- 5.2.5.7. Foot protection/shoe covers/metatarsal foot protectors
- 5.2.5.8. Full-body suits (Tyvek)
- 5.2.5.9. Ear plugs/muffs

### **5.3 Training**

- 5.3.1. All employees engaged in demolition activities shall be instructed on the demolition plan, so that they may conduct work activities in a safe manner. Personnel must be trained on the PPE, equipment, and machinery that they are required to use.

## **6.0 References**

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[Fed/OSHA demolition standards](#)

[Cal/OSHA demolition standards](#)

[L&I WAC 296-155-780 - Demolition](#)

[EM-385-1-1](#)

[L&I WAC 296-24-21501 to 296-24-29431 – Material Handling, Storage, and Rigging](#)

[L&I WAC 296-800 – Core Safety](#)

## **7.0 Attachments**

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[Silica Exposure Control Plan](#)

[Table 1](#)

[Dig Permit](#)

[Electrical Demolition Work Plan](#)



[Plumbing / Piping Demolition Work Plan](#)

[HVAC Demolition Work Plan](#)

# Drones

## 1.0 Purpose

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- 1.1. This policy outlines the procedures for BNB's internal drone usage on our projects.

## 2.0 Scope

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- 2.1. This policy covers any scope of work relating to the operation / flying of a drone on any BNBuilders project.

## 3.0 Responsibility

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### 3.1 Operator

- 3.1.1. Before drone usage can be conducted on a BNB jobsite, the operator must first check in with the BNB superintendent. The operator must provide his certification (typically a FAA Part 107 License) and allow BNB supervisors to check his license. The operator must also show the FAA Pre-Flight Inspection Checklist they use and ensure BNB site management receives a copy the completed checklist. Operator must be accompanied by a visual observer. Operators must comply with FAA regulations listed in Small UAS Rule PART 107.

## 4.0 Definitions

---

**AGL** – Above Ground Level

**FAA** – Federal Aviation Administration

**PIC** – Pilot-in-Command

**UAS** – Unmanned Aircraft Systems

**VFR** – Visual Flight Rules

## 5.0 Procedure

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- 5.1. Before drone usage can be conducted on a BNB jobsite, the operator must first check in with the BNB superintendent. The operator must provide his certification (typically a FAA Part 107 License) and allow BNB supervisors to check his license. The operator must also show the FAA Pre-Flight Inspection Checklist they use and ensure BNB site management receives a copy the completed checklist. Operator must be accompanied by a visual observer. Operators must comply with FAA regulations listed in Small UAS Rule PART 107.
- 5.1.1. Operator's must not fly the aircraft higher than 400 feet above ground level (AGL).
- 5.1.2. Operator's must keep the UAS in visual line of sight of the operator at all times.
- 5.1.3. You may not fly more than one UAS at a time or from a moving vehicle.
- 5.1.4. A forward visual observer is responsible for ensuring that the UAS remains clear of and yields to all other aircraft and pedestrians.
- 5.1.5. Flight hours are restricted to daylight hours and civil twilight hours with appropriate anti-collision lighting on the UAS.
- 5.1.6. The remote PIC must conduct a preflight inspection of the UAS, as per a provided BNB survey drone preflight checklist.
- 5.1.7. UAS's are not allowed to fly over people or cars in the right of way, unless it is the operator or visual observer (Per FAA Small UAS Rule PART 107). UAS's may be flown over people that are under a covered structure.
- 5.1.8. UAS's are not allowed to fly in inclement weather. UAS's must be 500 feet below any cloud.

- 5.1.9. UAS's are not allowed to fly faster than 100 mph.
  - 5.1.10. Commercial UAS accidents involving serious injury and property damage of \$500 or greater must be reported to the FAA.
  - 5.1.11. Only BNB surveyors licensed with a FAA Part 107 are permitted to fly on BNB project.
  - 5.1.12. 3<sup>rd</sup> party drone usage will not be permitted on BNB projects.
- 5.2. All drone operators must have a current FAA PART 107 License. This license must be received from an FAA approved testing center. Operators must pass a Recurrent Knowledge Test every 24 months to keep certificate in good standing (Required per FAA Small UAS Rule PART 107).

## **6.0 References**

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[FAA – Part 107 Summary \(Unmanned Aircraft Systems Requirements\)](#)

## **7.0 Attachments**

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[Drone Surveying Checklist](#)

# Dropped Object Prevention

## 1.0 Purpose

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- 1.1. The purpose of this policy is to establish guidelines for eliminating dropped objects when working at heights. Site plans should help mitigate dropped objects by ensuring that workers are properly trained to secure tools and materials at heights and understand **correct preventative procedures**.

## 2.0 Scope

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- 2.1. **This Dropped Object Prevention Plan applies to:**
  - 2.1.1. All locations where personnel are to perform work at heights that expose others to a dropped object hazard. For example stairways, elevator shafts, mechanical shafts, leading edges, perimeter work, aerial lifts ETC.)
  - 2.1.2. This plan must be observed by all personnel involved in or working near elevated work activities.
  - 2.1.3. It is the expectation of BNBuilders that any tools and materials that could be considered drop hazards are secured with primary or secondary drop systems.

## 3.0 Responsibilities

---

The following must be adhered to by BNB project teams:

### 3.1 Project Manager is responsible for:

- 3.1.1. The project manager has primary responsibility for establishing a properly functioning project dropped object prevention program.
- 3.1.2. Allocate project funds as necessary to support the implementation of an effective dropped object prevention and protection policy.
- 3.1.3. Include specific subcontract scope language as necessary to address dropped object hazards known to be inherent to the nature of a subcontractor's work.
- 3.1.4. Ensure that project dropped object prevention and protection expectations are clearly communicated to all employees, subcontractors, and trade workers on the project.
- 3.1.5. Ensure that dropped object prevention and protection plans are re-evaluated to ensure effectiveness during the current, and future, phases of construction.

### 3.2 Project Superintendent is responsible for:

- 3.2.1. Ensure a dropped object risk assessment is conducted as part of project Phase Planning and develop dropped object prevention and/or protection measures for each activity as applicable.
- 3.2.2. Review BNB dropped object protection measures for effectiveness.
- 3.2.3. Audit, document and ensure adherence to project dropped object prevention plan (i.e. installation and maintenance of protective barriers, netting, delineations, warning signage, and other protections).
- 3.2.4. Coordinate work activities, to the extent feasible, to minimize worker exposure to overhead work hazards.
- 3.2.5. Avoid trades working above one another, if possible.
- 3.2.6. Establish and communicate area access restrictions to mitigate potential exposures.

### 3.3 Project Senior Foreman is responsible for:

- 3.3.1. Assist with dropped object risk assessments as part of the JHA and PTP process.
- 3.3.2. Assist with the communication and understanding of requirements for dropped object prevention plan, and ensure that all craft workers and trade partners adhere to the site specific plans.
- 3.3.3. Assist in selecting and reviewing for effectiveness the dropped object prevention methods.
- 3.3.4. Supervise installation of dropped object prevention to ensure consistency with plan.

### 3.4 All Project BNB Employees and Subcontractor Employees are responsible for:



- 3.4.1. Notifying supervisor of dropped object hazards that are not adequately prevented or protected.
- 3.4.2. Perform work in compliance with identified dropped object prevention methods.
- 3.4.3. Limit items at height work locations to those necessary to perform the task.
- 3.4.4. Immediately report any dropped object incidents to a supervisor.

## 4.0 Definitions

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- 4.1. **Anchorage** - A secure point of attachment for tethers, tools and transport buckets with closure systems which is independent of an anchorage used for fall protection for personnel.
- 4.2. **Attachment Point** - A device designed and utilized to create a connection point on a tool to which the user can connect a tether or lanyard.
- 4.3. **Controlled Access Zones** - areas that have the potential to be impacted by drop hazards by in a work in progress above. Controlled Access Zones are to be clearly marked with barricades or caution/ danger tape to restrict access. Only employees in the activity conducted overhead will be admitted into a controlled access zone. Signage stating the hazard and who to contact for information shall be posted on all sides of demarcation.
- 4.4. **Drop Hazard** - Any tool, material or object that has an opportunity to fall from elevation to a lower level causing potential for damage to property, injury, or death.
- 4.5. **Maximum Dynamic Load** - the load an object can withstand without failing when dropped from a specified Drop Distance. Maximum Dynamic Load is usually much less than Maximum Static Load due to the dramatic increase in force caused by the velocity of a Dropped object.
- 4.6. **Primary Drop Systems** - systems which serve as the tool's primary form of drop prevention and typically include the worker's hand placement or grip on the tool. Other forms of primary protection may include main support systems for the tool (such as holstering a tool on the body or the platform a tool may be resting while not in use).
- 4.7. **Safety Net** - A device installed beneath work-in-progress to catch dropped objects. Not intended to catch personnel.
- 4.8. **Secondary Drop Systems** - serve as a backup in the event the primary system fails and are utilized to prevent damage from a dropped or dropped object after it has fallen. Secondary systems may include passive systems such as guardrails with toe-board and mesh netting, screens, floor/hole coverings, and tool canopies that have side protection. They may also include tool restraint systems which are utilized to secure a tool or object to an employee or stationary structure to prevent it from dropped (these include pouches and transport buckets with closure systems). Tool arrest systems include tool tethers, which will arrest the fall of the tool and prevent it from striking a lower level and others below.
- 4.9. **Spotters** - Personnel specifically designated as spotters should be used in cases where work in being conducted above and a Controlled Access Zone cannot be set up. Spotters should have no other responsibility than to watch the overhead activity and manage the flow of personnel who may be impacted by the risk of a dropped object.
- 4.10. **Static Load** - Maximum Static Load, or Tensile Strength, refers to the maximum load an object can withstand before failing. This measurement does not take into account drop Distance or Velocity.
- 4.11. **Tool Belt** - A device that is designed to ergonomically support and manage other dropped prevention items such as, lanyards/tethers, pouches, and holsters on the person of the worker.
- 4.12. **Tool Bucket** - A bucket designed for the purpose of carrying tools and materials. These tool buckets must be capable of being closed and secured in order to prevent the contents of the tool bucket from spilling. All tool buckets being utilized by employees must utilize a closure system.
- 4.13. **Tool Canopy** - A structure designed to rest over an area that is capable of withstanding the impact force of dropped **objects or tools. It is recommended that tool canopies have side protection if a potential for tool deflection exists.**
- 4.14. **Tool Holster** - A bag or pouch designed to secure single tools or items (hammers, wrenches, levels, radios, bottles, etc.) in order to keep them easily accessible while, in use with other necessary components, helps prevent them from becoming drop hazards.
- 4.15. **Tool Lanyard / Tether** - An extension made of durable materials that is designed to prevent an object from being dropped. These will typically utilize a connection point on either end of the tether for securing an object to a worker or **stationary item.**
- 4.16. **Tool Pouch** - A bag or pouch that is designed to secure its contents (nuts, bolts, nails, screws, small hand tools, etc.) from being spilled or dropped. Many tool pouches allow the user to remove a tool for use while preventing it from becoming a drop hazard through use of tethers, retractors, etc.

## 5.0 Procedure

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**All projects must plan for the following:** This Dropped Object Prevention Plan is to address the technical issues and risks challenges during construction and need to be identified on the Site-Specific Risk Register

This Dropped Object Prevention Plan must be reviewed in development of any job hazard analysis or pre-task plan for activities that require working at height with tools and materials.

### 5.1 Primary Dropped Object Prevention Systems

- 1.1.1. Tools shall be tethered while workers are tied off using a Personal Fall Arrest System.
- 1.1.2. Tools weighing less than 5 Lbs. may be tethered to toolbelts or workers. For wrist tethers, a weight of less than 5 Lbs. is recommended to prevent injury. Any tool weighing more than 10 Lbs. should be tethered back to the building or structure and not the employee.
- 1.1.3. Buckets/ toolboxes shall be utilized for safe transportation of tools and materials only if they are manufactured with a closure system which allows users to secure the contents of the bucket/ toolbox from potential spills.
- 1.1.4. Material, tools, equipment are to be stored at least 8 feet back from the edge of slab and shaft openings.
- 1.1.5. Cam-levers, dumpsters, tipsters or any device shall be with a lid to be closed after use and shall be closed and secured properly prior to picking/ flying with crane. All equipment and materials must be rigged in a way to prevent tools/ materials/ debris from dropped out of equipment.

### 5.2 Primary Dropped Object Prevention System's Criteria

#### 5.2.1 Tool Attachment Points

- 5.2.1.1. Prior to selecting a tool lanyard, a proper attachment point must be established on the tool. If a tool has a built-in connection point placed by the manufacturer for the purpose of drop prevention, this step is not required. Load rating of the attachment point should be appropriate for the tool's weight.

Examples of **CORRECT** tool attachment:



Examples of **INCORRECT** tool attachment:



**5.2.2 Tool Lanyards / Tethers**

5.2.2.1. After establishing an adequate attachment point on a tool, a proper tool tether will then need to be selected which has an appropriate load rating for the tool to be tethered.

Examples of **CORRECT** tether/lanyard selections for different sized tools



**5.2.3 Tool Holsters and Pouches**

5.2.3.1. For some tools and objects, a tool holster or tool pouch may be appropriate. Tools used in these holsters should weigh less than or equal to the manufacturer stated load-rating.

Examples of holstered tools:





**5.2.4 Tool Belts**

5.2.4.1. Upon choosing a proper method for tethering, it becomes necessary to select an appropriate anchor point for the remaining end of the tethering device. For many small tools, connecting to the worker can be the best option. This is only acceptable for tools weighing less than 5 lbs. D-Rings on fall protection harnesses which have been designated by the manufacturer for use as a tool connection point are a good option. Tool Belts designed with tether points are also a good option.

Examples of tethered tools utilizing tool belts:



**5.2.5 Wristbands**

5.2.4.1. Another acceptable option for tethering to the human body is with the use of a wristband. Wristbands must never be utilized with tools over 5 lbs.

Examples of tethered tools utilizing wristbands:



### 5.2.6 Tool Buckets

5.2.6.1. For the safe transportation of tools and materials, buckets may be utilized only if they are manufactured with a closure system which allows the user to secure the contents of the bucket from potential spills.

Examples of tool buckets with closure systems:



### 5.3 Secondary Dropped Object Preventions Systems

- 5.3.1. Controlled Access Zones are to be clearly marked with barricades danger tape with applicable signage to restrict access. Only employees directly engaged with the activity conducted overhead will be admitted into a Controlled Access Zone. In some cases a spotter may be required.
- 5.3.2. Spotters should be used in cases where work is being conducted above and a Controlled Access Zone cannot be set up. Spotters should have no other responsibility other than to watch the overhead activity and manage the flow of personnel who may be impacted by the risk of a dropped object. If spotter is not in place, the work cannot proceed.
- 5.3.3. When exterior walls are not in place, vertical netting should be provided from floor-to-ceiling along the perimeter, where applicable.
- 5.3.4. Horizontal and Vertical Debris Netting- Exterior and Interior of Buildings.
- 5.3.5. Horizontal debris netting should be provided at the perimeter of concrete buildings to catch debris from the pour level and during the installation and removal of tables or forms as feasible.
- 5.3.6. Horizontal debris netting should be designed and stamped by a professional engineer to meet all load requirements including, but not limited to, impact and wind loads.
- 5.3.7. Horizontal debris netting should be provided at each outrigger platform.
- 5.3.8. Exposed elevator shafts shall have vertical netting installed from floor to ceiling at each level in front of the fall protection handrail.
- 5.3.9. Toe boards and mesh netting shall be erected along the edge of overhead work in order to protect anyone below.
- 5.3.10. Overhead protection shall be erected at building access/egress routes.

### 5.4 Secondary Dropped Object Prevention System's Criteria

#### 5.4.1 Safety Netting

5.4.1.1. In applications where the utilization of safety nets is necessary, nets should be designed with specific sized webbing approved by the manufacturer for use based on the specific task, location and type of tools/materials being used. Forged steel safety hooks or shackles will be used to fasten the net to its supports. Nets should be installed as closely below the work in progress as is deemed practicable, but never more than 30 feet below. Safety nets shall be hung, maintained, and tested in accordance with the manufacturer's instructions as well as the requirements set forth by the Occupational Safety and Health Administration found in CFR 1926.502, WAC 296-880-40055 and Cal OSHA Title 8, Subchapter 4, article 24,1671. Nets designed for use to prevent dropped objects shall not be used as fall protection for human

beings. These nets may be deployed below fall protection nets in these cases. When dropped object nets are used alone, signs will be posted informing employees that "Fall Protection is still required in work areas above placed netting." Inspections of safety netting should occur weekly and defective netting will not be deployed.

## 5.4.2 Toe Boards

5.4.2.1. When being used as a secondary drop system, toe boards will be erected along the edge of overhead work in order to protect employees below. Toe boards will be capable of withstanding a force of at least 50 lbs. in any downward or outward motion. Toe boards will be at least 3 ½ inches tall with no greater than ¼ inch clearance over the working surface.

## 5.4.3 Controlled Access Zones

5.4.3.1. Controlled Access Zones are areas that have the potential to be impacted by drop hazards by in a work-in-progress above. Controlled Access Zones are to be clearly marked with barricades or caution/danger tape to restrict access. Only employees directly engaged in the activity conducted overhead will be admitted into a Controlled Access Zone. Signage stating the hazard and who to contact for information should be posted.

## 5.4.4 Guardrail Systems

5.4.4.1. If guardrail systems are to be engaged as a secondary drop system, they will need to be inspected to ensure any openings are not large enough for tools or materials to pass through. It is recommended they be enclosed with a small mesh netting or screen to prevent materials from passing through.

## 5.5 Work Practices

### 5.5.1 Housekeeping

5.5.1.1. Trash and waste should be kept in appropriate bins which are to be located in convenient locations across the workplace. When at height, these are to be stored in transport buckets with closure systems, pouches, etc. with an ability to be closed and prevent spillage until the material can be properly stored in a waste bin. Employees should "clean as you go" and maintain an orderly work area, resulting in a lower chance for dropped material. Tools and other materials should also be kept in an organized, orderly fashion.

### 5.5.2 Tool & Material Storage

5.5.2.1. Where tools or materials are stacked higher than the edge of the toe boards, screening or paneling will be constructed from the working surface to the top of the guardrail or mid-rail. This will be done for a sufficient distance to ensure these objects will not have an opportunity to become drop hazards. Unless guardrails with screening or paneling has been erected, **materials should not be stored within 8 feet of the leading edge or shaft**. All stacked materials should be stable and self-supporting.

### 5.5.3 Tool & Material Handling

5.5.3.1. Positive tool transfer should be utilized by employees. When transferring a tethered tool from one employee to another, "100% tie off" should be engaged. The tool should be tethered to the passing employee. Prior to handing off, the receiving employee should connect their tether to the tool as well. After positive connection has been completed, the passing employee may disconnect their tether from the tool. By utilizing this passing method, the tool never has an opportunity to become a drop hazard.

### 5.5.4 Equipment Inspection

5.5.4.1. All drop prevention systems shall be inspected prior to use. Excessively worn or damaged tools or materials **must be immediately removed from service and replaced**.

### 5.5.5 Discipline

5.5.5.1. Failure to implement these procedures or to use necessary drop prevention systems will be considered a failure **to abide by BNBuilders safety rules and could result in discipline up to removal from the project**.



## 5.6 Training Requirements

Ensure that all Staffs, subcontractors and their tiers are abiding by the requirements outlined in this Dropped Object Prevention Policy and any applicable regulations concerning dropped object prevention.

Recognition of dropped object hazards in the workplace

- Purpose and application of dropped object prevention and dropped object protection
- Correct procedures and equipment for use in the prevention of and protection from dropped objects
- Information regarding impact force and dropped/deflected object trajectory
- Proper storage and handling of equipment and materials at height
- Correct procedures and equipment for use in the prevention of and protection from dropped objects
- Information regarding impact force and dropped/deflected object trajectory
- Proper storage and handling of equipment and materials at height

## 6.0 References

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[OSHA Dropped Object Protection – 1926.759](#)

[CAL/OSHA Protection from Dropped Objects](#)

[L&I Dropped Object Protection – 296-874-20066](#)

## 7.0 Attachments

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[Shaft Work Entry Permit](#)

[Dropped Object Prevention Evaluation/ Checklist](#)

**Dropped Object Deflection Study**

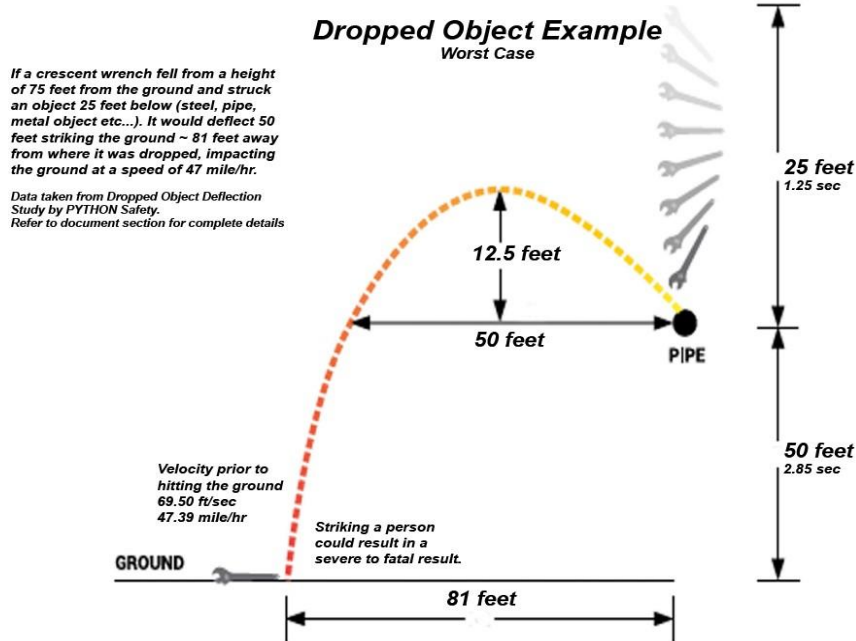


Image 1: This example serves as a reminder that deflection distances can be significant and must be taken into consideration when selecting the appropriate drop prevention / protection methods for at height activities. Image 1 shows a worst case scenario assuming a perfectly elastic collision, no air resistance and worst case impact location and trajectory angle. See the Dropped Object Deflection Study under References for additional information.

**Impact Force Chart**

**Impact Force of a Dropped Object**

Measured in pounds per square inch

| Drop Height (feet) | Weight of Dropped Object (pounds) |     |       |       |       |       |       |       |       |       |
|--------------------|-----------------------------------|-----|-------|-------|-------|-------|-------|-------|-------|-------|
|                    | 1                                 | 2   | 3     | 4     | 5     | 6     | 7     | 8     | 9     | 10    |
| 300                | 434                               | 867 | 1,301 | 1,735 | 2,168 | 2,608 | 3,036 | 3,469 | 3,903 | 4,337 |
| 200                | 354                               | 708 | 1,062 | 1,416 | 1,771 | 2,125 | 2,479 | 2,833 | 3,187 | 3,541 |
| 150                | 307                               | 613 | 920   | 1,227 | 1,533 | 1,840 | 2,147 | 2,453 | 2,760 | 3,067 |
| 100                | 250                               | 501 | 751   | 1,002 | 1,252 | 1,502 | 1,753 | 2,003 | 2,253 | 2,504 |
| 50                 | 177                               | 354 | 531   | 708   | 885   | 1,062 | 1,239 | 1,416 | 1,593 | 1,771 |
| 20                 | 112                               | 224 | 336   | 448   | 560   | 672   | 784   | 896   | 1,008 | 1,120 |
| 10                 | 79                                | 158 | 238   | 317   | 396   | 475   | 554   | 633   | 713   | 792   |
| 6                  | 61                                | 123 | 184   | 245   | 307   | 368   | 429   | 491   | 552   | 613   |

SERIOUS SEVERE FATAL

# Drugs & Alcohol

## 1.0 Purpose

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- 1.1. The purpose of this policy is to provide guidelines to ensure BNB workplaces, projects, and properties are drug and alcohol-free work environments.

## 2.0 Scope

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- 2.1. The scope of this policy covers all BNB workplaces, projects, or properties.

## 3.0 Responsibility

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### 3.1 General Responsibility and Applicability

- 3.1.1. Substance abuse and providing a safe place to work is everyone's responsibility. BNB expects all its employees to recognize and accept this responsibility and to do their part in helping us achieve and maintain a drug-free working environment for all BNB employees.

## 4.0 Definitions

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- 4.1. **Prescription Medication** - Drug or medication lawfully prescribed, under both federal and state law, by a physician, or other health care provider licensed to prescribe medication.
- 4.2. **Reasonable Suspicion** - Aberrant or unusual behavior of person which:
  - 4.2.1. Is observed by the person's immediate supervisor or others and confirmed by the observation of a managerial employee or their trained designee, which observations shall be documented at or near the time of the observation; and
  - 4.2.2. Is the type of behavior which is recognized an accepted symptom of intoxication or impairment caused by controlled substances or alcohol or addiction to or dependence upon said controlled substances.

## 5.0 Procedure

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### 5.1 Prescription and other medications

- 5.1.1. Prescriptions and over-the-counter medications are not prohibited when taken in standard dosage and/or according to a physician's prescription. Prescription medication means a drug or medication lawfully prescribed, under both federal and state law, by a physician, or other health care provider licensed to prescribe medication.
- 5.1.2. When taking prescription and/or over-the-counter medications, the employee is responsible for consulting his or her prescribing physician and/or pharmacist to ascertain whether the medication may interfere with safe performance of duties. If using a medication that could compromise the safety of the employee, his or her coworkers, or the public, it is the employee's responsibility to notify his or her immediate supervisor so that steps can be taken to address the safety risks posed. In such situations, BNB may require information from the employee's treating physician about whether the employee is able to safely perform his or her job duties. Any information about an employee's use of medication will be treated as confidential and shared with Company personnel on a need-to-know basis.
- 5.1.3. BNB employees are strictly prohibited from using, purchasing, possessing, selling, conveying, distributing, or manufacturing illegal drugs, intoxicants, or controlled substances in any amount or in any manner, including being under the influence of or having a detectible presence of such drugs or controlled substances in their body, while conducting BNB business (including business travel) or during working hours.
- 5.1.4. For purposes of this policy, "controlled substances" include any substance prohibited by local, state or federal law, including marijuana (used either recreationally or medicinally). The use of marijuana,

medicinal marijuana, or cannabinoids is a violation of this policy regardless of whether or not it is prescribed and/or used according to a physician’s prescription. Marijuana could affect the safety of BNB and its subcontractors’ employees, clients and third parties, even if such use is prescribed by a licensed physician. Further, BNB must comply with both federal and state law, and federal law prohibits the use of marijuana. For these reasons, having any detectible amount of marijuana within an employee’s system is a violation of this policy.

## 5.2 Drug and alcohol Testing

5.2.1. BNB tests all of its field construction employees for drugs and alcohol as a condition of their assignment to a job and ability to remain on BNB projects. Field employees will be asked to submit to a medical examination and/or to submit to urine, saliva, and/or breath or blood testing for drugs or alcohol. All new hires—and re-hires of regular full-time or part-time employees—will acknowledge receipt of BNB Drug and Alcohol Policy during the application and orientation process.

## 5.3 Random testing of current employees

5.3.1. Employees working in field roles in Washington State will be required to submit to a pre-employment drug and alcohol testing and will be subject to random testing during employment as part of the WCISAP Clean Card program. Employees working in areas not using the clean card program will be subject to drug and alcohol testing through local service providers using a process and structure that mirrors that used by the WCISAP Clean Card program. Failure to pass any drug or alcohol test, refusal to submit to testing and/or tampering with testing results will result in denial of employment or in immediate removal from the job.

5.3.2. Employees who are removed from job for failure of a drug or alcohol test will be further investigated based on the particulars of their situation until such time as their status is more fully determined by the Medical Review Officer. Acceptance of medical examinations and testing at the pre-employment stage is a mandatory condition of employment.

## 5.4 Additional reasons for testing any employee

**5.4.1. In addition to pre-employment testing and random testing for field employees, all BNB Employees are subject to testing in the following circumstances:**

5.4.1.1. **Post-Accident Testing:** Any employee involved in an on-the-job accident resulting in an injury requiring professional medical treatment or property damage will be required to take a post-accident drug test. Employees who may have caused/contributed to an accident or property damage will also be required to take a post-accident drug test.

**or**

5.4.1.2. **Reasonable Suspicion Testing:** A reasonable suspicion drug test may be requested when a BNB manager or supervisor has reason to suspect, based upon observation of employee’s behaviors, that an employee may be under any influence of drugs or alcohol. Types of behavior that may raise such reasonable suspicion testing are behaviors that are recognized and accepted symptoms of intoxication or impairment caused by controlled substances or alcohol or addiction to or dependence upon controlled substances; and are not reasonably explained as resulting from causes other than the use of controlled substances (such as fatigue, lack of sleep, side effects of prescriptions or over the-counter medications, reactions to noxious fumes or smoke.) Examples of such circumstances include: evidence of alcohol or a controlled substance on or about the employer’s person or in the employee’s vicinity, unusual conduct on the employee’s part that suggests impairment or influence of alcohol or a controlled substance, negative performance patterns, excessive absenteeism and unexplained absenteeism or tardiness and/or employee admission of use.

- 5.4.2. Cooperation with any requests for drug and alcohol testing under the post-accident or reasonable cause drug testing policies is a mandatory condition of continued employment. Refusal to submit to such medical examinations and testing is grounds for discipline up to and including discharge.

### **5.5 Searches and inspections based on reasonable suspicion**

- 5.5.1. When a manager for BNB has reasonable belief or suspicion that an employee may be violating any aspect of this policy, he or she may require an employee to submit to a search or inspection of the employee's person or belongings (including lunch box, backpack, tool box, purse, wallet, desk, and vehicle) at any time while on company property or the site of an assigned project or associated parking area. A manager's or supervisor's reasonable suspicion giving rise to such search / inspection must be based upon personal and objective observations by manager or supervisor. Entry on to BNB workspace or assigned project will be deemed consent to such reasonable suspicion's search/inspections. Refusal to consent to a search/inspection when requested by BNB manager may subject the employee to discipline up to and including discharge.

### **5.6 Notification of criminal convictions**

- 5.6.1. Any employee convicted of a violation of a criminal drug statute that is workplace-related must notify BNB in writing within five calendar days of the conviction.

### **5.7 Employee assistance**

- 5.7.1. BNB makes available to all employees a confidential employee assistance program (EAP) whose goal is rehabilitation. This program is available at no cost to employees and their dependents, and includes initial assessment, referral, and counseling. The EAP includes family support and counseling aimed at successful rehabilitation. Any subsequent treatment after referral from BNB EAP program to an outside treatment provider may be covered under the employee's health care coverage.
- 5.7.2. The costs of continuing or long-term rehabilitation services, whether covered by the employee's medical plan or not, are the ultimate responsibility of the employee BNB urges individuals who believe they may be having substance abuse problems to seek help.

### **5.8 General responsibility and applicability**

- 5.8.1. Substance abuse and providing a safe place to work is everyone's responsibility. BNB expects all its employees to recognize and accept this responsibility and to do their part in helping us achieve and maintain a drug-free working environment for all BNB employees.
- 5.8.2. BNB will provide further information on this subject from time to time. You are encouraged to contact your supervisor, Safety Director, or the Human Resources Director if you have questions about this policy.

### **5.9 Discipline**

- 5.9.1. Any violation of this policy shall result in disciplinary action up to and including dismissal. Evidence of employee use of alcohol and/or controlled substances in violation of this policy includes but is not limited to: smell, smoke, residue and/or employee admission of use. BNB will deal with each violation at its discretion in accordance with its current policies and practices and the specific circumstances involved. This may include requiring an employee to satisfactorily complete an approved drug abuse assistance or rehabilitation program or to submit to drug or alcohol testing as a condition of continued employment.

### **5.10 Confidentiality**

- 5.10.1. All information received by the employer through a drug / alcohol testing program is confidential communication. Access to this information is limited to those who have a legitimate need to know in compliance with relevant laws.

### 5.11 Training

- 5.11.1. All employees must be trained when first hired by BNB.
- 5.11.2. Supervisors or managers tasked with determining reasonable suspicion must be trained to recognize signs and symptoms of impairment.

## 6.0 References

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[L&I WAC – 246-922-405 – Substance Abuse Monitoring](#)

[L&I WAC – 296-800 – Core Safety Rules](#)

[OSHA General Duty Clause](#)

[CALOSHA – Title 8 Subchapter 7 Group 16 Article 109 – Hazard Communication](#)

## 7.0 Attachments

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[Notice of Safety Violation Form](#)

## Electrical

### 1.0 Purpose

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- 1.1. The purpose of this program is to establish the minimum requirements for ensuring that all work with electricity is carried out safely.

### 2.0 Scope

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- 2.1. This program applies to all BNB projects and is applicable to every electrical system and all electrical equipment irrespective of voltage limits. There is no distinction between permanent and temporary systems or equipment.

### 3.0 Responsibility

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#### 3.1 Project Management

- 3.1.1. BNB Project Management and Supervision are responsible for conducting a preconstruction risk assessment to identify electrical hazards and/or tasks. When electrical hazards or tasks are identified, appropriate steps must be taken to eliminate/control the hazard and notify contractors who may be affected. For contractors that will be exposed to electrical hazards or tasks, BNB Project Management must ensure that adequate HS&E submittals are received such as qualified electrician certification, electrical hazard awareness training and usage. BNB Project Management & Supervision are responsible for ensuring that this standard is adhered to.

#### 3.2 Workers

- 3.2.1. Workers are responsible for working in a safe manner around electricity. Those working with electrical hazards must understand how to protect others. Workers who are to engage in electrical tasks must understand and follow this standard in addition to their employer's electrical safety requirements. Workers must not carry out work for which they are not adequately trained, certified, authorized, or qualified.
- 3.2.2. **Qualified Electrician Attributes:**
  - 3.2.2.1. Understand the scope of work and hazards involved
  - 3.2.2.2. Comply with all electrical safe work procedures and requirements as described in this document
    - 3.2.2.2.1. CPR/First Aid certified
    - 3.2.2.2.2. Arc Flash trained NFPA 70E
    - 3.2.2.2.3. Hazardous Energies – annual (Licensed Elec.)
    - 3.2.2.2.4. Basic Electrical Safety (Licensed Elec.)
    - 3.2.2.2.5. Intermediate Electrical Safety (Licensed Elec.)
    - 3.2.2.2.6. Advanced Electrical Safety - Advanced is required annually (Licensed Elec.)

### 4.0 Definitions

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- 4.1. **Arc Flash Boundary** - When an arc flash hazard exists, an approach limit at a distance from a prospective arc source within which a person could receive a second degree burn if an electrical arc flash were to occur. Note: a second-degree burn is possible by an exposure of unprotected skin to an electric arc flash above the incident energy level of 5 J/cm<sup>2</sup> (1.2 cal/cm<sup>2</sup>).
- 4.2. **Approved** - means acceptable to the authorities.
- 4.3. **Authorized Person** - means a person approved or assigned by management to perform a specific duty or duties or to be at a specific location or locations at the jobsite.
- 4.4. **Avoid Contact** - minimal possibility of bare skin contact to exposed live energized parts.
- 4.5. **Balaclava (sock hood)** - an arc rated hood that protects the neck and head except for the facial area of the eyes and nose.
- 4.6. **Blast Suit** - Properly rated hood, face shield, gloves, hard hat, and Nomex or equivalent outer clothing combination.



- 4.7. **Bonding** – The permanent joining of metallic parts to form an electrically conductive path which will assure electrical continuity and the capacity to conduct safely any current likely to be imposed.
- 4.8. **Buddy System** - A safety system used which one person is performing Energized Electrical Work (EEW) and one person is functioning as a dedicated Qualified - (EEW) Buddy. Both individuals must be qualified as per this document. A person may function as an EEW Buddy for two people if they are working on the same system and are both in a single line of sight from a single observation point. Both must be trained, and wear required PPE.
- 4.9. **Cabinet** - means an enclosure designed either for surface or flush mounting.
- 4.10. **Compelling Reason** - A situation where greater operational health, safety or environmental hazard exists if equipment is de-energized or if an essential continuity of service is halted. Examples of "compelling reasons" include:
  - 4.10.1. Impact to Emergency Alarms
  - 4.10.2. Impact to Illumination
  - 4.10.3. Impact to Life Support
- 4.11. **Competent Person** - means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them.
- 4.12. **Conductor (bare)** - means a conductor having no covering or electrical insulation whatsoever.
- 4.13. **Conductor (insulated)** - means a conductor encased within material of composition and thickness that is recognized as electrical insulation.
- 4.14. **Defect** - means any characteristic or condition that tends to weaken or reduce the strength of the tool, object, or structure of which it is a part.
- 4.15. **Disconnect** - means a device, or group of devices, or other means by which the conductors of a circuit can be disconnected from their source of supply.
- 4.16. **EEW Badge** - (Journey License or other visible indicator, hereafter referred to as "EEW badge") - A badge authorizing a qualified person to perform trouble shooting, I/R Scanning, and voltage and current measurements for Type 4 classifications without an EEW permit. The badge must be visible when performing the operations. The individual must be qualified per this document.
- 4.17. **EEW Permit** - Document authorizing qualified personnel to perform installations or repairs on energized electrical equipment and/or systems.
- 4.18. **Electrical Hazard** - An electrical condition where the possibility of injury or incident is present due to an exposed energized circuit.
- 4.19. **Enclosed** - means surrounded by a case, housing, fence or walls which shall prevent persons from accidentally contacting energized parts.
- 4.20. **Enclosure** - means the case or housing of apparatus, or the fence or walls surrounding an installation to prevent personnel from accidentally contacting energized parts, or to protect the equipment from physical damage.
- 4.21. **Energized Electrical Work (EEW)** - Energized Electrical Work, formerly electrical "hot work". Any work requiring- performance of duties on or near an exposed energized circuit with magnitude greater than 50 volts or greater AC and/or DC.
- 4.22. **Exposed** - (as applied to live parts) means capable of being inadvertently touched or approached nearer than a safe distance by a person. It is applied to parts not suitably guarded, isolated, or insulated.
- 4.23. **Ground** – A conducting connection, whether intentional or accidental, between an electrical circuit or equipment and earth, or to some conducting body that serves in place of the earth.
- 4.24. **Grounded** – Connected to the earth or to some conducting body that serves in place of the earth.
- 4.25. **Guarded** - means covered, shielded, fenced, enclosed, or otherwise protected by means of suitable covers, casings, barriers, rails, screens, mats, or platforms to remove the likelihood of approach to a point of danger or contact by persons or objects.
- 4.26. **Hazardous Locations** - Class 1, Division 1 and 2 Locations as specified in the NEC and NFPA.
- 4.27. **Incident Energy** - (arc rating) The amount of energy impressed on a surface, a certain distance from the source, generated during an electrical arc event. One of the units used to measure incident energy is calories per centimeter squared (cal/cm<sup>2</sup>)
- 4.28. **Infeasible Shutdown** - will be determined by a senior level management for that organization
- 4.29. **Isolated** - means the disconnection and separation of the electrical equipment from every source of electrical energy in such a way that this disconnection and separation is secure and proved dead.

- 4.30. **Labeled** - means equipment or materials to which has been attached a label, symbol or other identifying mark of a qualified testing laboratory which indicates compliance with appropriate standards or performance in a specified manner.
- 4.31. **Licensed Electrician** – an individual who maintains a valid electrical certificate or license to perform electrical work in a specific state by adhering to the experience, training, and/or examination requirements set forth by that state.
- 4.32. **Limited approach boundary** - An approach limit at a distance from an exposed energized electrical conductor or circuit part within which a shock hazard exists.
- 4.33. **NEC** - stands for National Electric Code.
- 4.34. **NFPA** - stands for National Fire Protection Association
- 4.35. **NFPA 70E** - is a regulation to protect workers exposed to live electrical circuits thru training, PPE, tools and safe practices. It is not an OSHA regulation as of 2012, but OSHA refers to NFPA 70E when investigating accidents. At that time the employer may be cited by OSHA for not following NFPA 70E and doing a PPE evaluation of the work site and safe practices.
- 4.36. **Permit Issuer** - Individual responsible for issuing EEW permits and adhering to the permit system criteria as defined in this document.
- 4.37. **Properly Rated and Tested** - PPE device has a specific purpose and a specific rating. The rating will determine if the PPE will protect the worker. Most PPE requires an inspection as specified, by the manufacture and appropriate standards of the device, before donning. To include looking for obvious indications of mechanical or functional failure. PPE devices that do not pass this inspection should be returned for repair or discarded. Rubber insulated gloves, sleeves and mats require certification from an approved certifier,
- 4.38. **Qualified EEW Buddy** - A person assigned to monitor the individual performing Type 4 EEW (Hot Work).
- 4.39. **Qualified Person** - A person who is familiar with the construction, operation, and hazards of the specific equipment involved and has had training in avoiding the electrical hazards of working on or near exposed energized parts. This person must also meet the requirements of this document. The qualification applies to specific tools or equipment and cannot be universally applied to all tools or equipment.
- 4.40. **Qualified Person as an EEW Buddy** - A person assigned to monitor the individual performing Hot Work (e.g. Type 5 EEW). **Qualified** means persons who are capable of working safely on equipment and are familiar with electrical properties, the proper use of special precautionary techniques, personal protective equipment, insulating and shielding materials, and insulated tools.
- 4.41. **Receptacle** - means a contact device installed at the outlet for the connection of a single attachment plug. A single receptacle is a single contact device with no other contact device on the same yoke. A multiple receptacle is a single device containing two or more receptacles.
- 4.42. **Safe Working Distance - Voltage Range (phase to phase) Minimum Approach Distance:**
  - 4.42.1. < 300 V Avoid Contact
  - 4.42.2. 300 V and < 750 V      1 ft. 0 in. (30.5 cm)
  - 4.42.3. 750 V and < 2 kV      1 ft. 6 in. (46 cm)
  - 4.42.4. 2 kV and < 15 kV      2 ft. 0 in. (61 cm)
  - 4.42.5. 15 kV and < 37 kV      3 ft. 0 in. (91 cm)
  - 4.42.6. 37 kV and < 87.5 kV      3 ft. 6 in. (107 cm)
  - 4.42.7. 85.5 kV and < 121 kV      4 ft. 0 in. (122 cm)
  - 4.42.8. kV and < 140 kV      4 ft. 6 in. (137 cm)
- 4.43. **Temporary Power Supervisor** - One who has demonstrated skills and knowledge related to the construction and operation of temporary electrical power equipment and has received safety training to identify and avoid the hazards involved.
- 4.44. **Troubleshooting** - Investigation techniques- employed to locate the source of an equipment malfunction.
- 4.45. **Testing & Metering** - Diagnosis and analysis of electrical systems to trace or determine voltage and/or current on circuits.
- 4.46. **Volt-amperes** - Circuit voltage [volts] multiplied by current [amperes].

## 5.0 Procedure

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### 5.1 Risk Assessment

5.1.1. Prior to electrical work commencing, a competent person must conduct a risk assessment associated with electrical work for the project. The risk assessment should be incorporated into the job/activity hazard analysis which should be completed before work begins and reviewed whenever the scope of work changes.

**5.1.2. The job/activity hazard analysis must identify the process, controls to be followed, and should include consideration of:**

- 5.1.2.1. scope of work
- 5.1.2.2. selection and verification of isolation method
- 5.1.2.3. supervisory requirements
- 5.1.2.4. personal protective equipment
- 5.1.2.5. emergency procedures

## 5.2 General Procedures for Electrical

- 5.2.1. Adequate precautions must be taken to prevent de-energized electrical equipment from becoming accidentally energized.
- 5.2.2. Adequate working space means of access/egress, and lighting must be provided for all electrical work.
- 5.2.3. Worn or frayed electrical cords or cables shall be tagged as defective and removed from work areas.
- 5.2.4. Only qualified personnel are authorized to make electrical repairs.
- 5.2.5. Extension cords shall not be fastened with staples, hung from nails, or suspended by wire. Flexible cords and cables may not pass through doorways or other pinch points unless protection is provided to avoid damage. Cords and temporary wiring passing through walls shall be properly protected (e.g. sleeved).
- 5.2.6. Temporary power cords must be protected from damage. Those run overhead shall be adequately secured (with a non-conductive means) at or above 7 feet from floor level. No temporary cords shall be draped over equipment or left where potentially walked or driven upon.
- 5.2.7. Cords used on construction projects shall be of an extra hard usage type and 12 AWG or larger. Flat or non-rated cords are not allowed. Surge Strips are not allowed, and splitters must be rated for heavy usage, not home-receptacle type.
- 5.2.8. Work in wet or damp work locations must not be performed until all efforts to abate the hazard have been exhausted.
- 5.2.9. An Assured Equipment Grounding Conductor Program and/or Ground Fault Circuit Interrupter (GFCI) protection is required for all 120v, 15 & 20 Amp receptacles, electrical extension cords and tools, including for those plugged into permanent power, portable generators and welding machines.
- 5.2.10. Metal fish tape shall never be used for pulling wire into energized panels or where the potentials exist for contact with energized components.
- 5.2.11. All wiring components and equipment in hazardous environments shall be maintained in a condition consistent with NEC requirements (e.g. no loose or missing screws, gaskets, threaded connections, seals, or other impairments to a tight condition).
- 5.2.12. Electrical switches shall be labeled to indicate the system, equipment, service, or tool they control. This includes switch boxes, cabinets, motor control cabinets, stationary equipment, all control panels, and other such switches or disconnects.
- 5.2.13. When personnel may contact fixed electrical equipment or circuits that have been de-energized, the circuit(s) shall be locked out in accordance with. When personnel are exposed to capacitors or similar equipment, the equipment shall be treated as energized unless already discharged utilizing Lock-Out Tag-Out procedures.
- 5.2.14. Personnel should practice the "one-hand rule" when the task allows to prevent their body from becoming part of a circuit.

- 5.2.15. Tripped circuit breakers may not be reset (or fuses replaced) until the system which they service has been verified safe.
- 5.2.16. All electrical and protective equipment shall be inspected for damage prior to use. Damaged items shall be tagged and taken out of service.
- 5.2.17. Precautions shall be taken to verify the location of underground/inner wall electrical interference prior to beginning excavation/penetration activities. If unsure of the exact location of these interferences, protective equipment shall be worn.
- 5.2.18. All personnel who perform work on electrical systems must be qualified as defined by this document. Whenever possible, electrical equipment must be worked on in an electrically de-energized state according to documented lockout/tag out procedures. Work on energized electrical equipment over 50 volts AC or DC will be permitted only when an officer of BNB has provided written approval.
- 5.2.19. Smoking, eating or drinking in areas where batteries are being stored, charged, or worked on is prohibited.
- 5.2.20. Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas containing live parts.
- 5.2.21. Do not wear rings or watches while wearing rubber gloves. Conductive articles of jewelry and clothing (such as watch bands, bracelets, rings, key chains, necklaces, metalized aprons, cloth with conductive thread, or metal headgear) shall not be worn if they might contact exposed energized parts.
- 5.2.22. Consideration must be given to grounding and bonding the electrical equipment at all points of disconnection as appropriate.
- 5.2.23. Employees shall use insulated tools when working within the limited approach boundary near energized parts where tools might make accidental contact. Insulated tools shall be protected from damage to the insulating material. Insulated tools, test instruments, equipment and their accessories shall be rated for the circuits and equipment on which they are used. All test instruments are required to be verified in proper working order before and after an absence of voltage test is performed. Insulated tools shall be designed and constructed for the environment to which they are exposed and the way they are used.

### 5.3. Temporary Electrical Power Equipment.

#### 5.3.1. Policy

- 5.3.1.1. This section of the Electrical program provides the general guidelines for the utilization of Temporary Electrical Power Equipment. The guidelines define a minimum baseline of quality and workmanship for installing and maintaining temporary electrical power equipment at construction sites.

#### 5.3.2. Exception

- 5.3.2.1. The installation of temporary electrical power service at a construction site should be in accordance with the overall project plan and schedule. The Superintendent has the responsibility of ensuring that temporary electrical power service is available when needed to support construction operations. This is accomplished by identifying the following project milestones:
  - 5.3.2.1.1. When temporary power must be available at the construction site.
  - 5.3.2.1.2. When the temporary power supply needs to be increased, modified, or extended to meet the needs of specific construction operations.
  - 5.3.2.1.3. When the temporary power must be transferred (cutover) to the permanent building distribution system.
  - 5.3.2.1.4. When all or part of the temporary construction power distribution is to be removed.
  - 5.3.2.1.5. Other milestones during construction that require a change, expansion, or removal of the temporary construction power distribution system.

5.3.2.2. This process is not part of the Temporary Electrical Power Equipment program.

### 5.3.3. Roles

#### 5.3.3.1. Temporary Power Supervisor

- 5.3.3.1.1. Visual inspection of temporary electrical power equipment upon delivery to the construction site.
- 5.3.3.1.2. Distribute temporary electrical power equipment ensuring working spaces, walkways, and similar locations are kept clear.
- 5.3.3.1.3. Locate temporary electrical power equipment at points of concentrated load where the equipment is separated by distance (e.g., different buildings), physical barriers (e.g., building floors), or convenience.
- 5.3.3.1.4. Maintain the temporary electrical power equipment to be readily accessible, ensuring that proper working space is maintained around it.
- 5.3.3.1.5. Provide task-specific temporary electrical power equipment for tools such as heaters, floor grinders, and welding equipment.
- 5.3.3.1.6. Troubleshoot power loss issues by visually inspecting the temporary electrical power equipment and checking the circuit breakers and GFCI receptacles on the spider box equipment.
  - 5.3.3.1.6.1. The troubleshooting is restricted temporary electrical power equipment specified in the Temporary Power Supervisor training.
- 5.3.3.1.7. Direct the de-energization and demobilization of the temporary electrical power equipment, including cleaning equipment for transport and identifying damaged or faulty equipment.
- 5.3.3.1.8. A Licensed Electrician will make all final connections of the temporary electrical power equipment to the Portable or Permanent Temporary Electrical Power Distribution Panels.

#### 5.3.3.2. Licensed Electrician

- 5.3.3.2.1. Locate and install temporary electrical power equipment in accordance with the NEC and any requirements of the serving utility.
- 5.3.3.2.2. Make the final connection of the temporary electrical power equipment to the Portable or Permanent Temporary Electrical Power Distribution Panels.
- 5.3.3.2.3. Troubleshoot loss of power at temporary electrical power service.
- 5.3.3.2.4. Maintain the Assured Equipment Grounding Conductor Program.
- 5.3.3.2.5. As soon as the building's permanent service is installed, energized, tested, and accepted, transfer electric service from the temporary electrical power equipment to the permanent service equipment.
- 5.3.3.2.6. Immediately after cutover, de-energize and remove the temporary service equipment, power receptacles, conductors and cables, and other equipment that was part of the temporary construction power system.

### 5.3.4. Responsibility

- 5.3.4.1. The Responsibility section is based on general operational scenarios for installing and maintaining Temporary Electrical Power Equipment at a construction site.
- 5.3.4.2. The scenario type and specific installation and maintenance responsibilities must be designated at the beginning of the project and documented in the project's Site-Specific Safety Plan.
- 5.3.4.3. The need for a BNBuilders (BNB) Temporary Power Supervisor will be determined based on the scenario type and the installation and maintenance responsibilities.
- 5.3.4.4. **Scenario #1:** Electrical Subcontractor will provide ALL Temporary Electrical Power Equipment
  - 5.3.4.4.1. The Electrical Subcontractor will install and maintain all temporary electrical power equipment for the construction site.

5.3.4.4.2. The Electrical Subcontractor is the sole responsible member for the installation, expansion, maintenance, cutover, and removal of ALL temporary electrical power equipment at the construction site.

5.3.4.5. **Scenario #2:** Temporary Electrical Power Equipment is installed and maintained through shared responsibility of the Electrical Subcontractor and BNB.

5.3.4.5.1. The ownership of specific installation and maintenance responsibilities must be designated at the beginning of the project and documented in the project's Site-Specific Safety Plan.

5.3.4.5.2. The Equipment Installation and Maintenance section provides descriptions of responsibilities that must be associated with the Electrical Subcontractor or BNB.

5.3.4.5.3. The Equipment Installation and Maintenance section defines the minimum responsibilities that BNB must designate to a Licensed Electrician or to the BNB Temporary Power Supervisor to ensure compliance with Federal and State regulations.

5.3.4.5.4. Additional responsibilities should be identified during the pre-construction contractual agreement and documented in the project's Site-Specific Safety Plan.

### **5.3.5. Equipment Installation and Maintenance**

#### **5.3.5.1. Ground Fault Circuit Interrupter (GFCI)**

5.3.5.1.1. All 120-volt, single-phase, 15-ampere and 20-ampere receptacle outlets on construction sites, which are not a part of the permanent wiring of the building or structure, and which are in use by employees, must have approved ground-fault circuit interrupters for personnel protection.

5.3.5.1.2. Receptacles on a two-wire, single-phase portable or vehicle-mounted generator rated not more than 5kW, where the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces, need not be protected with ground-fault circuit interrupters.

#### **5.3.5.2. Assured Equipment Grounding Conductor Program (AEGCP)**

5.3.5.2.1. For receptacles other than 120-volt, single-phase, 15-ampere and 20-ampere that are not protected by ground-fault circuit interrupter protection the construction site must establish and implement an assured equipment grounding conductor program covering all cord sets, receptacles which are not a part of the building or structure, and equipment connected by cord and plug which are available for use or used by employees.

5.3.5.2.2. This program must comply with the following minimum requirements:

5.3.5.2.2.1. Maintain written description of the program, including the specific procedures adopted at the job site for inspection.

5.3.5.2.2.2. Designate one or more Licensed Electricians to implement the program and perform continuing tests and inspections as required.

5.3.5.2.2.3. Visually inspect each cord set, attachment cap, plug and receptacle of cord sets, and any equipment connected by cord and plug, except cord sets and receptacles which are fixed and not exposed to damage, before each day's use for external defects, such as deformed or missing pins or insulation damage, and for indications of possible internal damage.

5.3.5.2.2.4. Do not use equipment found damaged or defective until repaired.

5.3.5.2.3. Perform the following tests on all cord sets, receptacles which are not a part of the permanent wiring of the building or structure, and cord-connected and plug-connected equipment required to be grounded:

5.3.5.2.3.1. Test all equipment grounding conductors for continuity and found to be electrically continuous.



5.3.5.2.3.2. Test each receptacle and attachment cap or plug for correct attachment of the equipment grounding conductor. The equipment grounding conductor must be connected to its proper terminal.

5.3.5.2.3.3. Test each outlet receptacle, or power source to ensure proper polarity.

5.3.5.2.4. Perform all required tests:

5.3.5.2.4.1. Before first use;

5.3.5.2.4.2. Before equipment is returned to service following any repairs;

5.3.5.2.4.3. Before equipment is used after any incident which can be reasonably suspected to have caused damage (for example, when a cord set is run over); and

5.3.5.2.4.4. At intervals not to exceed 3 months, except that you must test cord sets and receptacles which are fixed and not exposed to damage at intervals not exceeding 6 months.

5.3.5.2.4.5. Restrict the use of any equipment which has not met these requirements.

5.3.5.2.4.6. Record all tests performed.

5.3.5.2.5. This test record must identify each receptacle, cord set, and cord-connected and plug-connected equipment that passed the test and must indicate the last date it was tested or the interval for which it was tested.

5.3.5.2.5.1. Keep this record by means of logs, color coding, or other effective means and maintain it until replaced by a more current record.

5.3.5.2.5.2. Make the record available on the job site for inspection.

#### **5.3.5.3. Enclosures**

5.3.5.3.1. All temporary power distribution equipment enclosures should be deadfront and completely enclose the temporary electrical power equipment.

5.3.5.3.2. Install only temporary electrical power equipment enclosures that are suitable for the environment.

5.3.5.3.3. All equipment doors, screws and so forth must be in place and secure.

5.3.5.3.4. All unused openings for cable assemblies and raceways must be securely covered.

#### **5.3.5.4. Protection from the elements**

5.3.5.4.1. When possible, locate temporary electrical power equipment where it will be protected from the elements.

5.3.5.4.2. If equipment must be installed outdoors in an unprotected area, install equipment that is suitable for the location.

5.3.5.4.3. If applicable, install protective covers or canopies over distribution equipment to minimize solar heating, exposure to water, and snow/ice accumulation.

#### **5.3.5.5. Physical barriers and fencing**

5.3.5.5.1. Provide physical barriers and/or fencing around electrical equipment where required for damage protection or to restrict access.

#### **5.3.5.6. Hazardous (Classified) Locations**

5.3.5.6.1. When possible, avoid installing temporary electrical power equipment in hazardous (classified) locations.

5.3.5.6.2. A hazardous (classified) location is an area where the possibility of fire or explosion can be created by the presence of flammable or combustible gases or vapors, combustible dusts, or easily ignitable fibers/particulates.

5.3.5.6.3. If the temporary power system must pass through or serve equipment in hazardous (classified) locations, the installation must consider the extent and classification of areas at the construction site.



- 5.3.5.6.4. Consideration should be made to the properties of the flammable vapors, liquids, or gases, or the combustible dust or fibers that may be present, and the likelihood that a flammable or combustible concentration or quantity will be present during construction.

**5.3.5.7. Equipment Support**

- 5.3.5.7.1. Securely support distribution equipment to existing structures, temporary structures or construct a rigid free-standing support for the equipment.
- 5.3.5.7.2. Install distribution equipment in a workmanlike manner so that it is level and plumb.

**5.3.5.8. Equipment Accessibility and Working Space**

- 5.3.5.8.1. Working space around temporary electrical power equipment (spider boxes & power distribution panels) should be level and clear of obstructions.
- 5.3.5.8.2. Post appropriate signage and conduct regular inspections to ensure that the equipment remains readily accessible and sufficient working space is maintained throughout the period of construction.
- 5.3.5.8.3. Do not use temporary structures built to house temporary electrical power equipment for material or tool storage.
- 5.3.5.8.4. Locate spider boxes to keep the length of extension cords required for portable tools and task lighting to a reasonable length. This minimizes congestion on construction sites, reduces tripping hazards, minimizes voltage drop, and reduces nuisance tripping of ground-fault circuit-interrupter protection devices.

**5.3.5.9. Equipment Marking and Labeling**

- 5.3.5.9.1. Mark or label all switchboards, switchgear and panelboards as designated on the temporary power distribution system one-line diagram.
- 5.3.5.9.2. Mark or label all switches, disconnects, circuit breakers, and other control devices with the purpose, circuit, or equipment served.
- 5.3.5.9.3. A completed directory located at the panelboard is sufficient for panelboard circuit breakers.
- 5.3.5.9.4. Use a marking or labeling method that is durable and suitable for the environment.

**5.3.6. Procedure**

- 5.3.6.1. The following are general guidelines and safe work practices for BNB employees installing and maintaining temporary electrical power equipment at a construction site. Site-specific safe work practices may exist and must be documented in the project's Site-Specific Safety Plan, then communicated to BNB's Temporary Power Supervisor at the project.

**5.3.6.2. Mobilization**

- 5.3.6.2.1. Utilizing the scenarios listed under the Responsibility section of this policy, define who will perform the initial installation, then maintenance of the temporary electrical power equipment throughout the life of the project.
- 5.3.6.2.2. Document the temporary electrical power equipment responsibilities in the project Site-Specific Safety Plan
- 5.3.6.2.3. If applicable, identify BNB Temporary Power Supervisor to manage temporary electrical power equipment and verify training qualifications with the BNB Safety Department.

**5.3.6.3. Operations**

- 5.3.6.3.1. The following are operational criteria that BNB must follow to ensure Federal and State compliance. The operational standards are divided into typical Licensed Electrician and BNB Temporary Power Supervisor responsibilities, which must be defined in the contractual agreement between the responsible parties.
  - 5.3.6.3.1.1. Licensed Electrician ONLY

- 5.3.6.3.1.1.1. Ground Fault Circuit Interrupter (GFCI)
- 5.3.6.3.1.1.2. Assured Equipment Grounding Conductor Program (AECGP)
- 5.3.6.3.1.1.3. Hazardous (Classified) Locations
- 5.3.6.3.2. Licensed Electrician or Temporary Power Supervisor
  - 5.3.6.3.2.1.1. Enclosures
  - 5.3.6.3.2.1.2. Protection from the elements
  - 5.3.6.3.2.1.3. Physical barriers and fencing
  - 5.3.6.3.2.1.4. Equipment Support
  - 5.3.6.3.2.1.5. Equipment Accessibility and Working Space
  - 5.3.6.3.2.1.6. Equipment Marking and Labeling

#### **5.3.6.4. Demobilization**

- 5.3.6.4.1. The following are criteria related to the demobilization of temporary electrical power equipment at construction sites:
  - 5.3.6.4.2. De-energize the power source for temporary electrical power equipment.
  - 5.3.6.4.3. Disconnect temporary electrical power equipment from the power source.
  - 5.3.6.4.4. Remove any dirt, concrete, sheetrock mud, etc. from temporary electrical power equipment.
  - 5.3.6.4.5. Clearly identify damaged or faulty equipment
  - 5.3.6.4.6. Coordinate logistics for transporting temporary electrical power equipment back to provider.

### **5.3.7. Training**

#### **5.3.7.1. Temporary Power Supervisor Training**

- 5.3.7.1.1. Training will focus on understanding the utilization and capabilities of temporary electrical power equipment.
- 5.3.7.1.2. Through this training, a Temporary Power Supervisor will be able to properly install, maintain, and troubleshoot temporary electrical power based on the knowledge of the hazards associated with the equipment.
- 5.3.7.1.3. Temporary Power Supervisor must be knowledgeable of the following:
  - 5.3.7.1.3.1. Temporary Electrical Power Equipment Safety Policy and associated policies or procedures.
  - 5.3.7.1.3.2. Recognition of applicable electrical hazards.
  - 5.3.7.1.3.3. Details about the type and magnitude of the electrical hazard present in the work area.
  - 5.3.7.1.3.4. The means and methods necessary to mitigate electrical hazards.
  - 5.3.7.1.3.5. The basics of properly installing and maintaining temporary electrical power equipment.
- 5.3.7.1.4. Temporary Power Supervisor are restricted to installing, maintaining, and troubleshooting temporary electrical equipment specified in the Temporary Power Supervisor training
- 5.3.7.1.5. Refresher training is required annually

## **5.4 Energized Electrical Work (EEW)**

### **5.4.1 Policy**

- 5.4.1.1. Personnel must not engage in energized electrical work unless their employer can demonstrate that de-energizing introduces additional or increased hazards or is infeasible due to equipment design or operational limitations.

### **5.4.2 Exceptions**

- 5.4.2.1. Live parts that operate at less than 50 volts to ground need not be de-energized if there will be no increased exposure to electrical burns or to explosion due to electric arcs. Examples of

increased or additional hazards include interruption of life support equipment, deactivation of emergency alarm systems, shutdown of hazardous location ventilation equipment, or removal of illumination for an area. Examples of work that may be performed on or near energized circuit parts because of infeasibility due to equipment design or operational limitations include testing of electric circuits that can only be performed with the circuit energized and work on circuits that form an integral part of a continuous industrial process in a chemical plant that would otherwise need to be completely shut down in order to permit work on one circuit or piece of equipment.

### 5.4.3 Procedures

- 5.4.3.1. If a situation arises where it is impossible to do work under de-energized conditions, **the BNB Superintendent or Safety Manager for the project must contact the Safety Director prior to performing the work.** A formal preconstruction meeting must occur prior to any energized electrical work. All energized electrical work must comply with NFPA 70E requirements. The EEW Assessment & Permit must be completed prior to EEW (see attachments).
- 5.4.3.2. Pulling wire into energized panels will not be allowed unless an EEW plan has been generated and approved. Non-metallic pulling socks shall be used for pulling wire into energized panels or where the potential exists for contacting energized components.

### 5.4.4 Testing, Commissioning and Fault Finding

#### **Must only be carried out:**

- 5.4.4.1. by appropriately trained and certified personnel
- 5.4.4.2. using calibrated test equipment that is suitable for the operation
- 5.4.4.3. following a documented job/activity hazard analysis

## 5.5 Fuses

- 5.5.1. Special tools shall be used to install/remove fuses under load.
- 5.5.2. Panel doors shall be closed prior to re-energizing circuits in which fuses have been replaced.
- 5.5.3. Persons who perform work on high voltage fuses (over 600 volts) shall wear appropriate head, face, body flash suits, protective footwear and insulated gloves and certificate for high voltage training.

## 5.6 Electrical Work in Hazardous Locations

- 5.6.1. Work on equipment that is rated for use in hazardous locations that violate the classified location rating is not permitted. For example, work which requires the opening of explosion-proof enclosures in a classified location must be performed in a de-energized, locked and tagged out state.
- 5.6.2. If there is a potential for combustible vapors in a work area, a test of the area must be performed with a combustible gas meter prior to and during the duration. Work must be halted immediately if any combustible gas or vapor is detected.
- 5.6.3. Areas around exposed/energized equipment must be properly barricaded and/or secured to prevent accidental contact and maintain a safe work environment.
- 5.6.4. Equipment must be suitable for the environment (e.g., hazardous locations, damp areas) in which it is used.
- 5.6.5. A voltage tester rated for that location shall be tested on a known live voltage to ensure that it is operating correctly prior to checking the voltage of the equipment to be worked on. The tester should then be retested on the same energy source to make sure the tester is functioning properly.

## 5.7 Hazards

**5.7.1. Work with electricity is one of the most hazardous activities with the potential for fatal accidents.**

**The key risks include:**

- 5.7.1.1. Shock / electrocution
- 5.7.1.2. burns
- 5.7.1.3. fires / explosions
- 5.7.1.4. arc flash
- 5.7.1.5. falls (due to contact with electricity)

### **5.7.2 Hazard Controls**

**5.7.3.1. All activities potentially involving work with electricity must be identified, the risks systematically assessed, and risk reduction planned to use the following hierarchy:**

### **5.7.3 Engineering Controls**

- 5.7.3.1. The best way to eliminate risk associated with electrical work is to avoid the need to work with electricity in the first place. For example, isolate the point of work from the source of supply or secure it from inducted energy by grounding.

### **5.7.4 Administrative Controls**

- 5.7.4.1. To administratively reduce risk associated with electrical work, reduce the number of people who need to work with electricity, only use experienced and competent personnel, lock-out tag-out electrical circuits, etc.

### **5.7.5 Personal Protective Equipment (PPE)**

**5.7.5.1. If engineering or administrative controls are not adequate in controlling risk, PPE may be used to reduce the consequences of electrical incidents. For example:**

- 5.7.5.1.1. ensuring all cable locating devices are fully insulated
- 5.7.5.1.2. use specialized PPE e.g. gauntlets, helmet
- 5.7.5.2. Obtain the proper safety equipment to complete the job in a safe manner. The specific safety equipment will vary based on the potential hazard. Personnel engaged in electrical work shall not wear clothing with or without PPE that could increase injury (100% dry cotton is better than blended materials).
- 5.7.5.3. For EEW, the correct PPE, insulated tools, and procedures for safe practices should be documented in the job hazard analysis, PTP, Method of Procedure (MOP), and Arc Flash Assessment.

**5.7.5.4. The safety equipment may include but is not limited to the following:**

- 5.7.5.4.1. ANSI approved hard hat (proof tested to 20,000 volts)
- 5.7.5.4.2. ANSI approved safety glasses with non-conductive frames
- 5.7.5.4.3. Rubber insulated mats or boots
- 5.7.5.4.4. Properly rated and tested rubber gloves and sleeves
- 5.7.5.4.5. Body hook
- 5.7.5.4.6. Approved insulated tools
- 5.7.5.4.7. Face shield
- 5.7.5.4.8. Fire extinguisher
- 5.7.5.4.9. Flame retardant clothing for the hazard level (i.e. Nomex or equivalent outer clothing)
- 5.7.5.4.10. Properly rated and tested blast suit designed for the level of exposure
- 5.7.5.4.11. Cotton clothing (dry)

## **5.8 Training**

**5.8.1. Personnel engaged in activities covered by this Standard must be competent for the task being undertaken. Competency includes:**

- 5.8.1.1. Possessing adequate qualifications in and experience of working with electricity;
- 5.8.1.2. Understanding the hazards which may arise during the work, the precautions which need to be taken and the ability to recognize when it is unsafe for work to continue.
- 5.8.1.3. All Competent Persons must have received appropriate electrical safety training (e.g. licensed electrician, journeyman electrician).
- 5.8.1.4. Personnel engaged in activities where unplanned contact with electrical services has been identified as a risk, must have attended a relevant training course on the specific issues. Only qualified persons are allowed to complete testing, troubleshooting and voltage measurement within any limited approach boundary. Qualified workers will meet training requirements of NFPA 70E. All personnel training shall be documented and maintained for the duration of their employment.

## **6.0 References**

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[NFPA 70E](#)

[L&I WAC 296-46B – Electrical Safety Standards](#)

[CA T8 Article 3 1518 - Protection from Electrical Shock](#)

[CA T8 Article 1-6, 8-13, 15-16, 45, 47-52, 57-59 – Electrical Safety Orders](#)

[L&I WAC 296-800 – Core Safety](#)

## **7.0 Attachments**

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[Assured Grounding Policy](#)

[Electrical Demolition Work Plan](#)

# Emergency Eye Wash Station

## 1.0 Purpose

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- 1.1. BNB projects may have chemicals and other hazards that create a risk of eye injury. BNB sites must provide eye wash stations that comply with ANSI Z358.1-2014, WAC 296-800-15030(2), OSHA 29 CFR 1910.151, and CCR/8-5162.

## 2.0 Scope

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- 2.1. This policy applies to all BNB projects that store or use chemicals that are corrosive or strong eye irritants and may cause temporary or permanent eye damage.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. BNB Project Management and Supervision will ensure compliant eye wash stations are in place on the project whenever there are substances that are injuriously corrosive and may cause harm to employees' eyes.

### 3.2 Subcontractors

- 3.2.1. Subcontractors must provide their own eye wash stations if they are the sole user of corrosive chemicals on a BNB project.

## 4.0 Definitions

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- 4.1. **Temporary Eye Wash Station** - Temporary equipment that irrigate and flush both eyes simultaneously while the user holds their eyes open, has a valve that activates in one second or less and remains on without user assistance until intentionally turned off, and delivers at least 0.4 gallons (1.5 liters) of water per minute for fifteen minutes (about 6 gallons total).
- 4.2. **Corrosive chemical** - Any substance or product that has a pH of less than 2.5 or greater than 11.0 and upon contact causes destruction of living tissue by chemical action. Common corrosive chemicals include bleach, concrete, and sulfuric acid.
- 4.3. **Strong Eye irritant** - A substance that will induce a local inflammatory reaction upon immediate, prolonged, or repeated contact with normal living tissue. It is not corrosive but causes a reversible inflammatory effect on living tissue by chemical action at the contact site.
- 4.4. **Tepid** – Temperatures between 60 and 100 degrees Fahrenheit.

## 5.0 Procedure

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### 5.1 Procedure for Identifying Corrosive Chemicals

- 5.1.1. BNB project leadership must review the Safety Data Sheets (SDS) for all products that enter the BNB work environment. The SDS for each product used by BNB personnel must be kept electronically (See BNB Hazard Communications Policy).
- 5.1.2. Any product that may cause employee exposure and is listed as corrosive, a strong irritant, toxic, or within the defined pH range triggers the requirement to procure and provide a compliant emergency eyewash station.

### 5.2 Procedure for Placing Emergency Eye Wash Station

- 5.2.1. Emergency eye wash stations must be located so that it takes no more than 10 seconds to reach, and the travel distance should be no more than 50 feet.

- 5.2.2. The emergency washing facility must be kept free of obstacles blocking their use. An employee must be able to reach the emergency eyewash facility even when material in the eyes causes temporary blindness and confusion. A door may not be between the employee exposure and the eyewash station.
- 5.2.3. The eyewash station should be placed in a location where it is not exposed to potential damage due to weather or construction activity.

### 5.3 Procedure for Maintaining the Eye Wash Station

- 5.3.1. Each project must follow the maintenance requirements as outlined by the manufacturer of the temporary eye wash station. This may include regular draining, cleaning, and refilling.
- 5.3.2. BNB project leadership is responsible for assigning regular maintenance of each eye wash station to an employee who is trained in cleaning and maintenance procedures.
- 5.3.3. Each eye wash station must be inspected weekly at a minimum and inspections can be recorded electronically in the BNB safety inspection application or on a physical tag affixed to the station.

## 6.0 References

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[DOSH Directive 13.00 Emergency Washing Facilities](#)

[OSHA 29 CFR 1910.151](#)

[CCR/8-5162](#)

## 7.0 Attachments

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None



# Environmental

## 1.0 Purpose

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- 1.1. The purpose of this policy is to provide guidelines on how to manage Storm Water Pollution, Lead, Asbestos, Mold, and Water Intrusion on all BNB projects.

## 2.0 Scope

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- 2.1. This policy outlines how to assess and develop a plan for Storm Water Pollution, Lead, Asbestos, Mold, and Water Intrusion at the project level.

## 3.0 Responsibility

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### 3.1 Storm Water

#### 3.1.1 Project Management

- 3.1.1.1. It is essential that Project Management be aware of SWPPP regulations in order to ensure the proper resources are allocated to the project to ensure compliance over the duration of the project. Project Management may also be involved in obtaining the SWPPP Permit, coordination of the SWPPP between the Owner, Civil Engineer, and Subcontractors, as well as the design team to ensure any LEED or Low Impact Development requirements are met.

#### 3.1.2 Project Supervision

- 3.1.2.1. Supervision of trades in relation to the SWPPP is key throughout the life of the project. Project Supervision may be required to perform SWPPP inspections for the site to maintain the effectiveness of the Best Management Practices (BMPs), or coordinate with a subcontractor to ensure inspections and maintenance of BMPs are performed.

#### 3.1.3 Workers

- 3.1.3.1. Workers must know what pollutants they work with to ensure the SWPPP is maintained. Concrete, masons and graders, for instance, each have BMP requirements to minimize pollution to the site and drain inlets. All workers are responsible for maintenance of BMPs they damage or disturb. For example, if project personnel remove straw wattles to access their work area, they are responsible for replacing them as they were first installed.

### 3.2 Asbestos & Lead

#### 3.2.1 Project Management

- 3.2.1.1. Negotiate the contract to specifically exclude BNB from any obligation to perform remediation of any existing contaminated or hazardous materials.
- 3.2.1.2. Ensures adherence to all corporate policies. Does not allow BNB to contract remediation work without securing the proper approvals and with adherence to this Environmental Policy.

#### 3.2.2 Project Supervision

- 3.2.2.1. Assist in developing job hazard analysis and pre-task plans to ensure hazardous materials are abated properly.

#### 3.2.3 Project Safety

- 3.2.3.1. Provide technical expertise to the project team regarding all aspects of hazardous materials.

- 3.2.3.2. Review Clean Letter for completeness and advise project staff on how to proceed.
- 3.2.3.3. Ensure all consultants and subcontractors hired by BNBuilders to engage in this work are qualified and able to perform this type of work.

## 3.3 Water Intrusion

### 3.3.1 Project Supervision

- 3.3.1.1. Project Supervision must develop a Water Intrusion Plan prior to the start of the project. They must identify potential and existing penetrations / intrusions and develop a mitigation plan to eliminate exposure.
- 3.3.1.2. BNBuilders is responsible for the enforcement of the Water Intrusion plan. While management is ultimately responsible, all personnel involved in company operations have a responsibility to be familiar with and comply with the provisions of this plan. Compliance with this plan shall be enforced by the Project Manager / Superintendent. It is the responsibility of site personnel to report observed water intrusion and mold growth to the project site’s supervisory personnel upon discovery. Site personnel will also report site or design issues that have potential to cause water intrusion if left uncorrected.

## 4.0 Definitions

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- 4.1. **Asbestos** – a heat-resistant fibrous silicate mineral that can be woven into fabrics and is used in fire-resistant and insulating materials such as brake linings.
- 4.2. **ACM** - Asbestos Containing Material
- 4.3. **Best Management Practices (BMPs)** – The practices and measures that prevent or reduce potential storm water pollution such as: Gravel Bags, Silt Fence, Hydro-Mulch, Concrete Washouts, Street Sweeping, etc.
- 4.4. **Construction Activities** – Earth disturbing activities such as the clearing, grading, and excavation of land.
- 4.5. **Fungus** - any of a group of spore-producing organisms feeding on organic matter, including molds, yeast, mushrooms, and toadstools.
- 4.6. **GOOD FAITH SURVEY** - A report conducted by an accredited inspector showing the location of asbestos and lead materials in the building
- 4.7. **Lead** - is a [chemical element](#) with the [symbol](#) Pb (from the [Latin plumbum](#)) and [atomic number](#) 82. It is a [heavy metal](#) that is [denser](#) than most common materials.
- 4.8. **Mold** - is a fungus that grows in the form of multicellular filaments called hyphae.
- 4.9. **Notice of Intent (NOI)** – The form required for authorization of coverage under the Construction General Permit.
- 4.10. **PACM** - Presumed asbestos containing material is thermal system insulation and surfacing material found in buildings constructed not later than 1980.
- 4.11. **Pollutant-Generating Activities** – At construction sites, those activities that lead to or could lead to the generation of pollutants, which include: sediment, nutrients, heavy metals, pesticides, oil and grease, bacteria, trash/debris, concrete/stucco/mortar, or any other toxic substance.
- 4.12. **Storm Water Pollution Prevention Plan (SWPPP)** – Refers to the document and onsite measures taken to prevent the discharge of storm water pollution from construction sites.
- 4.13. **SUSPECT ACM** - An industry term that refers to any material suspected of containing asbestos based on appearance, usage, and age of the building.

## 5.0 Procedure

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### 5.1 Storm Water

**5.1.1.0.** Storm Water runoff from construction activities can have a significant impact on water quality. As storm water flows through a construction site, it can pick up pollutants like sediment, trash, debris, and chemicals and transport them to a nearby storm sewer system or directly to a river, lake, or coastal water. Polluted storm water runoff can harm or kill fish and other wildlife. Common construction by-products such as concrete wash water have an extremely high pH and can impair the quality of ground and surface waters. Sedimentation can destroy aquatic habitat and high volumes of runoff can cause stream bank erosion. Trash

and debris can clog waterways and potentially reach the ocean where it can kill marine wildlife and negatively impact ecology.

### **5.1.1 Hazards**

#### **5.1.1.1. The potential hazards associated with SWPPP are:**

- 5.1.1.1.1. Monetary penalties for BNB and our clients from Federal, State, or Municipal Agencies for failure to adequately implement SWPPP on our construction sites.
- 5.1.1.1.2. Negative publicity for BNB and our clients for penalties and violations associated with polluting local water resources.
- 5.1.1.1.3. Negative environmental impact for BNB, clients, and communities in which we live and work.

### **5.1.2 Hazard Controls**

#### **5.1.2.1. Engineering Controls**

- 5.1.2.1.1. Prior to construction and land disturbance, a comprehensive SWPPP and Erosion Control Plan (ECP) with BMPs must be developed for the site that specifically addresses: Erosion Controls, Sediment Controls, Waste Management Controls, and Non-Storm Water Controls. Depending on the Municipality or LEED Requirement, post construction controls or Low Impact Development standards must be addressed, such as: bio-retention, infiltration trenches, treatment devices and green-roofs.

#### **5.1.2.2. Administrative Controls**

- 5.1.2.2.1. Prior to construction and land disturbance, all required permits depending on location must be obtained by BNB, our client, or a contractor. During construction, all required inspections or amendments to the SWPPP must be performed by BNB or a contractor. After construction, termination of the SWPPP Permit must be performed by BNB, a contractor, or the owner.

#### **5.1.2.3. Personal Protective Equipment**

- 5.1.2.3.1. At a minimum, any person conducting SWPPP functions on site must have work boots, a safety vest, eye protection and a hard hat. During New Hire Orientation, any additional PPE required will be discussed.

#### **5.1.2.4. Training**

- 5.1.2.4.1. Depending on the location of the site, site and contractor personnel may be required to attend SWPPP training in order to perform inspections, install and maintain BMPs, and prevent pollution discharge related to specific trades.

## **5.2 Asbestos**

### **5.2.1 Asbestos**

- 5.2.1.1. BNB does not perform any asbestos abatement. This section covers the procedures for performing work in building where there is potential to disturb Asbestos Containing Material (ACM).

### **5.2.2 Good Faith Survey and Limitations**

5.2.2.1. Before any work that has the potential to disturb ACM can begin on an existing building, the BNB team must obtain a Good Faith Survey or similar Asbestos Notification letter from the facility owner.

5.2.2.2. The inspection must have been conducted by an accredited AHERA inspector.

### **5.2.3 Clearance (Letter of Abatement)**

5.2.3.1. Where ACM is identified, a licensed contractor must be used to perform the abatement. BNB must obtain a certification letter stating that ACM has been abated prior to performing any work activities that may disturb PACM.

5.2.3.2. BNB Supervision must review the asbestos notification and verify that the survey has been conducted in accordance with the scope of work BNB will perform. BNB must also understand the limitation of the survey, i.e. areas not sampled.

5.2.3.3. Throughout the course of work, employees will monitor for signs of suspect ACM material in accordance with the limitations stated in the good faith / asbestos survey.

### **5.2.4 Procedures for discovery of suspect ACM**

5.2.4.1. If there are any suspect ACM identified during construction, then the work must be stopped, the area cordoned off with danger tape until additional sampling can be completed by an accredited inspector. If the suspect material is a confirmed ACM, then a certified abatement company must be contacted to abate the ACM. BNB does not perform asbestos abatement.

### **5.2.5 Training**

5.2.5.1. For any sites that contain asbestos, it is required that the crew be given an Asbestos Awareness Training. This training will help crews recognize suspect asbestos materials and understand the steps they need to take to protect themselves, and their co-workers.

## **5.3 Lead**

5.3.0 Lead is an elemental metal. It was widely used in paints (coatings) for use on homes and buildings up until the 1970's and is still used steel structures (bridges) exposed to the elements. Lead is also used in radiation shielding (metal sheets and x-ray room windows), fine crystal glassware, fuel additives, flashing, batteries, bullets and shot, and personal grooming products (hair coloring). Lead is also found in some mortar and is a common soil contaminant due to the use of lead fuel additives in automobiles.

5.3.01 BNBBuilders does not start work in any existing structure without having reviewed the findings of a lead inspection with the owner.

5.3.02 Buildings occupied by children under the age of 6 may meet the EPA RRP requirements. These projects have a higher containment requirement and supervised by a Lead RRP trained supervisor.

### **5.3.1 Inspections**

5.3.1.1. The US EPA has regulations and training requirements for lead inspectors, project designers, and workers, however, these regulations apply only to Pre-schools, HUD and Indian Housing. EPA requires a Certified Renovation & Repair Project (RRP) to oversee the construction and controls of the project. Where OSHA oversees the lead exposure for workers, the EPA RRP governs the exposure controls for the public. Notification must be given to the building owner prior to starting a Lead RRP project.

5.3.1.2. It is important to confirm the status and applicability of these regulations in each state you work in.

- 5.3.1.3. Typical lead inspections conducted for the purpose of worker safety & health include the collection of paint chips of each color of paint in a given facility. Bulk samples of mortar, soil, lead foil, and etc., may also be collected depending on the intended construction work. Results are reported in milligrams per kilogram (mg/kg). Mg/kg is also equal to another reporting unit, parts per million. Results may also be reported as a percentage.
- 5.3.1.4. Ideally, the samples collected contain no detectable concentration of lead. However, laboratories report “no detectable lead” using the “<” (less than) sign. For example, <25 mg/kg means that the laboratory found out that there is no lead in the sample down to 25 mg/kg. This means that there could be 24, 23, or 12 mg/kg of lead in the sample; however, the analytical method is not sensitive enough to “see” this small concentration because of the amount of sample collected, the equipment used, and etc. A reporting limit of <50 mg/kg or <0.0005% is reasonable to determine that there is no detectable lead in the material. A reporting limit of <100 or <1% (10,000 mg/kg) is not.
- 5.3.1.5. Chemical tests such as the commercially available “Lead checks” may also be used. The reaction of lead in a substrate to the chemicals in the lead check turns the brush on the lead check red. Lead checks can be used to confirm the presence of lead in a substrate, however they are not sufficiently sensitive to be used to say that a coating is “lead free.” Lead checks may give “false negative” results (lead is present but not found) and should not be relied on other than to confirm the presence of lead.
- 5.3.1.6. Radiological methods are sometimes used to determine lead content in coatings. Handheld X-ray fluorescent (XRF) detectors are often used for HUD, Indian, and DoD housing lead paint inspections. They can be relied on to confirm lead in coatings, however, they also can give false negative readings. There is a well-known case in Washington where coatings were found to be “lead free” using an XRF, and L&I determined that the workers scraping the paint were overexposed to airborne lead.
- 5.3.1.7. Paint chip sample results are preferable in almost all situations because of their increased sensitivity and lower detection limits.
- 5.3.1.8. Lead abatement may have also occurred in a building before or after a lead inspection was performed. Abatement records can also be reviewed that document the removal lead-containing materials. Abatement contractor bids, scopes of work, daily logs, photographs, and waste manifests can be requested from the owner and should be reviewed. Lastly, asbestos abatement contractor close out packages should contain final clearance air or surface cleaning wipe sample results. These are critical to assure that the former lead abatement work areas are safe to enter and occupy.

### **5.3.2 Handling and Installation of Lead-Backed Drywall and Sheet Lead Shielding**

- 5.3.2.1. Please see the attached reference for [Handling Lead-Backed Drywall procedures](#).

## **5.4 Water Intrusion**

5.4.0 This section addresses the prevention, management, and response to water intrusion events and potential mold growth. It is important to note that this is a basic outline to respond to water intrusion events. Each water intrusion event has different characteristics.

- 5.4.01 Mold is a significant concern and its presence in structures has the potential to result in both property damage and personal injury. It is the policy of BNBuilders to take reasonable steps to prevent water intrusion events, to respond to water intrusion events in a timely and effective manner and thus to minimize the potential for mold growth. This plan outlines the procedures that are followed during *new construction, renovation, and maintenance activities* to minimize the potential for water intrusion and to respond to water intrusion and/or mold growth when it occurs. By training employees, putting controls in place, and reporting and documenting incidents, project exposures associated with water intrusion are reduced.

## **5.4.1 Water Intrusion Control during Project Life Cycle**

5.4.1.1. Control of water intrusion begins at the project pre-construction phase, during subcontractor selection and in use of protective contract language. It continues during field operations and is completed during project close-out and the warranty period.

### **5.4.1.2. Areas of operation which pose higher exposures to water intrusion include:**

- 5.4.1.2.1. HVAC
- 5.4.1.2.2. Mechanical
- 5.4.1.2.3. Plumbing
- 5.4.1.2.4. Fire Sprinklers
- 5.4.1.2.5. Roofing
- 5.4.1.2.6. Landscaping
- 5.4.1.2.7. Window Installation
- 5.4.1.2.8. Building Envelope

### **5.4.1.3. Project types which pose higher exposure to water intrusion include:**

- 5.4.1.3.1. Residential
- 5.4.1.3.2. Hospitals
- 5.4.1.3.3. Hotels
- 5.4.1.3.4. Schools
- 5.4.1.3.5. Renovations

## **5.4.2 Pre-Construction Phase**

5.4.2.1. BNBuilders verifies that the following elements, which are part of our bid package and scope of work, are evaluated upon review of the construction specifications prior to commencing site operations. This is the responsibility of the BNB project managers or their designees and is performed as part of the pre-assessment constructability review.

- 5.4.2.1.1. Pre-site analysis
- 5.4.2.1.2. Discovery during renovations
- 5.4.2.1.3. Drainage away from foundations
- 5.4.2.1.4. Roofing intersection details
- 5.4.2.1.5. Window and door flashing
- 5.4.2.1.6. Roof and wall penetrations
- 5.4.2.1.7. Building envelope drainage systems
- 5.4.2.1.8. Vapor barriers and wall cavity drainage provisions
- 5.4.2.1.9. Ventilation of enclosed spaces that may contain moisture
- 5.4.2.1.10. Exterior waterproofing and foundation drainage
- 5.4.2.1.11. HVAC systems, including condensate collection and drainage
- 5.4.2.1.12. Mechanical systems
- 5.4.2.1.13. Exterior venting of moisture producing areas and equipment (i.e., bathrooms, kitchens, indoor pools, locker rooms, laundries)
- 5.4.2.1.14. Vapor barriers
- 5.4.2.1.15. Sump pump installation (primary and optional battery back-up)
- 5.4.2.1.16. Rain gutters and downspouts
- 5.4.2.1.17. Utility and site drainage systems
- 5.4.2.1.18. Septic systems
- 5.4.2.1.19. Landscaping and irrigation systems

**5.4.2.2. Potential for third party impact:**

5.4.2.2.1. Ensure any discrepancies or concerns with the design are brought to the attention of the appropriate external and internal team members function for discussion and possible corrective action. These communications with the designated team, especially if a valid concern is not addressed, are documented. This documentation is retained in the project file.

**5.4.2.3. Subcontractors:**

5.4.2.3.1. When BNBuilders hires subcontractors, their activities may result in a water intrusion event. Prior to the start of field operations, BNB will instruct their subcontractors that they are responsible to identify and report to project superintendent any water intrusion event they become aware of during the course of operations regardless of fault.

**5.4.2.4. Contractual Provisions:**

5.4.2.4.1. A review of each contract is performed by BNBuilders management to address overall project liabilities and responsibilities. As part of this review, terms and conditions that relate to the handling and/or discovery of a water intrusion event or mold at a project site are evaluated. BNB accepts responsibility for remedying site conditions which were under BNB control that may have led to the generation of mold. It is BNB’s intent to enter into contracts that limit their responsibility for conditions beyond their control. Identified water intrusion or mold concerns or conditions must be addressed prior to contract approval. In the event that pre-existing mold is discovered at a project site, BNBuilders is responsible to notify the owner. Appropriate documentation of this communication, as well as the determined course of action, is retained in the project share file.

**5.4.3 Construction Phase**

5.4.3.1. BNBuilders ensures that site operations are performed in a way that minimizes the potential for water damaged materials to be utilized for the project. The following are steps that are taken to minimize the potential for water intrusion:

- 5.4.3.1.1. Deliveries are sequenced to avoid the storage of large amounts of moisture sensitive material at the site for an extended time period
- 5.4.3.1.2. Building materials are inspected upon delivery and significantly mold impacted materials are rejected
- 5.4.3.1.3. Moisture sensitive materials are protected from weather elements during delivery and off-loading activities
- 5.4.3.1.4. Stored building materials are elevated and covered to protect them from weather elements
- 5.4.3.1.5. Interior partitions are inspected for moisture and mold prior to being permanently enclosed
- 5.4.3.1.6. Building penetrations are sealed at the end of the workday to avoid moisture infiltration
- 5.4.3.1.7. Roof and building envelopes are substantially completed before any porous materials are stored in the building
- 5.4.3.1.8. Wet porous building materials are dried and inspected for mold growth prior to installation
- 5.4.3.1.9. Moisture limiting design features, such as roofing, flashing, windows, doors, exterior waterproofing and building envelope components are properly installed according to manufacturer’s specifications
- 5.4.3.1.10. Site workers practice good housekeeping
- 5.4.3.1.11. Site workers are responsible for reporting any unwanted accumulation of water to site management
- 5.4.3.1.12. Sub-floors are cleaned and dried prior to carpet installation
- 5.4.3.1.13. Construction debris is removed from within HVAC systems and associated ductwork



- 5.4.3.1.14. Existing duct work that is to remain in place during renovation activities is sealed with polyethylene sheeting and tape to prevent dust and debris from entering
- 5.4.3.1.15. HVAC condensate collection and drainage systems are checked to ensure that they are functioning properly

**5.4.3.2. Regular inspections are performed and documented during construction to identify leaks, ponded water and/or sources of water entry:**

- 5.4.3.2.1. Moisture/water leaks are responded to within 24 to 48 hours of discovery
- 5.4.3.2.2. Good communication is maintained between general contractor and other site contractors to remind them of this program and to discuss any water intrusion/mold issues
- 5.4.3.2.3. HVAC, plumbing and mechanical systems are tested before enclosure
- 5.4.3.2.4. BNBuilders conducts site inspections to ensure that the water intrusion minimization steps are implemented in a complete, consistent, and comprehensive manner. BNB maintains copies of their documentation in the project file.

**5.4.4 Project Close-Out and Warranty Period**

- 5.4.4.1. At project conclusion BNBuilders performs a final inspection with the client. As part of this walk-through, BNB should document that their site activities have not resulted in a moisture/water intrusion event. If a moisture/water intrusion event has occurred, BNB provides the client with documentation of the corrective action which was taken, including photographs.
- 5.4.4.2. Maintenance and operations by others at the site may affect the potential for future mold growth. At the conclusion of site operations, BNB provides the building owner(s) an information packet that includes all manufacturer warranties, equipment manuals and appropriate operation and maintenance instructions. As part of the turn-over process, BNB requests that the owner sign an acknowledgement form indicating the receipt of the materials provided to them. A copy of the signed form is maintained in the project file.
- 5.4.4.3. Many projects include a year-long warranty program. BNB should ensure that during this period, if issues of water intrusion or mold growth are repeated by the owner/tenant, that the concerns are addressed immediately.
- 5.4.4.4. Regular inspections are performed and documented during construction to identify leaks, ponded water and/or sources of water entry
  - 5.4.4.4.1. Moisture/water leaks are responded to within 24 to 48 hours of discovery
  - 5.4.4.4.2. Good communication is maintained between general contractor and other site contractors to remind them of this program and to discuss any water intrusion/mold issues
  - 5.4.4.4.3. HVAC, plumbing and mechanical systems are tested before enclosure
  - 5.4.4.4.4. BNBuilders conducts site inspections to ensure that the water intrusion minimization steps are implemented in a complete, consistent, and comprehensive manner. BNB maintains copies of their documentation in the project file.

**5.4.5 Procedures for Responding to Water Intrusion**

- 5.4.5.1. These procedures are designed to respond to water intrusion generated as a result of clean water and not contaminated water (i.e. sewage). In the event moisture/water enters the structure during the construction phase (e.g. roof leak, pipe leak, weather-related flooding), the emphasis must shift to removing the moisture/water, halting the source of the moisture/water, and drying any impacted materials. In some instances, impacted porous materials may need to be removed and replaced. Response activities must commence immediately (within 24 to 48 hours) following the moisture/water event or upon discovery of the moisture/water damage. Field personnel should notify internal management of the moisture/water intrusion event as soon as possible.

5.4.5.2. In the event that a moisture/water intrusion event is suspected to involve contaminated water, an appropriate specialty contractor should be contacted.

**5.4.5.3. If moisture/water intrusion response is not conducted promptly, mold growth may develop. The following actions shall be taken within 24 to 48 hours for handling objects and construction materials that have come into contact with clean moisture/water:**

5.4.5.3.1. Identify and eliminate the moisture/water source.

5.4.5.3.2. Wet Vacuum

5.4.5.3.2.1. Wet vacuums are designed to collect water. They can be used to remove accumulated water from floors, carpets, and other hard surfaces. They are less effective for removing water from dense porous materials such as gypsum board.

5.4.5.3.2.2. Wet vacuums may spread spores if sufficient liquid is not present. The tanks, hoses and attachments of these vacuums should be thoroughly cleaned and dried after use because mold and mold spores may stick to the equipment surfaces.

5.4.5.3.3. Drying and Ventilation

5.4.5.3.3.1. Materials that come into contact with water must be dried prior to being installed or covered with additional material. There are several methods used to assist in drying wet materials. Large blowers with directional controls or heaters assist in the drying process.

5.4.5.3.3.2. Forced ventilation should be vented directly outside. Avoid combustion type heaters for drying purposes as oxygen levels are decreased, the exhaust requires outside ventilation and moisture is generated as a by-product of incomplete combustion. Ensure impacted area is dry before proceeding with repairs.

5.4.5.3.4. Material Disposal

5.4.5.3.4.1. Damaged materials that are not salvageable, must be disposed. These materials are double-bagged using 6-mil polyethylene bags and discarded as construction waste.

5.4.5.3.4.2. It is important to package mold-contaminated materials in sealed bags before removal from the contaminated area to minimize the dispersion of mold spores. Large items that have heavy mold growth should be covered with polyethylene sheeting and sealed with duct tape before they are removed from the containment area.

5.4.5.3.4.3. Guidelines for evaluating damaged materials should be provided to site personnel to assist them in determining if materials should be discarded or reused.

5.4.5.3.5. Procedures for Responding to Mold Growth

5.4.5.3.5.1. BNB's response to mold growth is based upon the US EPA, OSHA, Cal OSHA, and L&I guidance documents addressing water intrusion and mold.

5.4.5.3.5.2. Both during construction and post-construction, BNBuilders will respond to complaints of water intrusion or mold growth in a timely manner.

5.4.5.3.6. Communication and Documentation Procedures

5.4.5.3.6.1. Throughout the phases of a project it is essential that communication with internal and external personnel are implemented and documented. BNB must determine and ensure that the appropriate levels of communication and documentation are maintained throughout the project to ensure that all parties involved understand the risk.

## **5.4.6 Water Intrusion Event Documentation**

5.4.6.1. Identification of a water or mold concern on a project; examples include unwanted water accumulation, water-impacted materials, visible mold growth, material staining, and musty odors.

5.4.6.2. Notification of internal company management responsible for the project by field personnel to communicate concern.

**5.4.6.3. Direction from corporate management such as, but not limited to:**

- 5.4.6.3.1. the continuation of work
- 5.4.6.3.2. the stoppage of work
- 5.4.6.3.3. notification of project owner and construction manager
- 5.4.6.3.4. completion of appropriate documentation
- 5.4.6.3.5. formal letter to project owner and architect

**5.4.6.4. In order to document a water intrusion or mold growth event, consider the following list of items that may be included in such a form:**

- 5.4.6.4.1. Job site
- 5.4.6.4.2. Site address
- 5.4.6.4.3. Client contact
- 5.4.6.4.4. Today's date
- 5.4.6.4.5. Location of incident (description and/or description with diagram)
- 5.4.6.4.6. Owner/client verification of location (i.e., how you may reference an area may not be how the owner/client does)
- 5.4.6.4.7. Description of moisture event
- 5.4.6.4.8. Date and time of observation of occurrence
- 5.4.6.4.9. Date and time action initiated
- 5.4.6.4.10. Describe materials affected
- 5.4.6.4.11. Square footage affected
- 5.4.6.4.12. HVAC evaluation
- 5.4.6.4.13. Owner, construction manager, building occupant notification
- 5.4.6.4.14. Actions taken (water source controlled, owner notification only, self-performed cleanup, remediation, retain CIH, remediation firm, etc.)
- 5.4.6.4.15. Equipment used
- 5.4.6.4.16. Photographs should include date and location description
- 5.4.6.4.17. Follow-up actions
- 5.4.6.4.18. Re-inspection (date, results, methods of verification)
- 5.4.6.4.19. Comments

***When appropriate, a copy of the completed form should be provided to owner/client and when possible have the owner/client sign the document. The original document is retained in the project records.***

## 6.0 References

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[L&I WAC 296-46B – Electrical Safety Standards](#)

[L&I WAC 296-800 – Core Safety](#)

[CAL/OSHA Title 8 Subchapter 7 Group 16 Article 109 SS 5192 – Hazardous Waste Operations and Emergency Response](#)

[OSHA – Memorandum of Understanding between OSHA and EPA](#)

[OSHA- A Brief Guide to Mold in the Workplace](#)

## 7.0 Attachments

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[Silica Exposure Control Plan](#)

# Excavation

## 1.0 Purpose

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- 1.1. Work in or near trenches and / or excavations is a very hazardous activity with the potential for seriously disabling and fatal accidents.

## 2.0 Scope

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- 2.1. These requirements apply regardless of the location, activity or equipment involved. Although the hazards posed by underground utilities are significant, this standard does not thoroughly cover control measures for the associated risks [Utility Avoidance](#) must be read alongside this document when the location of a utility impacts excavation activities. Similarly, due to the risks associated with persons falling into excavations, [Fall Protection](#) must also be read alongside this document.
- 2.2. This program sets out the minimum requirements to be applied on BNB projects to ensure that risks to health and safety from work near excavations are effectively managed. Additionally, all requirements set by local, state, and federal legislation and/or regulation must be complied with.

## 3.0 Responsibility

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### 3.1 Project Management

**3.1.1. BNB Project Management and Supervision will ensure that subcontractors engaged in excavation/trenching work submit the following documentation:**

- 3.1.1.1. Excavation Program, Competent/Qualified Person certifications, JHA(s), PTP(s),
- 3.1.1.2. Proof of training
- 3.1.1.3. IIPP and safety manuals etc.
- 3.1.1.4. Applicable permits (i.e., Cal/OSHA excavation permit)

**3.1.2. BNB Project Management and Supervision will ensure the following:**

- 3.1.2.1. coordination of and attendance at a Pre-Dig Meeting
- 3.1.2.2. completion of Daily Excavation Inspection Checklist & Log (for trenches/excavations over four feet in depth)
- 3.1.2.3. completion of Dig Permits
- 3.1.2.4. procedures regarding excavations are appropriately followed
- 3.1.2.5. personnel engaged in excavation work are properly trained prior to assignment
- 3.1.2.6. proper safety equipment is made available to personnel
- 3.1.2.7. air monitoring is conducted as applicable
- 3.1.2.8. coordination of shut offs and lockout/tag out of energy sources

### 3.2 Workers

- 3.2.1. Workers are responsible for following the requirements of their employer regarding excavation procedures.
- 3.2.2. Workers are responsible for working in a safe manner around excavations and must take measures to protect others. Workers must not carry out work for which they are not adequately trained, certified, authorized, or qualified.

**3.2.3. Workers may also responsible for the following:**

- 3.2.3.1. Conducting site evaluation prior to starting work
- 3.2.3.2. Attending a pre-dig meeting
- 3.2.3.3. Understanding and working in accordance with their job/activity hazard analysis
- 3.2.3.4. Completing daily Pre-Task Plans
- 3.2.3.5. Completing a Dig Permit

## 4.0 Definitions

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- 4.1. **Accepted engineering practices** - those requirements which are compatible with standards of practice required by a registered professional engineer.
- 4.2. **Aluminum Hydraulic Shoring** - a pre-engineered shoring system comprised of aluminum hydraulic cylinders (cross braces) used in conjunction with vertical rails (uprights) or horizontal rails (wales). Such system is designed specifically to support the sidewalls of an excavation and prevent cave-ins.
- 4.3. **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 belled shape.
- 4.4. **Benching (Benching system)** - a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.
- 4.5. **Cave-in** - the separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.
- 4.6. **Competent person** - one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- 4.7. **Cross braces** - the horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.
- 4.8. **Excavation** - any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.
- 4.9. **Faces or sides** - the vertical or inclined earth surfaces formed as a result of excavation work.
- 4.10. **Failure** - the breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.
- 4.11. **Hazardous atmosphere** - an atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.
- 4.12. **Kickout** - the accidental release or failure of a cross brace.
- 4.13. **Protective system** - a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or 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.
- 4.14. **Ramp** - an inclined walking or working surface that is used to gain access to one point from another and is constructed from earth or from structural materials such as steel or wood.
- 4.15. **Registered Professional Engineer** - a person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.
- 4.16. **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.
- 4.17. **Shield (Shield system)/Trench Box/Shield** - a structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either premanufactured or job-built in accordance with 1926.652(c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."
- 4.18. **Shoring (Shoring system)** - a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.
- 4.19. **Sloping (Sloping system)** - a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.
- 4.20. **Stable rock** - natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.
- 4.21. **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.
- 4.22. **Support system** - a structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.
- 4.23. **Tabulated data** - tables and charts approved by a registered professional engineer and used to design and construct a protective system.

- 4.24. **Trench (Trench excavation)** - a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.
- 4.25. **Uprights** - the vertical members of a trench shoring system placed in contact with the earth and usually positioned so that 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."
- 4.26. **Wales** - horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

## 5.0 Procedure

- 5.1. Work involving excavations should be avoided whenever possible. Where this is not possible, then steps must be taken to reduce the risk. Excavation routes must be planned so as to eliminate or reduce the presence of risks such as underground utilities. Planning must include all relevant parties, including management teams, clients, utility owners, contractors and those carrying out the task.
- 5.2. Risks associated with work in or near excavations must be identified and assessed. A Preconstruction Risk Assessment must be documented prior to commencing work on the project and reviewed whenever the scope of work changes. A geological report must be provided and reviewed prior to excavation work.
- 5.3. A documented job/activity hazard analysis must be prepared by those engaging in excavation activities and will identify the process and the controls to be followed and should include consideration of the following risk factors and controls:

| Job/Activity Hazard Analysis Considerations for Excavation Activities |  |
|---|--|
| RISK FACTORS  | CONTROL  |
| <b>Trench collapse</b>  | Before commencing work, a thorough assessment must be made of the type of ground in which the excavation is to be carried out. This should include the inclination of the surrounding slope, soil type and permeability.<br>Except when excavating sound rock, the risk of ground collapse must be minimized by use of an appropriate technique such as battering, stepping or proprietary ground support systems.                   |
| <b>The presence of water</b>  | Where surface water is present e.g. streams or rivers, a thorough assessment must be made about its effects and whether the water source needs redirecting.<br>Where water is likely to enter a trench (e.g. from ground water run-off or a high water table) a water management system must be documented. This should include channeling, pumping and de-watering techniques where appropriate (e.g. for highly permeable ground). |
| <b>Nearby structures</b>  | Care must be taken to ensure that the foundations of nearby structures are not disturbed or undermined. In the event where ground movement may affect a structure, a thorough assessment must be made regarding the need for additional structural support e.g. underpinning.  |
| <b>Presence of existing utilities</b>                                 | The presence of underground utilities must be thoroughly assessed. This should include evaluation of up-to-date utility drawings and the use of utility-locating devices. Where underground utilities are present, reference 1 should be consulted for safe digging practices.   |



|   |   |
|---|---|
| <p><b>Vehicle movements</b></p>   | <p>Vehicle routes must be carefully planned to ensure plant does not approach the edge of a trench excavation.<br/>Where required, access routes for personnel and vehicles crossing a trench must be properly planned and must include the necessary precautions e.g. edge protection. These access routes should be used in the event where plant and / or materials are required to cross a trench. Signage must not be used as a primary form of risk control, and should be used only to emphasize risk control measures.<br/>Where plant and equipment, e.g. dumper trucks, are required near a trench excavation, specific planning activities must be undertaken to ensure a safe approach, and should include access routes and the surrounding environment e.g. overhead power lines.</p> |
| <p><b>Equipment selection</b></p>   | <p>Equipment use must be planned to prevent serious injury to those working in or near a trench excavation. Plans for their selection should include:</p> <ul style="list-style-type: none"> <li>• ground conditions surrounding an excavation to minimize the risk of toppling</li> <li>• be used in accordance with appropriate standards and specifications</li> <li>• be appropriate to defined utility exclusion zones, where appropriate.</li> </ul>  |
| <p><b>Falls and slips</b></p>   | <p>Risk prevention measures such as guard rails and toe boards to prevent, falls, slips and small equipment falling must be planned.<br/>Suitable plans must also be put in place for safe entry and egress from a trench excavation to minimize the risk of injury. Suitable access must also be provided in the event of an emergency, when conventional access (e.g. via a secured ladder) may not be appropriate.</p>   |
| <p><b>Risks to members of the public</b></p>  | <p>When excavating in areas accessible to the public the trench must be back-filled and closed in the shortest amount of time that is practical. Barriers and signage should be erected to advise pedestrians of a trench's presence.<br/>Where pedestrian access ways are required these must include the necessary precautions e.g. edge protection.</p>  |
| <p>Job/Activity Hazard Analysis must also cover the process and the controls to be followed for:</p> <ul style="list-style-type: none"> <li>• permit and authorization processes to dig</li> <li>• provision of clear guidance on when work shall and shall not continue</li> <li>• site specific sensitivities, e.g. the need to seek permission from owners for the use of equipment at airports, on the railways, petrol stations or other sensitive environments</li> <li>• any special controls needed to manage high risk activities which may not normally be required in trench excavation</li> <li>• response arrangements for emergencies</li> <li>• use of Personal Protective Equipment (PPE) where appropriate, e.g. flame retardant outer clothing when working alongside utilities.</li> </ul> <p>Additionally, the potential for human failure may also be covered, outlining potential barriers and the need for additional controls. Potential mitigation measures for human failure include not undertaking specific activities without periodic breaks and not working alone.</p> |   |

## 5.1 Procedures and Requirements

### 5.1.1 Inspection Requirements:

5.1.1.1. The competent person responsible for the excavation must be on site during all operations relating to the open excavation. A competent person shall make soil classification (see attachment "How to Classify Soil") and shall inspect excavations before entry:

5.1.1.1.1. At the start of each shift

5.1.1.1.2. As needed throughout the shift



- 5.1.1.1.3. After rain showers or heavy rains
- 5.1.1.1.4. After freezing and/or thawing temperatures occur
- 5.1.1.1.5. After any condition that can cause change to the integrity of the soil
- 5.1.1.1.6. Nearby traffic, vibrations or earthquakes
- 5.1.1.1.7. After any significant modification to the support system

Inspections must be documented—see attachment titled “Daily Excavation Inspection Checklist & Log.”

## **5.1.2 General Requirements**

### **Excavations four feet or greater in depth;**

- 5.1.2.1. require protective systems (i.e., trench shield, shoring system, sloping, benching, etc.);
- 5.1.2.2. must have a stairway, ladder, ramp or other safe and equivalent means of access and egress within twenty-five (25) feet of any employee working inside of the excavation; and
- 5.1.2.3. where hazardous material may exist, the atmosphere in the excavation must be tested. Refer to [Confined Spaces](#).
- 5.1.2.4. Where appropriate, barriers must be erected to prevent unauthorized access to an excavation.
- 5.1.2.5. All excavation material and stockpile material must be placed a minimum four (2) feet away from the edge of the excavation. Loose soil or rocks shall be removed from the side of the excavation walls and placed in a manner that the material does not have the potential to roll or become accidentally knocked back into the excavation.
- 5.1.2.6. For excavations over twenty (20) feet in depth or greater, all shoring, sloping, benching or any other protective means must be designed by a Registered Professional Engineer with means of verification.
- 5.1.2.7. The number of workers in the excavation shall be limited to the number needed to perform work.
- 5.1.2.8. Water shall not be allowed to accumulate in the excavation at any time. Pumps, drains or other means shall be used to remove water on a continuous basis or as needed.
- 5.1.2.9. Emergency rescue equipment shall be readily available.
- 5.1.2.10. While the excavation is open, the Subcontractor shall protect underground installations and utilities by supporting or removing as necessary. When excavations must be left open for periods of time protective guardrails and/or hard barricades must be installed to prevent workers from falling into excavation.
- 5.1.2.11. Underground Utility Location and Potholing Procedures shall be followed to prevent damage to the identified underground utilities. See [Utility Avoidance Policy](#).
- 5.1.2.12. For rigging requirements, see [Material Handling & Rigging](#).
- 5.1.2.13. Subcontractors who will be working on preexisting sewage pipes must have their personnel; vaccinated from Hepatitis B or have signed waivers; trained on the applicable hazards including potential hepatitis B exposure; and must properly equip their personnel with protective equipment.

## **5.1.3 Equipment Operations**

- 5.1.3.1. Where lifting equipment is required to lift materials in / out of an excavation, consideration must be made of the ground conditions, anticipated loads and surrounding structures e.g. overhead power lines.
- 5.1.3.2. Where equipment e.g. a dump trucks are required close to an excavation, appropriate stop blocks must be used to prevent a vehicle’s overrunning.
- 5.1.3.3. Operations shall stop upon observation of any suspected unsafe soil conditions or if there are signs of previously disturbed soil, water seepage, or fissured soil.
- 5.1.3.4. Vibration must also be taken into consideration. Heavy equipment or nearby road traffic may also cause damage or disturb the excavation.
- 5.1.3.5. No personnel shall be permitted underneath loads handled by lifting, excavating equipment, or dump trucks-- workers shall wait on top until load delivery is complete. Personnel are prohibited in areas where loads are being moved and/or placed.

## 5.1.4 Fall protection

- 5.1.4.1. Where any personnel are exposed to fall hazards around trenches or excavations that are six feet or greater in depth, fall prevention measures must be addressed. See [Fall Protection](#) for additional requirements.
- 5.1.4.2. Proper guardrails and toe boards shall be maintained at the top of the excavation when required for fall protection.
- 5.1.4.3. Walkways with guardrails shall be used where personnel cross over excavations.
- 5.1.4.4. Exceptions: Fall Protection is not required at excavations when employees are:
  - 5.1.4.4.1. Directly involved with the excavation process and on the ground at the top edge of the excavation; or
  - 5.1.4.4.2. Working at an excavation site where appropriate sloping of side walls has been implemented as the excavation protective system. See the link [here](#).

## 5.1.5 Trench Excavation Protective Systems

- 5.1.5.1. Where buildings and other items are sufficiently close to risk surcharging of the excavation's sides, temporary support must be strengthened.
- 5.1.5.2. Stability of adjacent structures shall be evaluated before starting an excavation and monitored daily thereafter.
- 5.1.5.3. For excavations less than 20 ft. (6m) in depth, the maximum slope shall be 34 degrees measured from the horizontal (1-1/2 horizontal to 1 vertical) unless suitable protective systems are utilized.
- 5.1.5.4. All support systems or shoring systems such as pre-engineered hydraulic systems shall have tabulated data on site and shall follow the guideline as stipulated within.
- 5.1.5.5. Materials and equipment used for protective systems shall be free from damage or defects that might impair their proper function.
- 5.1.5.6. 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 system.
- 5.1.5.7. Removal of support systems shall begin at the bottom of the excavation and progress in an upward manner. Members shall be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.
- 5.1.5.8. All excavations less than 20 ft. (6m) in depth which have vertically lowered portions shall be shielded or supported to a height at least 18 inches (.5m) above the top of the vertical side with a maximum allowable slope of 1-1/2:1.
- 5.1.5.9. If a trench shield or trench box does not extend up to ground level, then the dirt above the top of the trench shield/box must be sloped. The slope must start at least 18 inches below the top of the box. When a trench box extends above the soil line, soil shall be placed on the sides to prevent workers from falling between the trench box and the excavation. End plates shall be used at both ends of the trench boxes as deemed necessary. The trench box/shield manufacturer's tabulated data shall be followed and readily available on site.
- 5.1.5.10. Protective systems in excavations over twenty (20) feet deep must be designed, stamped and signed by a registered professional engineer and be submitted to BNB Project Management & Supervision. EXCEPTION: If the manufacturer of the shoring system (hydraulic shores, trench boxes, trench shields, slide rail systems, etc.) allows the use of its equipment to depths greater than 20 feet, the Manufacturer's Tabulated Data shall be submitted to BNB Project Management & Supervision, and the Subcontractor competent person for trenching & excavation shall have a copy on the job site.
- 5.1.5.11. Excavations of earth material to a level not greater than 2 feet (.61 m) below the bottom of a shield shall be permitted, but only if the shield is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the shield.

## 5.1.6 Shield Systems

- 5.1.6.1. Shield systems or trench boxes shall be used to protect employees from forces imposed such as possible cave-in.
- 5.1.6.2. Shield systems shall not be subjected to loads exceeding those which the system was designed to withstand.
- 5.1.6.3. Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.

- 5.1.6.4. Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.
- 5.1.6.5. Employees shall not be allowed in shields when shields are being installed, removed, or moved vertically.

## 5.2 Hazards

### **5.2.1. The risks associated with working in and around trench excavations may be significant and may potentially include:**

- 5.2.1.1. people being trapped or struck by collapse of the sides
- 5.2.1.2. people falling from height into the excavation
- 5.2.1.3. materials or equipment falling into the excavation
- 5.2.1.4. drowning by flooding
- 5.2.1.5. asphyxiation caused by air contamination
- 5.2.1.6. hazards caused by damage to existing utilities

## 5.3 Hazard Controls

### **5.3.1 Engineering Controls**

- 5.3.1.1. An engineering control for excavations is to avoid the need to work in and/or around excavations via methods such as project design. Trenchless technologies such as micro-tunneling or directional drilling may eliminate the need for some trenches but may introduce other risks.
- 5.3.1.2. For existing excavations, the first order is to perform a pre-entry assessment by a competent person to evaluate the excavation or trench to be entered and see if the hazard(s) can be eliminated or reduced. Perhaps it may be feasible to introduce a mechanical device or instrument that can carry out the required evaluation or work such as a surveying probe/camera which may eliminate the need for personnel to enter an excavation.

### **5.3.2 Administrative Controls**

- 5.3.2.1. An administrative control for excavation activities would be to reduce the chance of an injury from work near an excavation by giving priority to collective measures over individual measures, e.g. using physical barriers as edge protection to prevent access. Preventative measures may also include reducing the number of individuals exposed to and the amount of time spent working in and around excavations. In order to prevent trench collapse, sloping, stepping or protective systems may be used.

#### **5.3.2.2. Pre-Planning Meetings must be conducted with all parties involved in excavation activities to ensure that:**

- 5.3.2.2.1. all parties understand the work to be done
- 5.3.2.2.2. pre-entry procedures are identified
- 5.3.2.2.3. duties of each team member are established
- 5.3.2.2.4. hazards that may be encountered are identified
- 5.3.2.2.5. equipment needed is identified
- 5.3.2.2.6. emergency response and rescue procedures are written
- 5.3.2.2.7. procedures involving any chemicals or work techniques which could create additional hazards within the excavation are identified
- 5.3.2.2.8. required hazard controls are identified for underground utilities
- 5.3.2.2.9. personal protective equipment is identified
- 5.3.2.2.10. Necessary signage is identified (Danger signage warning of fall hazards, confined spaces, cave in hazards, etc.)

### **5.3.3 Personal Protective Equipment**

**To mitigate the consequences if an accident or failure does occur, procedures must address Personal Protective Equipment (PPE), for example:**

- 5.3.3.1. Hard Hat - ANSI Z89.1
- 5.3.3.2. Safety glasses - ANZI Z87.1
- 5.3.3.3. Work boots - ASTM F2413
- 5.3.3.4. Reflective vest – type II, high visual
- 5.3.3.5. Gloves
- 5.3.3.6. Flame-retardant outer clothing

## 5.4 Training

### **5.4.1. Supervisors must be adequately trained in safe excavation principles and assessed for competency. Competency consists of:**

- 5.4.1.1. number of years of experience in the relevant field
- 5.4.1.2. qualifications
- 5.4.1.3. training (Competent person training for Excavation, OSHA 30, First Aid, CPR)
- 5.4.1.4. familiarity with appropriate techniques and equipment
- 5.4.1.5. recognition of risks

- 5.4.2. Additionally, operators of equipment must have been trained on the specific piece(s) of equipment. Also, depending on the hazards to be encountered, other required training may consist of confined spaces, respiratory protection, hazmat, rigging & signal person, flagger, fall prevention, etc.

## 6.0 References

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[FED / OSHA 29 CFR 1926 Subpart P – Excavations](#)

[CALOSHA Title 8 Subchapter 4 Article 6 - Excavations](#)

[WAC L&I 296-155-650 - Excavations](#)

## 7.0 Attachments

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[Dig Permit](#)

[Confined Space Entry Permit](#)

[Alternative Methods Permit](#)

[Coring & Saw Cutting Checklist](#)

# Fall Protection

## 1.0 Purpose

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- 1.1. Fall hazards present significant risks to BNBuilders, contractors, third parties and members of the public. The purpose of this program is to provide guidelines for the elimination and control of potential fall hazards may be countered.

## 2.0 Scope

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- 2.1. This policy applies to all BNB projects and offices. In addition, it is imperative that local, state, and federal regulations as well as manufacturer guidelines are followed.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. BNB Project Management & Supervision are responsible for conducting a preconstruction risk assessment for the project. During the risk assessment, site-specific fall hazards must be identified and addressed. Control measures must be identified and followed up with to ensure implementation in the field. It is the responsibility of BNB Project Management to ensure that these conditions are satisfied to prevent un-controlled work at heights.
- 3.1.2. BNB Project Management & Supervision are responsible for ensuring subcontractors engaged in work at heights submit adequate safety documentation that details fall hazards and controls.

#### **3.1.3. Fall protection submittals consist of:**

- 3.1.3.1. Job/Activity Hazard Analysis (J/AHA)
- 3.1.3.2. Pre-Task Plans (PTP)
- 3.1.3.3. Competent Person letter/certification/proof
- 3.1.3.4. Personal Fall Arrest Inspection Checklist/Document
- 3.1.3.5. Proof of training on:
  - 3.1.3.5.1. The employer's safety programs and procedures
  - 3.1.3.5.2. Fall awareness
  - 3.1.3.5.3. List of equipment to be used (specs, use, installation, maintenance, storage, etc.)
  - 3.1.3.5.4. Competent person
  - 3.1.3.5.5. Site-specific hazards
- 3.1.4. When conventional fall protection is not practical or at the request of BNB Project Management, subcontractors whose personnel will be potentially exposed to fall hazards shall have and follow an adequate Fall Protection Plan. If contractors prefer to use their own format for the plan, it must have the same information at a minimum.

### 3.2 Workers

- 3.2.1. Workers engaged in working at heights are responsible for following their employer's safety plan and site-specific fall protection plan (if applicable).
- 3.2.2. Foremen are responsible for ensuring JHAs and daily Pre-Task Plans are completed, understood, and followed by their crew members.
- 3.2.3. Competent persons are responsible for completing daily safety inspections and ensuring that their site-specific fall protection plan is adequate, amended as needed, communicated, and followed by crew members.
- 3.2.4. Personnel whom create a potential fall hazard or tear down, remove, or damage a fall-hazard control shall be fully responsible to correct the hazard immediately. A competent person in fall protection shall inspect the correction to ensure adequacy.

## 4.0 Definitions

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- 4.1. **Anchorage** - a secure point of attachment for lifelines, lanyards or deceleration devices.
- 4.2. **Body harness** - straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, pelvis, waist, chest and shoulders with means for attaching it to other components of a personal fall arrest system.
- 4.3. **Buckle** - any device for holding the body belt or body harness closed around the employee's body.
- 4.4. **Connector** - a device which is used to couple (connect) parts of the personal fall arrest system and positioning device systems together. It may be an independent component of the system, such as a carabiner, or it may be an integral component of part of the system (such as a buckle or d-ring sewn into a body belt or body harness, or a snap-hook spliced or sewn to a lanyard or self-retracting lanyard).
- 4.5. **Controlled access zone (CAZ)** - an area in which certain work (e.g., overhand bricklaying) may take place without the use of guardrail systems, personal fall arrest systems, or safety net systems and access to the zone is controlled.
- 4.6. **Conventional fall protection** - guardrails, personal fall arrest systems, and/or safety nets.
- 4.7. **Deceleration device** - any mechanism, such as a rope grab, rip-stitch lanyard, specially-woven lanyard, tearing or deforming lanyards, automatic self-retracting lifelines/lanyards, etc., which serves to dissipate a substantial amount of energy during a fall arrest, or otherwise limit the energy imposed on an employee during fall arrest.
- 4.8. **Deceleration distance** - the additional vertical distance a falling employee travels, excluding lifeline elongation and free fall distance, before stopping, from the point at which the deceleration device begins to operate. It is measured as the distance between the location of an employee's body belt or body harness attachment point at the moment of activation (at the onset of fall arrest forces) of the deceleration device during a fall, and the location of that attachment point after the employee comes to a full stop.
- 4.9. **Failure** - load refusal, breakage, or separation of component parts. Load refusal is the point where the ultimate strength is exceeded.
- 4.10. **Free fall** - the act of falling before a personal fall arrest system begins to apply force to arrest the fall.
- 4.11. **Free fall distance** - the vertical displacement of the fall arrest attachment point on the employee's body belt or body harness between onset of the fall and just before the system begins to apply force to arrest the fall. This distance excludes deceleration distance, and lifeline/lanyard elongation, but includes any deceleration device slide distance or self-retracting lifeline/lanyard extension before they operate and fall arrest forces occur.
- 4.12. **Guardrail system** - a barrier erected to prevent employees from falling to lower levels.
- 4.13. **Hole** - a gap or void 2 inches (5.1 cm) or more in its least dimension, in a floor, roof, or other walking/working surface.
- 4.14. **Infeasible** - that it is impossible to perform the construction work using a conventional fall protection system (i.e., guardrail system, safety net system, or personal fall arrest system) or that it is technologically impossible to use any one of these systems to provide fall protection.
- 4.15. **Lanyard** - a flexible line of rope, wire rope, or strap which generally has a connector at each end for connecting the body belt or body harness to a deceleration device, lifeline, or anchorage.
- 4.16. **Leading edge** - the edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an "unprotected side and edge" during periods when it is not actively and continuously under construction.

- 4.17. **Lifeline** - a component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.
- 4.18. **Low-slope roof** - a roof having a slope less than or equal to 4 in 12 (vertical to horizontal).
- 4.19. **Lower levels** - those areas or surfaces to which an employee can fall. Such areas or surfaces include, but are not limited to, ground levels, floors, platforms, ramps, runways, excavations, pits, tanks, material, water, equipment, structures, or portions thereof.
- 4.20. **Opening** - a gap or void 30 inches (76 cm) or higher and 18 inches (48 cm) or wider, in a wall or partition, through which employees can fall to a lower level.
- 4.21. **Personal fall arrest system** - a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.
- 4.22. **Positioning device system** - a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.
- 4.23. **Rope grab** - a deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking, or both.
- 4.24. **Roof** - the exterior surface on the top of a building. This does not include floors or formwork which, because a building has not been completed, temporarily become the top surface of a building.
- 4.25. **Roofing work** - the hoisting, storage, application, and removal of roofing materials and equipment, including related insulation, sheet metal, and vapor barrier work, but not including the construction of the roof deck.
- 4.26. **Safety-monitoring system** - a safety system in which a competent person is responsible for recognizing and warning employees of fall hazards.
- 4.27. **Self-retracting lifeline/lanyard** - a deceleration device containing a drum-wound line which can be slowly extracted from, or retracted onto, the drum under slight tension during normal employee movement, and which, after onset of a fall, automatically locks the drum and arrests the fall.
- 4.28. **Snap hook** - a connector comprised of a hook-shaped member with a normally closed keeper, or similar arrangement, which may be opened to permit the hook to receive an object and, when released, automatically closes to retain the object.
- 4.29. **Locking Snap hook** - The locking type with a self-closing, self-locking keeper which remains closed and locked until unlocked and pressed open for connection or disconnection; or
- 4.30. **Non-Locking Snap hook** - The non-locking type with a self-closing keeper which remains closed until pressed open for connection or disconnection. As of January 1, 1998, the use of a non-locking snaphook as part of personal fall arrest systems and positioning device systems is prohibited.
- 4.31. **Steep roof** - a roof having a slope greater than 4 in 12 (vertical to horizontal).
- 4.32. **Toe board** - a low protective barrier that will prevent the fall of materials and equipment to lower levels and provide protection from falls for personnel.
- 4.33. **Unprotected sides and edges** - any side or edge (except at entrances to points of access) of a walking/working surface, e.g., floor, roof, ramp, or runway where there is no wall or guardrail system at least 39 inches (1.0 m) high.
- 4.34. **Walking/working surface** - any surface, whether horizontal or vertical on which an employee walks or works, including, but not limited to, floors, roofs, ramps, bridges, runways, formwork and concrete reinforcing steel



but not including ladders, vehicles, or trailers, on which employees must be located in order to perform their job duties.

4.35. **Warning line system** - a barrier erected on a roof to warn employees that they are approaching an unprotected roof side or edge, and which designates an area in which roofing work may take place without the use of guardrail, body belt, or safety net systems to protect employees in the area.

4.36. **Work area** - that portion of a walking/working surface where job duties are being performed.

## 5.0 Procedure

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### 5.1 General

5.1.1. Risks associated with work at height must be identified and assessed. Risk assessment or job hazard analysis should be documented prior to commencing work and must be reviewed whenever the scope of work changes. Planning must include all relevant parties as appropriate, e.g. management teams, clients, designers, procuring teams, suppliers, contractors and those carrying out the task.

**5.1.2. Prior to any work at heights being carried out, a documented plan must be prepared which identifies the process and the controls to be followed and should include consideration of:**

- 5.1.2.1. permit and authorization processes for work at height including any restrictions e.g. weather and environmental conditions
  - 5.1.2.2. selection, maintenance and inspection of appropriate access and other equipment
  - 5.1.2.3. safe access and egress arrangements
  - 5.1.2.4. preventing the fall of objects
  - 5.1.2.5. restricting access, e.g. exclusion/controlled access zones beneath areas where people are working at height
  - 5.1.2.6. personal protective equipment
  - 5.1.2.7. response arrangements for emergencies including training and testing.
- 5.1.3. All work at height must be planned and appropriately supervised. Where conditions change or planned controls are not met, the activity must be immediately stopped and reassessed.
- 5.1.4. When conventional fall protection is not practical or at the request of BNB Project Management, subcontractors whose personnel will be potentially exposed to fall hazards shall have and follow an adequate [Fall Protection Work Plan](#). If contractors prefer to use their own format for the plan, it must have the same information at a minimum.
- 5.1.5. Fall protection shall be used by all employees when working six (6) feet or more above the ground/floor or whenever working in a precarious position, unless other adequate fall prevention (guardrails or safety nets) are provided. “Monitor-Type Systems” are **NOT** permitted.
- 5.1.6. Subcontractors must provide copies of the fall protection manufacturer specifications prior to the start of work.

#### 5.1.7 Personal Fall Arrest Systems

- 5.1.7.1. Body belts shall not be used as part of a personal fall arrest system. Only full-body safety harnesses are approved for use as a part of a personal fall protection system.
- 5.1.7.2. Shock absorbing lanyards must be used unless a Self-Retracting Lanyard is in use.
- 5.1.7.3. Wire rope lanyards shall not be used as connectors in a personal fall arrest system unless a wire rope lanyard with an energy absorber is required due to the type of work being performed (welding, cutting, etc.).
- 5.1.7.4. 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.
- 5.1.7.5. 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.
- 5.1.7.6. Lanyards and vertical lifelines shall have a minimum breaking strength of 5,000 pounds.
- 5.1.7.7. When vertical lifelines are used, each employee shall be attached to a separate lifeline.
- 5.1.7.8. Fall arrest equipment shall be protected against being cut or abraded. Padding, softeners, etc.

must be used to protect equipment from sharp edges.

- 5.1.7.9. Self-retracting lifelines and lanyards which automatically limit free fall distance to 2 feet or less shall be capable of sustaining a minimum tensile load of 3,000 pounds applied to the device with the lifeline or lanyard in the fully extended position. When used for leading edge work, lifelines must be protected from sharp edges.
- 5.1.7.10. Anchorages shall be independent of any anchorage being used to support or suspend platforms and capable of supporting at least 5,000 pounds per employee.
- 5.1.7.11. Personal fall arrest systems shall:
  - 5.1.7.12. limit maximum arresting force on an employee to 900 pounds
  - 5.1.7.13. be rigged such that an employee can neither free fall more than 6 feet, nor contact any lower level.
  - 5.1.7.14. have the anchor end of the lanyard secured at a level not lower than the employee's waist.
  - 5.1.7.15. bring an employee to a complete stop and limit maximum deceleration distance an employee travels to 3.5 feet.
  - 5.1.7.16. have sufficient strength to withstand twice the potential impact energy of an employee free falling a distance of 6 feet, or the free fall distance permitted by the system, whichever is less.
  - 5.1.7.17. The attachment point of the body harness shall be located in the center of the wearer's back near shoulder level, or above the wearer's head.
  - 5.1.7.18. The employer shall plan and provide for prompt rescue of employees in the event of a fall or shall assure that employees are able to rescue themselves.
  - 5.1.7.19. Personal fall arrest systems shall not be attached to hoists, nor shall they be attached to guardrails.
  - 5.1.7.20. When a personal fall arrest system is used at hoist areas, it shall be rigged to allow the movement of the employee only as far as the edge of the working level or working area.
  - 5.1.7.21. Each personal fall arrest system shall be inspected not less than twice annually by a competent person in accordance with the manufacturer's recommendations. The date of each inspection shall be documented.
  - 5.1.7.22. Personal fall arrest systems shall be inspected prior to each use for wear, damage, and other deterioration, and defective components shall be removed from service.

**5.1.8 Positioning device systems**

***Positioning device systems and their use shall conform to the following provisions:***

- 5.1.8.1. Shall be rigged such that an employee cannot free fall more than 2 feet.
- 5.1.8.2. When working over 6', must be used in conjunction with a personal fall arrest system.

**5.1.9 Personal fall restraint**

- 5.1.9.1. All Lanyards used for fall restraint are to be as short as possible and will prevent an employee from reaching a leading edge.
- 5.1.9.2. When a fall restraint system is used for fall protection from an aerial lift or a boom-type elevating work platform, the lanyard and anchor must be arranged so that personnel are not potentially exposed to falling any distance. When operating aerial work platforms near or over water, lift occupants are not required to tie off because in the event that an error occurred that resulted in the employees being in the water, being tied-off would exacerbate the drowning hazard. Fed OSHA Subpart CC 1926.1431 (K)(10)(i). Letter of interpretation amended June 18, 2014. Letter # 20090601-9068.
- 5.1.9.3. Anchorage points used for fall restraint shall be capable of supporting 4 times the intended load.

**5.1.9.4. Additional fall protection requirements**

- 5.1.9.4.1. During break periods, personnel shall fully remove and properly store full-body harnesses.
- 5.1.9.4.2. All fall arresting, descent control, and rescue equipment shall be used in accordance with the manufacturer's recommendations.
- 5.1.9.4.3. Any fall protection equipment subjected to a fall shall be immediately removed from service and shall not be used again.
- 5.1.9.4.4. Lifelines and anchorages shall be capable of supporting a minimum dead weight of 5000

pounds.

5.1.9.4.5. Safety net systems and their use shall comply with applicable Federal, State, and Local Regulations.

5.1.9.4.6. Control measures must be established to prevent material, equipment, tools, etc. from falling to lower levels where personnel may potentially be struck. Tool tethers/leashes and restricted areas below overhead work are acceptable means of protection from falling objects.

### 5.1.10 Guardrails

**Guardrails must be provided at floor openings, open sides, and/or leading edges or personal fall protection must be used. Guardrails or wire cables must follow these requirements:**

- 5.1.10.1. Top edge height of top rail/cable must be 42" + or - 3" (In California, top rails must be 42-45 inches).
- 5.1.10.2. The maximum deflection for the top rail when a load of 200 pounds is applied in any direction at any point on the top rail shall not exceed 3 inches in any direction.
- 5.1.10.3. Mid-rail/cable and toe boards must be installed and able to withstand 150 lbs. impact force (200 lb. for WA).
- 5.1.10.4. Guardrails or wire cables will not be used for anchoring personal fall arrest/restraint.
- 5.1.10.5. Upright supports for a wood guardrail system shall be spaced no greater than every 8 ft. on center.

### 5.1.11 Wire Rope Guardrails

- 5.1.11.1. All connections and splices shall be loop-type connections. If the loop is formed to splice two pieces of wire rope together, thimbles shall be used in the eyes formed by the loops and the forged wire rope clips are to be installed in accordance with the manufacturer's recommendations, including torqueing the nuts on the wire rope clips to the specified foot-pounds.
- 5.1.11.2. Top rails must have flagging every six feet for visibility purposes.
- 5.1.11.3. Wire rope guardrail runs shall be erected to allow sections to be removed without jeopardizing the entire perimeter when other workers could be exposed to falls.
- 5.1.11.4. The saddles of all wire rope clips used shall be constructed of forged steel rather than malleable steel in accordance with ASME B30.26-2004.
- 5.1.11.5. The installer of the wire rope system must carefully follow the manufacturer's instructions and specifications regarding the number of clips, spacing, clip size for a particular wire rope size and type, rope lay, and torque values.

## 5.2 Hazards

5.2.1. Falls are the leading cause of worker fatalities in the construction industry. The Occupational Safety and Health Administration (OSHA) notes each year, hundreds of workers are killed, and thousands injured as a result of falls at construction sites.

5.2.2. There are two key risks: falls from height which can result in death or serious injury and falling objects which present significant risks to BNBuilders employees, contractors, third parties and members of the public.

**5.2.3. The following is a list of activities that may have fall exposures:**

- 5.2.3.1. Caisson Drilling (holes)
- 5.2.3.2. Confined spaces
- 5.2.3.3. Crane assembly and disassembly
- 5.2.3.4. Elevator shaft work activities
- 5.2.3.5. Elevated/Aerial Work Platforms
- 5.2.3.6. Excavation & Trenching
- 5.2.3.7. Floor/wall/roof openings/holes

- 5.2.3.8. Sky Lights
- 5.2.3.9. Roofing
- 5.2.3.10. Glazing & curtain walls
- 5.2.3.11. Guard Rails installation
- 5.2.3.12. Formwork and rebar cage installations
- 5.2.3.13. Ladder use
- 5.2.3.14. Leading edge, decking activities
- 5.2.3.15. Man-lifts repairs
- 5.2.3.16. Scaffold erection and dismantling
- 5.2.3.17. Steel Erection, Welding, Bolting, Metal Decking
- 5.2.3.18. Swing stage scaffolding

## 5.3 Hazard Controls

5.3.1. All activities potentially involving work at height must be identified, the risks systematically assessed, and risk reduction planned in advance.

### 5.3.2 Engineering Controls

5.3.2.1. Work at height should be avoided whenever possible. When this is not possible, then careful consideration must be given as to how the risks can be reduced.

5.3.2.1.1. Avoid the need to work at height, e.g. through design of structure and/or process. For example, parapet walls can be designed to be a minimum height of 39-45”. Also, sky lights can have protective cages installed to prevent them from being an “open-hole” hazard.

5.3.2.1.2. Reduce the number of people who need to work at height, e.g. through off site manufacturing.

5.3.2.1.3. Reduce the likelihood of a fall by, e.g. use a work platform or platform ladder rather than a traditional ladder.

5.3.2.1.4. Give priority to collective measures over individual measures, e.g. fixed edge protection is preferable to every worker wearing fall prevention equipment.

### 5.3.3 Administrative Controls

5.3.3.1. When scopes of work with fall hazards are identified, pre-planning meetings must be conducted to ensure that all parties know the work to be done, hazards that may be encountered, equipment necessary, and emergency plans. During pre-planning meetings, the Site-Specific Fall Protection Plan and other safety submittals should be reviewed.

5.3.3.2. In order to reduce the chance of dropped items, personnel must reduce materials stored at height and establish exclusion/controlled access zones below overhead work activities. Debris netting and covered walkways also provide protection from dropped/falling objects.

### 5.3.4 Personal Protective Equipment

5.3.4.1. Fall arrest/restraint equipment systems

5.3.4.2. Rescue/recovery equipment

5.3.4.3. Tool tethers for tools used at height

### 5.3.5 Training

***The employer shall assure that each employee exposed to fall hazards has been trained in the following areas:***

5.3.5.1. The nature of fall hazards in the work area;

- 5.3.5.2. The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used;
- 5.3.5.3. The use and operation of guardrail systems, personal fall arrest systems, safety net systems, warning line systems, controlled access zones, and other protection to be used;
- 5.3.5.4. The limitations on the use of mechanical equipment during the performance of roofing work on low-sloped roofs;
- 5.3.5.5. The correct procedures for the handling and storage of equipment and materials and the erection of overhead protection; and
- 5.3.5.6. The role of employees in fall protection plans;

**5.3.6 Certification of training*****Fall protection certificates shall contain:***

- 5.3.6.1. the name or other identity of the employee trained,
- 5.3.6.2. the date(s) of the training, and the signature of the person who conducted the training or the signature of the employer.

**5.3.7 Retraining*****Circumstances where retraining is required include, but are not limited to, situations where:***

- 5.3.7.1. Changes in the types of fall protection systems or equipment to be used render previous training obsolete; **or**
- 5.3.7.2. Inadequacies in an affected employee's knowledge or use of fall protection systems or equipment indicate that the employee has not retained the requisite understanding or skill.

**6.0 References**

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[FED / OSHA 29 CFR 1926 Subpart M – Fall Protection](#)

[CALOSHA Title 8 Subchapter 4 Article 24 – Fall Protection](#)

[L&I WAC 296-880-080 to 296-880-510–Unified Safety Standards for Fall Protection](#)

**7.0 Attachments**

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[Fall Protection Work Plan](#)

[Fall Protection Training Guide for Employees](#)

[Determination of Confined Space](#)

[Demolition Permit](#)

# Fire Panel Management

## 1. Purpose

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- 1.1. The purpose of this policy is to provide guidelines when modifying the normal operation of a fire protection system. The probability of casualties and major structural damage increases when fire alarm and fire protection systems are impaired. The risk of damages and their severity increases the longer systems remain impaired. Therefore, it is necessary to minimize the duration and scope of any impairment. This document contains an effective management program used to minimize the risk associated with the fire alarm and fire protection impairments. This standard must be followed throughout all phases of work.

## 2. Scope

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- 2.1. This policy covers any scope of work undertaken by BNBuilders or its subcontractors and their tiers where there is potential to disrupt a fire protection system as a result of our work throughout all phases of construction. This policy provides instructions to authorized individuals who wish to request or modify the normal operation of a fire alarm and fire protection systems during demolition and/or construction, outages, maintenance, testing and system impairments of occupied buildings. This document does not include guidance on hot work activities.

## 3. Responsibility

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### 3.1. Subcontractor

- 3.1.1. Notifies BNBuilders Superintendent/Foreman at least 72 hours in advance that work activities require a system impairment.
- 3.1.2. Submits for an impairment permit from BNBuilders at least 72 hours prior to starting work.
- 3.1.3. Obtains a new impairment permit when the scope of work changes or to receive permit extensions. Permits are valid for one day only and will expire at the end of the business day unless specified by Superintendent. It is up to the discretion of BNBuilders designated competent person to issue permits on an individual basis prior to 72 hours' notice and extended permit period, as necessary.
- 3.1.4. Maintains a copy of the impairment permit at the work site and follows the requirements include on the document.
- 3.1.5. Contacts BNBuilders Superintendent/Foreman immediately in the event of a fire emergency.

### 3.2. Authorized/Competent Person (BNBuilders Employee)

- 3.2.1. Assists subcontractor with the impairment permit process.
- 3.2.2. Communicates the job details requiring fire alarm modification to Superintendent/Foreman.
- 3.2.3. Coordinates Service Response to assist and Announcement of impairment and shutdown notice.
- 3.2.4. Identifies and communicates the oracle charge string for fire watch activities when needed.
- 3.2.5. Functions as the authorized person responsible for contacting Facilities Management and Alarm Company when the building or area is ready to be placed “on hold” and placed back “online,”
- 3.2.6. Monitoring impaired building fire alarm systems,
- 3.2.7. Bringing fire systems back “online” when work is complete and inspecting and testing the fire alarm system.
- 3.2.8. Document's impairment details (i.e., devices impaired, point numbers, name of individual(s) performing impairment) in appropriate building log binder.
- 3.2.9. Updates a new log binder when necessary.

### 3.3. Superintendent or Designated Authorized Competent Foreman

- 3.3.1. Issues the completed impairment permit.
- 3.3.2. Issues updated permit as needed.
- 3.3.3. Provides new panel log binder when needed from SharePoint.
- 3.3.4. Maintains expired permits electronically for a minimum of duration of project.
- 3.3.5. May issue permits on an individual basis prior to 72 hours' notice.
- 3.3.6. Can extend permit period, as necessary.
- 3.3.7. Coordinates activities with facilities management.

## 4. Definitions

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- 4.1. **Applicant** – An Approved person who is a Subcontractor filling out an impairment permit with BNBuilders Superintendent.
- 4.2. **Authorized Person**- Approved individual by BNBuilders who has specialized knowledge of the fire alarm systems, fire extinguisher operation and has completed fire watch training. This person is permitted to initiate an impairment permit application to work on the buildings fire alarm and fire protection systems.
- 4.3. **Fire Alarm Devices** - a set of electric/electronic devices/equipment working together to detect and alert people through visual and audio appliances when smoke/fire is present. These alarms may be activated from smoke detectors, heat detectors, water flow sensors, which are automatic or from a manual fire alarm pull station.
- 4.4. **Alarm Company** – Approved third party monitoring company.
- 4.5. **Subcontractor** – A person or persons who is performing work under a contract and is managing construction activities, which require the modifications of the buildings fire alarm or fire protection system.
- 4.6. **Disabling Devices** – Disabling or “turning off” specific alarm initiating devices and/or signals by using the fire alarm control panel function keys, while allowing the rest of the alarm system to remain active.
- 4.7. **Disabling Panel** – Any panel alteration that prevent it from receiving inputs or communicating alarms. Disabling an entire panel is not permitted without Superintendent authorization.
- 4.8. **Safety Department** – Safety Director, Regional Safety Manager, Safety Manager and Safety Engineer.
- 4.9. **Emergency Impairment** – An unexpected system failure.
- 4.10. **Fire Alarm Panel Watch** – An authorized individual or individuals whose sole responsibility is to monitor the fire alarm panel for activation of a fire alarm signal(s).
- 4.11. **Fire Alarm System** - A system, or portion of a combination systems consisting of devices (i.e., smoke and heat detectors) arranged to monitor and annunciate the status of a fire emergency and then to initiate the appropriate response to those signals.
- 4.12. **Fire Protection System** – Approved devices, equipment's and systems or combinations of systems used to detect a fire, activate an alarm, extinguish, or control a fire, control, or manage smoke and products of a fire, or any combination thereof.
- 4.13. **Fire Watch** – Person(s) who's sole responsibility is to look for fires within a designated area or areas. He or she must have specialized training on fire alarm systems activation, fire extinguisher operation and fire watch training.
- 4.14. **Impairment** – Any loss of the fire alarm system functionality. Examples of impairment include:
  - 4.14.1. Pump testing
  - 4.14.2. Maintenance and repair
  - 4.14.3. Disconnecting, bypass, or disabling signal circuits
  - 4.14.4. Deactivating Alarm initiating devices.
  - 4.14.5. System testing
  - 4.14.6. Emergencies
  - 4.14.7. Impaired fire alarm and fire protection equipment
  - 4.14.8. Powering down the fire alarm control panel



- 4.14.9. A system “on hold” with the Alarm Company
- 4.14.10. Maintenance
- 4.15. **Impairment Permit** – A document completed and issued by Superintendent to an authorized person. The permit provides permission to impair whole or part of a fire alarm system.
- 4.16. **Record of Fire Alarm Device (Log binder)** – A log binder used by an authorized person to document fire alarm system impairments and the type of work activities performed.
- 4.17. **On Hold or On Hold for Testing (System on Test)**– A condition in which the communication between the fire alarm panel and Alarm Company has been suspended, the start of a system impairment.
- 4.18. **Online** – A condition in which the communication between the fire alarm panel and Alarm Company has been restored, the end of a system impairment.
- 4.19. **Outage** – A condition in which the power supply to the fire alarm panel or other fire alarm devices is not available, it has been bypassed or the signal circuit is disabled.

## 5. Procedure

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### 5.1. Fire Panel Impairment

#### 5.1.1. Impairment

- 5.1.1.1. Usually, construction dust is the primary trigger of false alarms by activating a local smoke alarm. In lieu of disabling the smoke detector(s) and/or fire alarm system, alternate detection and notification systems are recommended. These alternate systems must be approved by Superintendent/Foreman before implementation. If the fire alarm system needs to be impaired, the Contractor must provide at least 72-hour notice to Superintendent. This advanced notice will allow for planning, coordination and obtaining an impairment permit. Only authorized personnel are permitted to interface or impair a building fire alarm panel and fire protection system.

#### 5.1.2. Planning for Impairment:

- 5.1.2.1. During impairment planning, the contractors Superintendent/Foreman performing work will notify the project team of the planned impairment. This should include the scope and duration/ extent of the impairment, and the precautions put in place.
- 5.1.2.2. When the impairment duration will last longer than 12-hours within a 24-hour period:
- 5.1.2.3. The Superintendent/Foreman shall:
  - 5.1.2.3.1. Evacuate the building or the portion of the building affected by the system impairment or schedule with Building Management to utilize an approved fire watch.
  - 5.1.2.3.2. Follow BNB Hot Work program and account for any dust control measures (JHA, Pre-Task Plan).
  - 5.1.2.3.3. Notify occupied spaces on the same alarm system of the impairment.

#### 5.1.3. Initiating an Impairment.

- 5.1.3.1. Impairment permits are obtained through General Contactor Authorized/Competent person or Superintendent. All permits are valid for 1-day only, and will expire at the end of the business day, unless:
  - 5.1.3.1.1. Requested and been approved for an extension by Superintendent/Foreman, up to one week.

5.1.3.1.2. The impairment is within an active construction site with an operational fire monitoring system, or the Subcontractor/ General Contractor is requesting the permit for monthly testing purposes, in which case the permit will be valid for 1-week.

5.1.3.2. The completed permit and impairment details will be shared with BNBuilders and the Owner upon request.

5.1.3.3. An authorized person (i.e., Foreman or competent individual) will update the panel logbook with impairment information daily.

5.1.3.4. An Authorized Person (i.e., Foreman) will maintain oversight of the impaired building's fire alarm system, and work with the Sub-Contractors to ensure appropriate procedures are followed throughout the impairment.

5.1.3.5. If the project plan or scope changes at any time during the project and the planned impairment is affected, the Authorized/Competent person must coordinate with Facilities Management to appropriately adjust the system impairment. An updated impairment permit must be obtained by the Contractor/ Sub-Contractor, to update these changes. The pre-task plan must be updated to reflect this change of scope.

**5.1.4. Terminating an Impairment.**

5.1.4.1. As soon as the impairment is no longer required, the authorized person will have all fire alarm and fire protection systems ready to be back to an operable state.

5.1.4.2. Once the system has been verified that it is functioning correctly, the Superintendent/Foreman shall be notified that the system has been restored.

**5.1.4.3.** Notify Facilities Management that the job is complete, and system has been restored. Authorized/Competent person will contact the Alarm Company and request that the building be placed back "online".

**5.1.5. Emergency Impairment:**

5.1.5.1. In the event of an unexpected system failure where the fire alarm and/or protection system cannot notify the building occupants, Authorized person will notify Project Superintendent/Foreman and other Contractors. Following the Emergency Response Plan for that specific project the team will perform one of the following:

5.1.5.1.1. Evacuate the building affected by the system impairment.

5.1.5.1.2. Have an authorized person function as an approved fire watch.

**5.1.5.2.** Sub-Contractor will continue to retain the responsibility of notifying the Superintendent of the impairment and in turn, the Authorized person will contact the alarm company. If the emergency is anticipated to last longer than 12-hours in a 24-hour period Superintendent will Notify local Fire and EMS of the emergency. An impairment permit must be obtained as soon as possible.

**5.1.6. Building Impairment Notifications:**

**5.1.6.1.** Contact building owner/ management to coordinate impairment notification plan as required.

**5.2. Jobsite Requirements**

- 5.2.1. Request a site visit from the local fire department as soon as practical to acquaint them with the project and to identify any special hazard considerations. Request additional fire department visits throughout construction as deemed necessary. Allow Fire Department to explain the response process during an FAC (Fire Alarm Commercial) call type.
- 5.2.2. Programming and troubleshooting a system like this will still need to be done at the main fire alarm control panel.
- 5.2.3. Reference the Method of Procedure document to develop a site-specific fire panel management plan.

### 5.3. Training

- 5.3.1. Authorized/Competent individual must be knowledgeable on the BNBuilders Fire Panel Management and Fire Prevention Policies along with a review or walk through of the Fire Alarm System by the buildings installer or building management prior to the start of construction. If possible, it is recommended to have additional individuals (backups) trained on the system as well.
- 5.3.2. A review or walk through must be conducted prior to initial assignment and annually thereafter or whenever there is a change in the Emergency Response Plan or new equipment is introduced.

## 6. References

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[Cal/OSHA Title 8, Subchapter 4, Article 36 - Fire Protection and Prevention](#)

[NFPA 10](#)

[L&I WAC 296-24-585 to 296-58503 – Fire Protection](#)

[L&I WAC 296-24-592 to 296-24-63599 – Fire Suppression Equipment](#)

**Specific codes referenced during the development of this policy include:**

- NFPA 25 for the impairment of sprinkler systems
- NFPA 72 for the impairment of the fire alarm system

# Fire Prevention

## 1.0 Purpose

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- 1.1. The purpose of this standard is to reduce or eliminate potential fire hazards in the workplace and to provide procedures for rapid and effective responses should a fire occur.

## 2.0 Scope

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- 2.1. This standard applies to all BNB projects where personnel carry out work that has the potential to cause fire. This standard must be followed throughout all phases of work.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. BNB Project Management & Supervision must ensure that adequate fire protection equipment is available on site and inspected as required. BNB Project Management & Supervision are to ensure adequate housekeeping of the project and must also ensure that personnel conducting work are adequately trained by their employer(s) in fire protection, firefighting equipment, safe work practices, and regular inspection of work areas.

### 3.2 Workers

- 3.2.1. Workers are responsible for engaging in safe work practices such as proper housekeeping and hot work procedures to prevent the occurrence of fire. Workers are responsible for knowing the types of combustible and flammable materials used in their areas and taking the proper precautions to control fire hazards.

## 4.0 Definitions

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- 4.1. **Combustible liquid** - any liquid having a flash point at or above 140 deg. F (60 deg. C), and below 200 deg. F (93.4 deg. C).
- 4.2. **Combustion** - means any chemical process that involves oxidation sufficient to produce light or heat.
- 4.3. **Fire Alarm Devices** - a set of electric/electronic devices/equipment working together to detect and alert people through visual and audio appliances when smoke/fire is present. These alarms may be activated from smoke detectors, heat detectors, water flow sensors, which are automatic or from a manual fire alarm pull station
- 4.4. **Fire Classes:**
  - 4.4.1. **Class A.** Fires in ordinary combustible materials, such as wood, cloth, paper, rubber, and many plastics.
  - 4.4.2. **Class B.** Fires in flammable liquids, gases, and greases.
  - 4.4.3. **Class C.** Fires which involve energized electrical equipment where the electrical non-conductivity of the extinguishing media is of importance. (When electrical equipment is de-energized, extinguishers for Class A or B fires may be used safely.)
  - 4.4.4. **Class D.** Fires in combustible metals, such as magnesium, titanium, zirconium, sodium, and potassium.
- 4.5. **Flammable Liquid** - a liquid having a flash point below 100o F (37.8o C) and having a vapor pressure not exceeding 40 pounds per square inch (absolute) at 100o F (37.8o C) and shall be known as a Class I liquid. Class I liquids shall be subdivided as follows:
  - 4.6. **Flammable Liquid Classes:**

- 4.6.1. **Class IA** shall include those having flash points below 73F (22.8C) and having a boiling point below 100F (37.8C).
- 4.6.2. **Class IB** shall include those having flash points below 73F (22.8C) and having a boiling point at or above 100F (37.8C).
- 4.6.3. **Class IC** shall include those having flash points at or above 73F (22.8C) and below 100F (37.8C).
- 4.7. **Flammable** - capable of being easily ignited, burning intensely, or having a rapid rate of flame spread.
- 4.8. **Fire resistance** - the amount of resistance of a material or construction to fire.
- 4.9. **Flash point** - the temperature at which vapor is given off sufficient to form an ignitable mixture with the air near the surface of the liquid or within the vessel.
- 4.10. **Safety Can** - a container not more than 5 gallons in capacity with a flash-arresting screen, spring-closing lid and spout cover and so designed that it will safely relieve internal pressure when subjected to fire exposure.
- 4.11. **Sprinkler System** - an integrated system of underground and overhead piping designed in accordance with fire protection engineering standards. The installation includes a water supply, such as a gravity tank, fire pump, reservoir or pressure tank and/or connection by underground piping to a city main.
- 4.12. **Standpipes** - a water pipe for supplying the fire hoses of a building, connected with the water supply of the building and usually with a fire department connection (FDC) outside the building.

## 5.0 Procedure

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### 5.1 Fire Prevention

#### 5.1.1 General:

- 5.1.1.1. The applicable pages in the Crisis Management Plan must be completed for the project.
- 5.1.1.2. Drills should be conducted frequently as determined by project management.
- 5.1.1.3. Maintain good housekeeping to reduce fire hazards and to provide safe routes of egress should a fire occur.
- 5.1.1.4. Conduct periodic workplace inspections to identify fire hazards such as unnecessary accumulation of combustibles (including paper and boxes), unnecessary storage of flammables, and sources of ignition.

#### 5.1.2 Ignition Hazards:

- 5.1.2.1. Electrical wiring and equipment for light, heat, or power purposes will be properly installed.
- 5.1.2.2. Equipment powered by internal combustion will be located with the exhausts positioned away from combustible materials.
- 5.1.2.3. Smoking is prohibited at or in the vicinity of operations that constitute a fire hazard. Such areas will be conspicuously posted as follows: "NO SMOKING OR OPEN FLAME."
- 5.1.2.4. Portable, battery-powered lighting equipment, used in connection with the storage, handling, or use of flammable gases or liquids, will be approved for the hazardous locations.

#### 5.1.3 Temporary Heating Devices

- 5.1.3.1. Ventilation
  - 5.1.3.1.1. Fresh air will be supplied in sufficient quantities to maintain the health and safety of employees. Where natural means of fresh air supply are inadequate, mechanical ventilation will be provided.
  - 5.1.3.1.2. Heaters used in confined spaces necessitate that special care be taken to provide sufficient ventilation to ensure proper combustion, maintain the health and safety of workmen, and limit temperature increase in the area.
- 5.1.3.2. Clearance and Mounting: Temporary heating devices will be installed according to manufacturer's instructions.
- 5.1.3.3. Stability: When in use, heaters will be set horizontally level, unless otherwise permitted by the manufacturer's instructions.

### 5.2 Fire Protection

- 5.2.1. Access to available firefighting equipment must be maintained at all times.
- 5.2.2. Firefighting equipment must be inspected monthly and maintained in operating condition. Defective equipment must be immediately replaced.
- 5.2.3. Fire extinguishers that are out of service or discharged must be immediately tagged, removed from service, and replaced.
- 5.2.4. Firefighting equipment shall be conspicuously located and not obstructed from view in the workplace.
- 5.2.5. A temporary or permanent water supply of sufficient volume, duration, and pressure as required to properly operate the firefighting equipment will be made available as soon as combustible materials accumulate as directed by Authorities Having Jurisdiction (AHJ).
- 5.2.6. Where underground water mains are to be provided, they will be installed, completed, and made available for use as soon as practicable.

**5.2.1 Fire Hose and Connections:**

- 5.2.1.1. One hundred feet, or less, of 1.5-inch (3.75-cm) hose, with a nozzle capable of discharging water at 25 gallons (95 liters) or more per minute, may be substituted for a fire extinguisher rated not more than 2A 20BC in the designated area, provided the hose line can reach all points in the area.
- 5.2.1.2. If fire hose connections are not compatible with local firefighting equipment, adapters or equivalent to permit connections must be provided
- 5.2.1.3. During demolition involving combustible materials, charged hose lines supplied by hydrants, water trucks with pumps or equivalent will be made available.

**5.2.2 Fixed Firefighting Equipment:**

**5.2.2.1. Sprinkler Protection**

- 5.2.2.1.1. Where BNB is involved in the construction of a facility in which automatic sprinkler protection is required, the installation of the sprinklers will closely follow the construction, and sprinklers will be placed into service as soon as practicable or as AHJ's direct.
- 5.2.2.1.2. Where BNB is involved in the demolition or alteration of a facility, existing automatic sprinkler installations should be retained in service as long as reasonable. Only authorized persons will permit the operation of sprinkler control valves. Modification of sprinkler systems to permit alterations or additional demolition should be expedited so that the automatic protection may be returned to service as quickly as possible. Sprinkler control valves will be checked daily, at the close of work/business, to ascertain that the protection is in service

**5.2.2.2. Standpipes**

- 5.2.2.2.1. In all structures in which standpipes are required, or where standpipes exist in structures being altered, they shall, unless replaced by temporary construction protection, be brought up as soon as applicable laws permit, and shall be maintained as construction progresses in such a manner that they are always ready for fire protection use.
- 5.2.2.2.2. Standpipes will be provided with Siamese fire department connections on the outside of the structure, at the street level and shall be conspicuously marked and accessible.
- 5.2.2.2.3. Each floor will be equipped with at least one standard hose outlet
- 5.2.2.2.4. Systems shall be extended as construction progresses to within one floor of the highest point of construction having secured decking or flooring.
- 5.2.2.2.5. Temporary standpipes in buildings under construction shall be installed and operable according to AHJ's.

**5.2.2.3. Fire Alarm Devices**

- 5.2.2.3.1. An alarm/alert system (e.g., telephone system, siren, air horns, etc.) will be established to alert both the employees on the site and the local fire department of an emergency according to the Project's Crisis Management Plan.
- 5.2.2.3.2. The applicable pages from the Project's Crisis Management Plan will be conspicuously posted on site.

**5.2.2.4. Fire Cutoffs**

- 5.2.2.4.1. In new construction, firewalls and exit stairways required for the completed buildings will be given construction priority.

- 5.2.2.4.2. Fire doors, with automatic closing devices, will be hung on openings as soon as practicable.
- 5.2.2.4.3. Fire cutoffs will be retained in buildings undergoing alterations or demolition until operations necessitate their removal.

## 5.3 Jobsite Requirements

- 5.3.1. BNBuilders provides and maintains general duty fire extinguishers on every jobsite per OSHA Standards. In addition, subcontractors provide their own activity appropriate type and size fire extinguisher protection as applicable.
- 5.3.2. Locate dumpsters twenty (20) feet or more from buildings except when located beneath a trash chute.
- 5.3.3. Request a site visit from the local fire department as soon as practical to acquaint them with the project and to identify any special hazard considerations. Request additional fire department visits throughout construction as deemed necessary.
- 5.3.4. Provide a temporary fire standpipe pump to ensure an adequate water supply for the fire department when a high-rise structure exceeds the height to which the local fire department's equipment has the unassisted capacity to reach. (Verify pumping capacity/requirements with the local fire department.)
- 5.3.5. In addition to system alarms and frequent inspections, a standpipe monitoring system is recommended to monitor the readiness of the temporary standpipe system.
- 5.3.6. Provide an Emergency Evacuation Notification (Alarm) System to efficiently alert all workers on the project. Test the system monthly and conduct mock evacuation drills at least once every six months.
- 5.3.7. Hot work must be done in accordance with [Welding, Cutting, & Hot Work](#).
- 5.3.8. Only approved metal safety cans with self-closing lids and spark arresting screens are to be used for the storage of flammable and combustible liquids outside of the manufacturer's container.
- 5.3.9. The telephone number of the nearest organized firefighting group/department shall be written in the Crisis Management Plan for the project.

### 5.3.10 Extinguisher Requirements, Placement, and Inspection:

- 5.3.10.1. Use only UL-listed extinguishers.
- 5.3.10.2. Extinguisher locations shall be marked on the project's Site Logistics' Plan.
- 5.3.10.3. Place extinguishers in conspicuous locations, along normal paths of travel, and near exits as noted on the Site Logistics Plan. If the extinguishers are not readily visible, use wall markings, signs, or lights to identify their locations.
- 5.3.10.4. A fire extinguisher, rated not less than 2A, shall be provided for each 3,000 square feet of the floor area, or fraction thereof. Where the floor area is less than 3,000 square feet, at least one extinguisher shall be provided. Travel distance from any point of the protected area to the nearest fire extinguisher shall not exceed AHJ's regulations (California-75 ft. Federal, Washington, & Oregon-100 ft.).
- 5.3.10.5. Ensure that extinguishers are readily accessible.
- 5.3.10.6. Keep the space in front of and below extinguishers clear at all times. The floor area beneath extinguishers may be marked as a reminder to keep the area clear.
- 5.3.10.7. Provide the appropriate number and types of fire extinguishers for operations being performed.
- 5.3.10.8. Properly trained personnel will inspect extinguishers at least monthly. The monthly inspection will include the following items at a minimum:
  - 5.3.10.8.1. Location
  - 5.3.10.8.2. Rating
  - 5.3.10.8.3. Access
  - 5.3.10.8.4. Visibility
  - 5.3.10.8.5. Operating Instructions
  - 5.3.10.8.6. Seals
  - 5.3.10.8.7. Tamper Indicators
  - 5.3.10.8.8. Fullness
  - 5.3.10.8.9. Physical Condition
  - 5.3.10.8.10. Attach inspection tags to each extinguisher. Tags should be marked with dates of inspection, testing, and recharging, and the initials of the inspector.



- 5.3.10.8.11. Fire extinguishers must be inspected annually by a qualified fire services contactor.
- 5.3.10.8.12. Material storage areas will be equipped with fire extinguishers adequate for their size, construction, and the material stored therein.
- 5.3.10.8.13. Extinguishers are to be adequately maintained with monthly inspections and yearly recharge dates marked on each extinguisher’s tag.

## 5.4 Hazards

| Fire Hazards   | Potential Consequences   |
|--|--|
| Flammable liquids, gas, diesel fuel, etc.                      | <ul style="list-style-type: none"> <li>• Fire / Explosion</li> <li>• Personal Injury / Illness</li> <li>• Property Damage</li> </ul>   |
| Inadequate training/job planning                               | <ul style="list-style-type: none"> <li>• Insufficient knowledge of tasks/products</li> <li>• Lack of coordination of work</li> <li>• Fire / explosion</li> <li>• Personal injury/illness</li> <li>• Property damage</li> </ul> |
| Incorrect / inappropriate use of tools or equipment            | <ul style="list-style-type: none"> <li>• Fire / explosion</li> <li>• Personal injury/illness</li> <li>• Property damage</li> </ul>   |
| Insufficient firefighting equipment                            | <ul style="list-style-type: none"> <li>• Fires/explosion uncontrolled</li> <li>• Personal injury/illness</li> <li>• Property damage</li> </ul>   |
| Mixing chemicals   | <ul style="list-style-type: none"> <li>• Chemical incompatibility</li> <li>• Fire / explosion</li> <li>• Personal injury/illness</li> <li>• Property damage</li> </ul>   |
| Poor housekeeping, incorrect storage and handling of materials | <ul style="list-style-type: none"> <li>• Materials exposed to ignition source</li> <li>• Fire / explosion</li> <li>• Personal injury/illness</li> <li>• Property damage</li> </ul>   |
| Sparks, flames, excess heat                                    | <ul style="list-style-type: none"> <li>• Fire / explosion</li> <li>• Personal injury/illness</li> <li>• Property damage</li> </ul>   |

## 5.5 Hazard Controls

### 5.5.1 Engineering Controls:

5.5.1.1. Fire engineers may be enlisted to assist architects, building owners and developers in evaluating buildings' life safety and property protection goals. Fire engineers will ensure compliance with NFPA 10 codes.

### 5.5.1.2. The following are additional engineering controls related to fire prevention/protection:

- 5.5.1.2.1. Substituting flammable/combustible products with less hazardous
- 5.5.1.2.2. Use of self-closing and grounded flammable storage cabinets
- 5.5.1.2.3. Use of flammable waste containers with self-closing lids
- 5.5.1.2.4. Availability of standpipes and connections

- 5.5.1.2.5. Use of double-walled tanks for flammable liquid containment
- 5.5.1.2.6. Availability of spill clean-up kits for flammable liquids
- 5.5.1.2.7. Bollards to protect propane/fuel tanks located in an area where they could be struck by a vehicle

#### **5.5.2 Administrative Controls**

***Some examples of administrative controls related to fire prevention/protection may be:***

- 5.5.2.1. Moving hot work into safer areas away from flammable/combustible materials
- 5.5.2.2. Handle/Store/Use flammable/combustible materials according to SDS
- 5.5.2.3. The availability and use of fire protection equipment (blankets, curtains, etc.)
- 5.5.2.4. Signage indicating storage/use of flammable/combustible materials

#### **5.6 Training**

- 5.6.3. Where fire extinguishers are provided for use, the employer will provide training on general principles of portable fire extinguishers, including stages of fires and classes of fire extinguishers with an emphasis on hazards of fighting a fire during the initial phases of a fire.
- 5.6.4. Training must be conducted prior to initial assignment and annually thereafter or whenever there is a change in the Crisis Management Plan or new equipment is introduced.

#### **6.0 References**

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[Cal/OSHA T8CCR1920 - 1938 – Fire Protection and Prevention](#)

[Fed/OSHA 29CFR1910, Subpart L – Fire Protection](#)

[NFPA 10](#)

[L&I WAC 296-24-475 to 296-24-47517 – Storage and Handling of Liquefied Petroleum Gases](#)

[L&I WAC 296-24-585 to 296-58503 – Fire Protection](#)

[L&I WAC 296-24-592 to 296-24-63599 – Fire Suppression Equipment](#)

#### **7.0 Attachments**

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[Hot Work Permit](#)

[Demolition Permit](#)

[Confined Space Permit](#)

# First-Aid CPR

## 1.0 Purpose

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The purpose of this policy is to provide guidelines for first aid treatment, training, and supply requirements on all BNB projects.

## 2.0 Scope

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The scope of this policy covers all BNB projects, equipment yards, and offices.

## 3.0 Responsibility

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### 3.1 Management and Supervision

Supervisory personnel must maintain current First Aid / CPR certifications by attending training every 2 years or as required by the certifying agency.

All crew leaders, supervisors, or persons in direct charge of one or more employees must have a valid first-aid certificate. A person holding a valid first-aid certificate must be present on the job site any time a crew is present.

## 4.0 Definitions

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**CPR**- Cardiopulmonary Resuscitation is an emergency procedure that combines chest compressions often with artificial ventilation to manually preserve intact brain function until further measures are taken to restore spontaneous blood circulation and breathing in a person who is in cardiac arrest.

**AED** - An automated external defibrillator (AED) is a portable device that checks the heart rhythm and can send an electric shock to the heart to try to restore a normal rhythm. AEDs are used to treat sudden cardiac arrest (SCA). SCA is a condition in which the heart suddenly and unexpectedly stops beating.

## 5.0 Procedure

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### 5.1 First Aid Supplies

- Adequate first aid supplies must be readily available on all jobsites.
- The contents of the kit must comply with Cal-OSHA CSO 1512 or WAC 296-800
- The contents of first aid kits will be inspected by BNB Supervisor on a weekly basis and restocked as necessary.

### 5.2 First Aid Treatment

- First aid trained individuals with valid credentials may provide treatment for minor medical issues on site.
- For more serious non-emergency treatment, an on-site medical treatment provider approved by the BNB Safety Director may be called.
- Non-life-threatening injuries requiring offsite medical evaluation and/or treatment shall be routed to the closest clinic in accordance with the site emergency management plan. The BNB Drug and Alcohol Policy shall be referred to for post-incident screening.
- Injured workers must be accompanied by a foreman or supervisor to the offsite clinic.
- Any injury, regardless of severity or treatment received, must be documented on an incident report form, and reported to the Safety Department.

### 5.3 Other Requirements

- At least one basket or equally appropriate litter equipped with straps and two blankets, or other similar warm covering, shall be provided for each building or structure five or more floors or 48 or more feet above or below ground level.
- Signage must be posted and easily visible, indicating the location of first aid kits, AED, stretcher basket and blanket.
- Maps with emergency contact numbers and directions to the nearest clinic and hospital will be located on the Jobsite Safety Board.

## **6.0 References**

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[FED/OSHA 1910.26 – First-aid and CPR Training](#)

[CAL/OSHA Title 8 Subchapter 4 Article 3 – Emergency Medical Services](#)

[L&I WAC 296-800-150 – First Aid](#)

## **7.0 Attachments**

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[Incident Report Form](#)

[Near Miss Form](#)

# Forklifts

## 1.0 Purpose

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- 1.1. The purpose of this standard is to define the procedures that apply to the care, control, maintenance, inspection, and operation of a powered industrial trucks, forklifts, etc.

## 2.0 Scope

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- 2.1. This standard applies to all operations that require the use of powered industrial trucks which may include forklifts, tele-handlers, rough-terrain forklifts, straight mast, motorized hand trucks, tractors, platform lift trucks, and other specialized industrial trucks powered by electric or internal-combustion engines.

## 3.0 Responsibility

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### 3.1 Project Management

#### 3.1.1. *Project Management and Supervision must ensure:*

- 3.1.1.1. Forklift operators provide documentation of training.
- 3.1.1.2. Forklift operators pass the BNB Forklift test to verify competency (BNB).
- 3.1.1.3. Safe operation through frequent observations of forklift operations.

### 3.2 Operators

- 3.2.1. Operators must complete documented inspections of powered industrial trucks daily, stay within the limits of the machine, know the weight of the loads to be carried, and always operate equipment in a safe manner.

## 4.0 Definitions

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- 4.1. **Forklift** – Powered Industrial Truck used to carry, push, pull, lift, stack or tier materials. Most common is the type 4 internal combustion engine with solid tires.
- 4.2. **Powered industrial truck (PIT)** - a mobile, power-driven vehicle used to carry, push, pull, lift, stack, or tier material.
- 4.3. **Tele-handler** – Also called “Rough Terrain” or “Extended Reach” or “Type 7” because of the telescopic boom. These forklifts are similar to cranes in that they extend and elevate loads, often requiring outriggers. Additional discussion, evaluation and training specific to their hazards and operation is required. Because they are used in rough terrain, and they can telescope the boom, tip overs are more of a concern.
- 4.4. **Free Rigging** – A method of lifting materials with a forklift by using a chain or other form of rigging (Slings, etc.) attached directly to the forks to lift material.

## 5.0 Procedure

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### 5.1 Daily Inspections

- 5.1.1. Will be documented — an optional form that personnel may use if they don't have their own form. Any malfunction must be taken care of before the piece of equipment is put back into service.
- 5.1.1.1. Operators or their employer must provide a copy of their current certification. If they cannot produce one, they will not be allowed to operate the equipment until certification is attained.
  - 5.1.1.2. A PTP must be completed each day that includes a listing of the weights of material to be moved and where in the load charts the weights fall.
  - 5.1.1.3. “Free Rigging”, the practice of hoisting equipment/material from forks, is not allowed-- Only manufacturer-approved attachments such as “truss-boom” attachments that have a load chart are permitted.

- 5.1.1.4. Chains, slings, and rigging used for hoisting must be inspected, tagged, and properly rated for the capacity to be lifted.
- 5.1.1.5. The operation of fuel-powered industrial trucks indoors or in enclosed areas must be done with adequate ventilation and air monitoring for poisonous gases such as Carbon Monoxide (CO).
- 5.1.1.6. BNB project personnel must review the attached "What to Look For" slide deck which lists warning signs that should alert us if we have an incompetent operator.

## 5.2 Hazards

- 5.2.1. Tipping is the greatest hazard with forklifts, and for that reason, additional training and testing is required before operators are approved to operate any forklift.
- 5.2.2. Struck-by hazards must also be controlled against to prevent personnel from being struck-by equipment or materials lifted/suspended by equipment. To aid in struck-by prevention, personnel must be physically separated from equipment operations.
- 5.2.3. Poisonous gases such as Carbon Monoxide (CO) may be emitted from powered industrial trucks which may potentially expose personnel.

## 5.3 Hazard Controls

### 5.3.1 Engineering Controls

- 5.3.1.1. Forklifts must be equipped with approved overhead protection at all times in addition to roll-over protection (ROPS).
- 5.3.1.2. Telescoping boom forklifts must be equipped with a convex rear-view mirror on the blind side of the machine.
- 5.3.1.3. Operators manual must be available for review by operators and supervisory personnel.
- 5.3.1.4. Capacities must be marked on the lift so it is clearly visible to someone in the operator's seat.
- 5.3.1.5. No use of propane-powered forklifts indoors or in confined spaces without adequate ventilation and air monitoring.
- 5.3.1.6. All equipment with a field of vision less than 270 degrees (i.e. rough terrain/all-terrain forklifts) will have a proximity alarm (this is different than the back-up alarm requirement). This alarm will have an audio and visual component. Proximity alarms will be installed in a position to best mitigate blind spots.

### 5.3.2 Administrative Controls

- 5.3.2.1. Controlled Access Zones must be set up around overhead/lifting activities.
- 5.3.2.2. Spotters must be used when traveling through congested areas, around blind spots, and at any time when the operator's vision may be hindered.

#### 5.3.2.3. Operators must follow these rules:

- 5.3.2.3.1. Stop at all intersections
- 5.3.2.3.2. Yield to pedestrians
- 5.3.2.3.3. Face the direction of travel
- 5.3.2.3.4. Reduce speeds when turning
- 5.3.2.3.5. Sound your horn at blind corners
- 5.3.2.3.6. Keep a safe distance behind other trucks, do not drive side-by-side
- 5.3.2.3.7. Stop completely before backing up
- 5.3.2.3.8. Never park closer than 8 feet from the center of railroad tracks
- 5.3.2.3.9. Cross railroad tracks diagonally

- 5.3.2.3.10. When parking, place the forks on the ground and tilted forward. Set the parking brake and remove the key
- 5.3.2.3.11. When carrying a large of bulky load that obstructs visibility, the forklift is to be operated in reverse. Look where you are going
- 5.3.2.3.12. Do not lift unstable loads
- 5.3.2.3.13. Do not add counterweights to the forklift
- 5.3.2.3.14. Follow the manufacturer's instructions when driving up and down ramps. Keep the load uphill.
- 5.3.2.3.15. Never turn while still on a ramp
- 5.3.2.3.16. No riders are allowed
- 5.3.2.3.17. Never allow anyone to walk or stand under the uprights or a load
- 5.3.2.3.18. Note low clearance hazards such as pipes, sprinkler heads, doorways, etc.
- 5.3.2.3.19. Do not push or carry another disabled forklift with your forklift
- 5.3.2.3.20. Be aware of carbon monoxide hazards and if in an enclosed area subject to accumulation of carbon monoxide get an air monitor and test the air continuously.
- 5.3.2.3.21. Before entering a truck trailer or railroad car, make sure its brakes are set and wheels chocked.
- 5.3.2.3.22. Trailers not coupled to a tractor must have, in addition to its landing gear, fixed jacks
- 5.3.2.3.23. Always use a proper dock board with feet and handles. Steel plates can shift and are dangerous.
- 5.3.2.3.24. Avoid parking on an incline if possible. If necessary, wheels must be chocked.
- 5.3.2.3.25. If a forklift is to be used to elevate a work platform, use an approved safety platform with top rail, mid-rail, toe board, and attach platform properly with the moving parts of the mast protected. All other provisions as defined in the OSHA standards must also be followed.
- 5.3.2.3.26. Forklifts shall be equipped with back up alarms, and if operating on roads, a yellow warning light and slow-moving vehicle sign.
- 5.3.2.3.27. A 10 lb. ABC fire extinguisher must always be within reach of the operator.
- 5.3.2.3.28. If the powered industrial truck is unattended, the operator shall not exceed a distance of 25' away and the load must be lowered, controls in neutral, brakes set, and power shut off.

### **5.3.3 Personal Protective Equipment**

- 5.3.3.1. Seat Belts must be worn at all times while in the operator's seat. Personnel working in the vicinity of powered industrial trucks must wear reflective vests.

## **5.4 Training**

- 5.4.1. Training will consist of formal lecture, discussion, written and practical/hands-on exams. It can include videos, computer learning and written materials.
- 5.4.2. All forklift operators will receive training and provide documentation of that training before operating a Forklift.
- 5.4.3. Forklift operators shall be evaluated for training deficiencies every 3 years. The superintendent may accept the operator's previous training at his discretion.

### **5.4.4. Refresher training will be required under the following conditions;**

- 5.4.4.1. The operator has been observed to operate the vehicle in an unsafe manner
- 5.4.4.2. The operator has been involved in an accident or near-miss accident
- 5.4.4.3. The operator is assigned to operate a different type of truck
- 5.4.4.4. The operator has received an evaluation that reveals he/she is not operating the truck safely.



- 5.4.4.5. A condition in the workplace changes in a manner that could affect safe operation of the truck.
- 5.4.4.6. Subcontractor employees may not operate any forklifts that are owned, rented or leased by BNB. If a subcontractor needs to use a BNB controlled forklift, a BNB employee will operate the forklift.

## **6.0 References**

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[FED / OSHA 29 CFR 1910.178 – Powered Industrial Trucks](#)

[CALOSHA Title 8 Subchapter 7 Group 4 Article 25 – Industrial Trucks, Tractors, Haulage Vehicles, Earthmoving Equipment](#)

[L&I WAC 296-863 – Safety Standards for Forklifts and other Powered Industrial Trucks](#)

## **7.0 Attachments**

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[Forklift Training PowerPoint](#)

[Equipment User Agreement](#)

## Hand & Power Tools

### 1.0 Purpose

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- 1.1. The purpose of this standard is to provide direction on use, maintenance, and inspection of hand and power tools used on BNB projects.

### 2.0 Scope

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- 2.1. This standard applies to all hand and power tools used on all BNB projects. Power operated hand tools may be powered by electric, pneumatic, fuel, powder, or hydraulic means.

### 3.0 Responsibility

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#### 3.1 Project Management

- 3.1.1. When applicable, it is the responsibility of project management to ensure adequate submittals such as tool training cards and/or certifications are received from subcontractors. Project management and supervision must ensure that tool operators are adequately trained as required by tool manufacturers. For example, the following tools require specialized training and/or certification:
  - 3.1.1.1. Powder actuated tools
  - 3.1.1.2. Pneumatic tools
  - 3.1.1.3. Compressed gas tools (impulse/combustion)
- 3.1.2. Supervision must ensure hand and power tool usage is compliant with regulatory and manufacturer requirements. Supervision must also ensure that adjacent workers are not affected by tool usage (noise, dust, ricochet, struck-by, debris, etc.). Supervision must enact controls to reduce tool operator and adjacent worker exposures.

#### 3.2 Workers

- 3.2.1. Workers must be trained on the proper use, maintenance, and inspection of tools. When a defective tool is identified, workers must tag the tool as defective and remove it from service. Workers are responsible for posting signage/notification as required by tool manufacturers. Also, workers are responsible for following safe work practices such as proper tool selection and use.

### 4.0 Definitions

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- 4.1. **Powder actuated tool** – a tool that utilizes the expanding gases from a power load to drive a fastener
- 4.2. **Pneumatic tools** – a tool that is driven by compressed air
- 4.3. **Powder actuated fastening system** - a method that uses a powder actuated tool, a power load, and a fastener
- 4.4. **Impulse/combustion/compressed gas tools** – uses disposable canisters of combustible gas in a combustion chamber to generate force which drives the object such as a nail, staple, etc.

### 5.0 Procedure

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#### 5.1 General Procedures for Hand and Power Tools

- 5.1.1. Ground Fault Circuit Interrupters (GFCI's) must be used with all electrical equipment.
- 5.1.2. Tool and extension cords are to be elevated above main walkways when feasible.
- 5.1.3. Cords are not to be routed through closed doorways.
- 5.1.4. Cords are not to be secured to metal or conductive objects/surfaces (i.e. studs, floor track, doorways, wire, etc.)
- 5.1.5. Adequate ventilation and monitors are required for the use of propane or other gas-fired devices indoors or in confined spaces.

- 5.1.6. Visually check all tools before each use for stress damage, insulation cuts or cracks, exposed conductors, missing grounds, slipped strain reliefs, damaged plugs, damaged switches, etc.
- 5.1.7. Damaged items must be tagged as defective and removed from the work area and be repaired by a qualified person.
- 5.1.8. Use the right tool for the job.
- 5.1.9. Guards and safety devices must be in place at all times.
- 5.1.10. Secure material when cutting with a saw.
- 5.1.11. Use the t-handles supplied by the manufacture when applicable.
- 5.1.12. Keep tools and cords clear of walkways.
- 5.1.13. Never use power tools if damaged or the ground pin is missing.
- 5.1.14. Don't lift or carry power tools by their cords.
- 5.1.15. Loose or frayed clothing or long hair, dangling ties, finger rings, etc. shall not be worn around moving machinery or other sources of entanglement.

**5.1.16. *The following tools and safety guidelines are to serve as a minimum standard for operation. Operators of tools must read and follow the tool manufacturer's manuals.***

**5.1.16.1 Air Hoses**

- 5.1.16.1.1. All hoses exceeding 0.5-inch inside diameter shall have a safety device at the source of supply or branch line, which will automatically reduce pressure in case of a line failure. All connections, couplings, and splices in air lines exceeding 0.5-inch inside diameter shall be equipped with clips and wire rope or chain lashings. The clips and lashings shall be installed in a manner that prevents whipping of the hose line, should the connection coupling or splice fail.
- 5.1.16.1.2. Air hoses shall not be disconnected at compressors until air pressure has been bled off.
- 5.1.16.1.3. The manufacturer's safe operating pressure for hoses, pipes, valves, and fittings shall not be exceeded. Defective hoses, valves, and fittings shall be removed from service.
- 5.1.16.1.4. Compressed air shall not be directed at any part of the body. Compressed air shall not be used for cleaning purposes, except when reduced to less than 30 lb/in<sup>2</sup>, and then only with effective chip guarding and the operator protected by applicable personal protective equipment.
- 5.1.16.1.5. Air hoses shall not be used for hoisting or lowering tools. Hoses shall not be laid on ladders, steps, scaffolds, or walkways in a manner creating a tripping hazard. Air hoses shall not be exposed to damage from vehicle or other traffic.

**5.1.16.2 Chain Saws**

***Minimum personal protective equipment consists of:***

- 5.1.16.2.1. leg protection/chaps,
- 5.1.16.2.2. proper footwear,
- 5.1.16.2.3. hearing protection
- 5.1.16.2.4. head protection
- 5.1.16.2.5. eye protection
- 5.1.16.2.6. face protection
- 5.1.16.3. Watch the tip of the blade and keep it from contacting other objects that can cause kickback. Kickbacks can be powerful, quick and severe, often to the face or upper body.
- 5.1.16.4. Ensure the blade is sharp and installed properly prior to use.

**5.1.17 Circular Saws**

- 5.1.17.1. Do not operate the saw if the lower guard does not move freely and close instantly when released. Do not pin the guard in an open position.

- 5.1.17.2. When provided with two handles and directed by the manufacturer, operators must use both handles on the saw. Operators must keep their entire body, including legs, behind the cutting area.
- 5.1.17.3. Sawhorses should be used when feasible with the stock (piece being cut) properly secured. Operators must not use the instep of their foot as a means to leverage material being cut.

### **5.1.18 Nailers**

- 5.1.18.1. Electric or pneumatically driven nailers, staplers, and similar equipment provided with automatic fastener feed which operate at more than 100 lb./in<sup>2</sup> shall have a safety device on the muzzle to prevent the ejection of the fasteners unless the muzzle is in contact with the work surface. Adjacent workers must be protected from ricochet/struck-by hazards associated with the operation of the nailer.

### **5.1.19 Porta Bands**

- 5.1.19.1. Use both hands to hold a Porta band when cutting. Do not hold material with the other hand-- use a vice.

### **5.1.20 Soil Compactors (aka Whacker)**

- 5.1.20.1. Operators of soil compactors must wear adequate foot protection such as metatarsal foot guards

### **5.1.21 Jackhammers (including other powered hammers such as rotor)**

- 5.1.21.1. Operators of jackhammers must wear proper protective equipment such as metatarsal foot guards, face shields, hearing protection, respiratory protection, anti-vibration hand protection, etc. as required by specific the operation. Rotation of personnel engaged in jackhammer operation may decrease risk for musculoskeletal disorders. Adjacent workers, personnel, and members of the public must be adequately protected from dust, noise, debris, etc. If feasible, water may be used to control dust at the source during operation.

### **5.1.22 Gas-Powered Saws (aka Cut-Off Saw, Demo Saw, Masonry Saw, Chop Saw)**

**The use of these saws requires additional PPE and safety considerations such as:**

- 5.1.22.1. Hearing protection
- 5.1.22.2. Face and eye protection
- 5.1.22.3. Leg protection (chaps)
- 5.1.22.4. Foot protection
- 5.1.22.5. Respiratory protection
- 5.1.22.6. Fire protection

### **5.1.23 Coring tools**

- 5.1.23.1. Operators of coring tools must be aware of hazards and procedures associated with penetrating surfaces. Prior to coring operations, utilities, energy sources, post-tensioned cables, etc. must be identified, marked out, and avoided. A controlled access zone must be established below coring operations to protect personnel from falling material/equipment. Operators must securely mount the coring tool to the surface being penetrated to avoid jerking of the tool during operation. Ladders should be avoided as a method of reaching the work area during coring tool operation—scaffolding or other work platforms are more suitable for this task. For reference, the Coring/Saw Cutting Operation Checklist may be used.

### **5.1.24 Hand-held cutting/grinding tools**

- 5.1.24.1. Operators must wear adequate personal protective equipment with hand-held cutting/grinding tools such as **eye and face protection** (face shield and safety glasses), hand and arm protection, and respiratory protection. Guards must be used as required by the tool manufacturer. The appropriate disc must be used for the task (cutting vs grinding).

### **5.1.25 Pneumatic**

- 5.1.25.1. An approved safety check valve must be installed at the manifold outlet to each supply line for hand-held pneumatic tools.

- 5.1.25.2. All pneumatic hose connections must be fastened securely.
- 5.1.25.3. Safety clips or retainers must be installed on all pneumatic tools to prevent the accidental expulsion of the tool from the barrel.

**5.1.26 Powder Actuated Tools**

The following three rules, if violated, may result in immediate termination.

- 5.1.26.1. Never point a tool at another person- loaded or not.
- 5.1.26.2. Never alter or override the safety features of a tool.
- 5.1.26.3. Never fire a tool into the air or at any surface unless the muzzle is firmly positioned against that surface per the manufacturer's specifications.

**5.1.26.4. Operation of Powder Actuated Tools (PAT):** The following operation rules must be followed to the letter. Violation of any one of them could be grounds for termination.

- 5.1.26.4.1. Never leave a PAT unattended.
- 5.1.26.4.2. Never load a PAT unless it is being prepared for immediate use.
- 5.1.26.4.3. Never attempt to load a fastener or powder charge into a PAT not designed for it (i.e. don't put Hilti charges in a Ramset unless they were meant for that tool).
- 5.1.26.4.4. Never drop power load magazines on the floor or work surfaces. Pick up all magazines.
- 5.1.26.4.5. Spent magazines are to be discarded in the trash. Magazines with unfired shots must be securely stored and disposed of accordingly.
- 5.1.26.4.6. Never attempt to transfer individual loads between several partially used magazines in an attempt to create full magazines.

**5.1.26.5. PAT Protective Equipment and Procedures:**

- 5.1.26.5.1. All powder-actuated tools must have muzzle shields attached to prevent from spalling, fastener ricochet, and powder burns. Any tool not so equipped must be immediately removed from service until it can be fitted with one.
- 5.1.26.5.2. Each operator must wear at a minimum:
- 5.1.26.5.3. Hearing protection with a Noise Reduction Rating (NRR) of at least 30.
- 5.1.26.5.4. Safety glasses
- 5.1.26.5.5. Hard hat
- 5.1.26.5.6. As a best practice, PAT operators may wear Anti-vibration gloves to protect against wrist and forearm injury from recoil. Also, face shields and long-sleeved shirts may provide additional protection if desired.

**5.1.26.6. Prior to operating a PAT, the user must:**

- 5.1.26.6.1. Ensure all adjacent workers are advised that powder-actuated tool will be in service and hearing protection should be used.

**5.1.26.7. Powder Actuated Tools - Maintenance and Storage:**

All tools loads and fasteners must be locked in a container or locker and stored in a safe place when not in use or more than 25 feet away, and be accessible only to authorized personnel.

**5.2 Hazards**

|   |   |  |
|---|---|--|
| noise<br>dust<br>struck-by<br>electric shock<br>flying objects<br>debris<br>sprains<br>strains<br>lacerations<br>pinch points | crushing<br>falling objects<br>caught-in<br>fire<br>explosion<br>equipment malfunction<br>incorrect use<br>unqualified operators<br>over use<br>wrong tool for the task | damaged fasteners<br>improper storage<br>improper/removed guarding<br>unguarded moving parts<br>missing handles<br>improperly maintained equipment<br>damaged components |
|---|---|--|

## 5.3 Hazard Controls

### 5.3.1 Engineering Controls

- 5.3.1.1. When feasible, material should arrive on site ready to be installed/erected due to off-site fabrication/prep. This practice may eliminate or reduce the need for operations in the field such as extensive cutting of materials.
- 5.3.1.2. Digital modeling may be another method to reduce risk by avoiding utility conflicts, excessive work, unnecessary penetrations, etc.
- 5.3.1.3. To eliminate respiratory hazards or the need to wear respiratory protection, water or vacuum methods may be used for dust-generating operations.

### 5.3.2 Administrative Controls

- 5.3.2.1. Administrative controls regarding the use of hand and power tools may be the posting of warning signage, the establishment of controlled access zones, rotation of personnel, the restriction of areas, the completion of checklists, etc.

### 5.3.3 Personal Protective Equipment

| Equipment Type             | PPE  |
|----------------------------|--|
| Jackhammers                | Eye Protection, Anti-vibration Gloves, Foot Protection, Hard Hat and Hearing Protection                                      |
| Soil Compactors            | Hearing Protection, Eye Protection, Anti-vibration Gloves, Hard Hat and Foot Protection                                      |
| Chipping Hammers           | Eye Protection, Face Protection, Anti-Vibration Gloves, Foot Protection  |
| Impact Wrenches            | Hearing Protection and Eye Protection  |
| Reamers                    | Eye Protection   |
| Arc Welders                | Hand Protection and Eye Protection, appropriately filtered, leather and or other protection covering exposed skin, clothing. |
| Explosive-Actuated Tools   | Eye Protection, hearing protection, anti-vibration gloves, hard hat, sleeved shirt   |
| Grinders                   | Eye Protection, Face Protection, hearing protection  |
| Hand-Held Chipping Hammers | Eye Protection, Face Protection, hearing protection  |

5.3.3.1. The table below lists the minimum required PPE for some hand and power tools.

5.3.3.2. Administrative controls regarding the use of hand and power tools may be the posting of warning signage, the establishment of controlled access zones, rotation of personnel, the restriction of areas, the completion of checklists, etc.

## 5.4 Training

5.4.1. Workers must be trained on the proper use, maintenance, and inspection of tools.

## **6.0 References**

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[FED / OSHA CFR 1926.300 – Tools – Hand and Power](#)

[CAL / OSHA T8 Article 27 Section 1684 – 1692 – Tool Design Requirements](#)

[L&I WAC 296-807 – Portable Power Tools](#)

## **7.0 Attachments**

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[Coring and Saw Cutting Checklist](#)

[Demolition Permit](#)



## Hazard Communication Program

This program has been developed and implemented to comply with the requirements of the Federal, State and Local standards; a written copy of this program is maintained at the workplace. The Hazard Communication Program informs the workforce of the safe use, handling and storage of hazardous chemicals which may be encountered while performing job assignments.

### Policy Statement

#### **All employees:**

- Will be properly advised when working with or being exposed to hazardous chemical used in the workplace
- Will be informed of all known or suspected hazardous substances in the workplace be properly labeled, including secondary containers
- Will be properly trained in the safe handling of hazardous substances prior to an exposure of a hazardous chemical
- Will be issued the necessary, appropriate, protective equipment and devices who are working with or exposed to hazardous substances
- Emergency handling procedures will be established at local levels on a case-by-case basis, including the maintenance of necessary first-aid facilities in the event of an incident involving a hazardous substance.

### Responsibilities

The individual Project Superintendent and/or Project Manager is/are delegated the responsibility of implementing the Hazard Communications Program at the work site.

#### **The responsibilities include the following:**

- To review and be familiar with the Federal and State OSHA/WISHA – Hazard Communication Requirement
- If warranted and necessary, designate subordinates responsible for implementing and monitoring the program
- Develop and maintain an inventory of all hazardous substances to which employees might be exposed
- Collect and maintain current Safety Data Sheets (SDS) for all hazardous substances at the workplace in both electronic and hard copies on the jobsite
- Review original and secondary containers to ensure that they are properly labeled
- Conduct employee training regarding hazardous substances to which employees may be exposed to and on the contents of the Hazard Communication Regulation
- Ensure that potentially exposed employees have access to and utilize proper protective equipment and devices and that emergency handling procedures and first aid facilities are in place in the event of an incident
- Maintain a plan for an on-going Hazard Communication Program which ensures that:
  - New employees are properly trained
  - New Hazardous substances are received with proper labeling and Safety Data Sheets
  - Current employees are retrained when new hazardous substances are introduced into the workplace.
- Make sure subcontractors comply with these requirements.

### Summary of the Requirements

This program applies to all BNBuilders’ employees, Trade Partners and their tiers. All hazardous substances found in the workplace under normal or reasonably foreseeable emergency conditions (i.e., spill or release of a chemical) are included.

BNBuilders will inform the employees of our Trade Partners (Subcontractors) their tiers, designated representative, and any Federal, State or Local regulatory agency of the hazardous substances in the workplace during the Project’s New Hire Orientation process and continually while on the project. A copy of BNB’s Hazard Communications Program to include the Safety Data Sheets (SDS) will be readily available for all workers and regulatory agencies. This information, to include the introduction of a new hazardous substance will be disseminated and discussed during the projects’ Weekly Safety Meetings, Toolbox Talks and other means of communication.

## Exclusions

***The Hazard Communication Standard does exempt some chemicals from coverage. Chemicals exempted from labeling include:***

- Pesticides (if covered by other federal regulations)
- Food, food additives, color additives, drugs, cosmetic or medical and veterinary supplies
- Distilled spirits or malt beverages for non-industrial use
- Consumer products (covered by other regulations)

***Exemptions from the entire section pertaining to construction are:***

- Hazardous wastes (subject to SPA regulations)
- Tobacco or tobacco products
- Wood or wood products (but not chemicals used to treat wood and treated lumber)
- Articles (manufactured items which do not release or otherwise result in exposure to a hazardous chemical under normal conditions of use)

## Hazard Determination

OSHA/WISHA’s definition of a Hazardous Chemical under the HCS is any chemical labeled as hazardous by a recognized authority such as OSHA/WISHA or the manufacturer, and any chemical that can create an effect on a person even if that effect is temporary. Under the current standard most chemicals, unless specifically exempted, should be treated as hazardous. Under the HCS there are no exposure limits set, so any amount of a chemical could trigger the standards requirements. Potential as well as actual exposure of a chemical to an employee must be considered when determining what chemicals should be treated as hazardous.

***OSHA defines Hazardous Chemicals as:***

- Any chemical listed in the toxic registry found to be carcinogenic by the International Agency for Research on Cancer (IARC).
- Listed as a carcinogen or potential carcinogen in the Annual Report on Carcinogens by the National Toxicology Program (NTP).
- Regulated by OSHA/WISHA as a carcinogen.
- Corrosive as defined by U.S. Department of Transportation in Appendix A 49 CFR, Part 173.
- Highly toxic (any chemical recognized as poisonous).
- Irritants – a chemical that causes a reversible inflammatory effect on living tissue.
- Sensitizer – a chemical that causes a substantial proportion of persons or animals to develop an allergic reaction.
- Any by-product produced that has any affects listed above.

## Safety Data Sheets (SDS)

Employers should receive an SDS from the manufacturer upon the initial purchase of a hazardous substance. The SDS provides both the employer and the employee with information necessary for working safely with a specific chemical. When an SDS is needed, contact the manufacturer, distributor or supplier in writing. If an SDS is not available from a manufacturer, OSHA should be notified in writing.

All subcontractors are to submit their SDS's to BNBuilders prior to mobilization and/or when a new hazardous chemical is introduced to the project. BNB will maintain the SDS's in the Project Office. SDS's will be available for review by all affected Contractors and their employees.

The SDS should cover 16 major elements. However, OSHA/WISHA will not be enforcing information requirements in sections 12 through 15 as these are not under its jurisdiction. If there is no relevant or applicable information, it should be so stated on the SDS. The mandatory items for inclusion are:

**Minimum information for an SDS:**

|    |   |   |
|----|---|---|
| 1. | <b>Identification of the substance or mixture and of the supplier</b> | <ul style="list-style-type: none"> <li>▪ GHS product identifier.</li> <li>▪ Other means of identification.</li> <li>▪ Recommended use of the chemical and restrictions on use.</li> <li>▪ Supplier's details (including name, address, phone number, etc.).</li> <li>▪ Emergency phone number.</li> </ul>   |
| 2. | <b>Hazards identification</b>   | <ul style="list-style-type: none"> <li>▪ GHS classification of the substance/mixture and any national or regional information.</li> <li>▪ GHS label elements, including precautionary statements. (Hazard symbols may be provided as a graphical reproduction of the symbols in black and white or the name of the symbol, e.g., flame, skull and crossbones.)</li> <li>▪ Other hazards which do not result in classification (e.g., dust explosion hazard) or are not covered by the GHS.</li> </ul> |

|    |   |   |
|----|---|---|
| 3. | <b>Composition/information on ingredients</b> | <p style="text-align: center;"><b>Substance</b></p> <ul style="list-style-type: none"> <li>▪ Chemical identity.</li> <li>▪ Common name, synonyms, etc.</li> <li>▪ CAS number, EC number, etc.</li> <li>▪ Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance.</li> </ul> <p style="text-align: center;"><b>Mixture</b></p> <ul style="list-style-type: none"> <li>▪ The chemical identity and concentration or concentration ranges of all ingredients which are hazardous within the meaning of the GHS and are present above their cutoff levels.</li> </ul> <p><i><b>NOTE:</b> For information on ingredients, the competent authority rules for CBI take priority over the rules for product identification.</i></p> |
| 4. | <b>First aid measures</b>                     | <ul style="list-style-type: none"> <li>▪ Description of necessary measures, subdivided according to the different routes of exposure, i.e., inhalation, skin and eye contact, and ingestion.</li> <li>▪ Most important symptoms/effects, acute and delayed.</li> <li>▪ Indication of immediate medical attention and special treatment needed, if necessary.</li> </ul>   |
| 5. | <b>Firefighting measures</b>                  | <ul style="list-style-type: none"> <li>▪ Suitable (and unsuitable) extinguishing media.</li> <li>▪ Specific hazards arising from the chemical (e.g., nature of any hazardous combustion products).</li> <li>▪ Special protective equipment and precautions for firefighters.</li> </ul>   |
| 6. | <b>Accidental release measures</b>            | <ul style="list-style-type: none"> <li>▪ Personal precautions, protective equipment and emergency procedures.</li> <li>▪ Environmental precautions.</li> <li>▪ Methods and materials for containment and cleaning up.</li> </ul>  |
| 7. | <b>Handling and storage</b>                   | <ul style="list-style-type: none"> <li>▪ Precautions for safe handling.</li> <li>▪ Conditions for safe storage, including any incompatibilities.</li> </ul>   |

|            |   |   |
|------------|---|---|
| <b>8.</b>  | <b>Exposure controls/personal protection.</b> | <ul style="list-style-type: none"> <li>▪ Control parameters, e.g., occupational exposure limit values or biological limit values.</li> <li>▪ Appropriate engineering controls.</li> <li>▪ Individual protection measures, such as personal protective equipment.</li> </ul>   |
| <b>9.</b>  | <b>Physical and chemical properties</b>       | <ul style="list-style-type: none"> <li>▪ Appearance (physical state, color, etc.).</li> <li>▪ Odor.</li> <li>▪ Odor threshold.</li> <li>▪ pH.</li> <li>▪ melting point/freezing point.</li> <li>▪ initial boiling point and boiling range.</li> <li>▪ flash point.</li> <li>▪ evaporation rate.</li> <li>▪ flammability (solid, gas).</li> <li>▪ upper/lower flammability or explosive limits.</li> <li>▪ vapor pressure.</li> <li>▪ vapor density.</li> <li>▪ relative density.</li> <li>▪ solubility(ies).</li> <li>▪ partition coefficient: n-octanol/water.</li> <li>▪ autoignition temperature.</li> <li>▪ decomposition temperature.</li> </ul> |
| <b>10.</b> | <b>Stability and reactivity</b>               | <ul style="list-style-type: none"> <li>▪ Chemical stability.</li> <li>▪ Possibility of hazardous reactions.</li> <li>▪ Conditions to avoid (e.g., static discharge, shock or vibration).</li> <li>▪ Incompatible materials.</li> <li>▪ Hazardous decomposition products.</li> </ul>   |
| <b>11.</b> | <b>Toxicological information</b>              | <p>Concise but complete and comprehensible description of the various toxicological (health) effects and the available data used to identify those effects, including:</p> <ul style="list-style-type: none"> <li>▪ information on the likely routes of exposure (inhalation, ingestion, skin and eye contact);</li> <li>▪ Symptoms related to the physical, chemical and toxicological characteristics;</li> <li>▪ Delayed and immediate effects and also chronic effects from short- and long-term exposure;</li> <li>▪ Numerical measures of toxicity (such as acute toxicity estimates).</li> </ul>   |

|            |   |   |
|------------|---|---|
| <b>12.</b> | <b>Ecological information</b>   | <ul style="list-style-type: none"> <li>▪ Ecotoxicity (aquatic and terrestrial, where available).</li> <li>▪ Persistence and degradability.</li> <li>▪ Bioaccumulative potential.</li> <li>▪ Mobility in soil.</li> <li>▪ Other adverse effects.</li> </ul>  |
| <b>13.</b> | <b>Disposal considerations</b>  | <ul style="list-style-type: none"> <li>▪ Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging.</li> </ul>   |
| <b>14.</b> | <b>Transport information</b>  | <ul style="list-style-type: none"> <li>▪ UN Number.</li> <li>▪ UN Proper shipping name.</li> <li>▪ Transport Hazard class(es).</li> <li>▪ Packing group, if applicable.</li> <li>▪ Marine pollutant (Yes/No).</li> <li>▪ Special precautions which a user needs to be aware of or needs to comply with in connection with transport or conveyance either within or outside their premises.</li> </ul> |
| <b>15.</b> | <b>Regulatory information</b>   | <ul style="list-style-type: none"> <li>▪ Safety, health and environmental regulations specific for the product in question.</li> </ul>  |
| <b>16.</b> | <b>Other information including information on preparation and revision of the SDS</b> |   |

Manufacturers are required to update the SDS within three months of learning that new hazard data is available which affects the SDS information.

### Labels and Other Forms of Warning

***When the employer receives containers of a hazardous substance, the supplier's original containers should have a label providing the following information:***

- Identity of the hazardous substance(s)
- Hazard warning statements
- Name and address of the chemical manufacturer or importer
- As hazardous substances are transferred from the original containers to portable or stationary containers, the employer needs to ensure that these secondary containers are labeled with the identity and the hazard warning statement
- Alternative posting, signs or placards may be used in lieu of labels directly affixed on stationary process containers
- Piping systems and portable containers for immediate use are exempt from labeling under California and Washington's Hazard Communication Regulation.

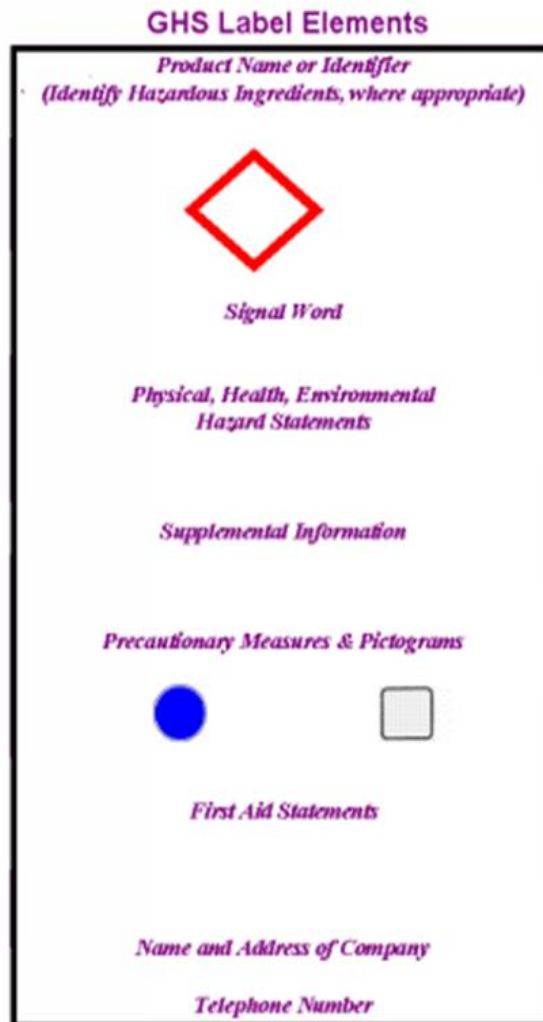
### Globally Harmonized System (GHS)

***Some GHS label elements have been standardized and are directly related to the endpoints and hazard level. The standardized label elements included in the GHS are:***

- **Symbols (hazard pictograms):** Convey health, physical and environmental hazard information, assigned to a GHS hazard class and category.

- **Signal Words:** "Danger" or "Warning" is used to emphasize hazards and indicate the relative level of severity of the hazard, assigned to a GHS hazard class and category.
- **Hazard Statements:** Standard phrases assigned to a hazard class and category that describe the nature of the hazard.

The symbols, signal words, and hazard statements have all been standardized and assigned to specific hazard categories and classes, as appropriate. These standardized elements are not subject to variation and should appear on the GHS label as indicated in the GHS for each hazard category/class in the system.



**Symbols/Pictograms**

The GHS symbols have been incorporated into pictograms for use on the GHS label. Pictograms include the harmonized hazard symbols plus other graphic elements, such as borders, background patterns or colors which are intended to convey specific information.

**Signal Words**

The signal word indicates the relative degree of severity a hazard. The signal words used in the GHS are:






"**Danger**" for the more severe hazards, and  
 "**Warning**" for the less severe hazards.







Signal words are standardized and assigned to the hazard categories within endpoints. Some lower level hazard categories do not use signal words. Only one signal word corresponding to the class of the most severe hazard should be used on a label.

**Hazard Statements**




Hazard statements are standardized and assigned phrases that describe the hazard(s) as determined by hazard classification. An appropriate statement for each GHS hazard should be included on the label for products possessing more than one hazard.











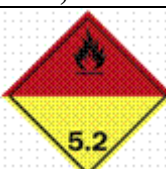
**Figure 4.9**

| <b>GHS Pictograms and Hazard Classes</b>  |   |   |
|---|---|---|
|  |    |                                    |
| <ul style="list-style-type: none"> <li>▪ Oxidizers</li> </ul>                     | <ul style="list-style-type: none"> <li>▪ Flammables</li> <li>▪ Self Reactives</li> <li>▪ Pyrophorics</li> <li>▪ Self-Heating</li> <li>▪ Emits Flammable Gas</li> <li>▪ Organic Peroxides</li> </ul> | <ul style="list-style-type: none"> <li>▪ Explosives</li> <li>▪ Self Reactives</li> <li>▪ Organic Peroxides</li> </ul> |

|   |   |   |
|---|---|---|
|    |  |    |
| <ul style="list-style-type: none"> <li>▪ Acute toxicity (severe)</li> </ul>   | <ul style="list-style-type: none"> <li>▪ Corrosives</li> </ul>                    | <ul style="list-style-type: none"> <li>▪ Gases Under Pressure</li> </ul>  |
|    |  |    |
| <ul style="list-style-type: none"> <li>▪ Carcinogen</li> <li>▪ Respiratory Sensitizer</li> <li>▪ Reproductive Toxicity</li> <li>▪ Target Organ Toxicity</li> <li>▪ Mutagenicity</li> <li>▪ Aspiration Toxicity</li> </ul> | <ul style="list-style-type: none"> <li>▪ Environmental Toxicity</li> </ul>        | <ul style="list-style-type: none"> <li>▪ Irritant</li> <li>▪ Dermal Sensitizer</li> <li>▪ Acute toxicity (harmful)</li> <li>▪ Narcotic Effects</li> <li>▪ Respiratory Tract Irritation</li> </ul> |





**Figure 4.10**  
**Transport "Pictograms"**

|  |   |   |
|--|---|---|
| <p align="center"><b>Transport "Pictograms"</b></p>                                  |   |   |
|   |  |                |
| <p><b>Flammable Liquid</b><br/><b>Flammable Gas</b><br/><b>Flammable Aerosol</b></p> | <p><b>Flammable solid</b><br/><b>Self-Reactive</b><br/><b>Substances</b></p>        | <p><b>Pyrophorics (Spontaneously</b><br/><b>Combustible) Self-Heating</b><br/><b>Substances</b></p> |

|  |  |   |
|--|--|---|
|   |   |  |
| Substances, which in contact with water, emit flammable gases (Dangerous When Wet) | Oxidizing Gases<br>Oxidizing Liquids<br>Oxidizing Solids                           | Explosive Divisions 1.1, 1.2, 1.3   |
|   |   |  |
| Explosive Division 1.4   | Explosive Division 1.5   | Explosive Division 1.6  |
|   |   |  |
| Compressed Gases   | Acute Toxicity (Poison): Oral, Dermal, Inhalation                                  | Corrosive   |
|  |  |   |
| Marine Pollutant   | Organic Peroxides  |   |

**Figure 4.11**

**ACUTE ORAL TOXICITY - Annex 1**

|                  | Category 1  | Category 2  | Category 3   | Category 4  | Category 5                     |
|------------------|---|---|--|---|--------------------------------|
| LD <sub>50</sub> | £ 5 mg/kg   | > 5 < 50 mg/kg  | <sup>3</sup> 50 < 300 mg/kg  | <sup>3</sup> 300 < 2000 mg/kg   | <sup>3</sup> 2000 < 5000 mg/kg |
| Pictogram        |  |  |  |  | No symbol                      |
| Signal word      | Danger  | Danger  | Danger   | Warning   | Warning                        |
| Hazard statement | Fatal if swallowed  | Fatal if swallowed  | Toxic if swallowed   | Harmful if swallowed  | May be harmful if swallowed    |

### **Other GHS label elements include:**

- Precautionary Statements and Pictograms
  - Measures to minimize or prevent adverse effects.
- Product Identifier (ingredient disclosure)
  - Name or number used for a hazardous product on a label or in the SDS.
- Supplier identification
  - The name, address and telephone number should be provided on the label.
- Supplemental information
  - non-harmonized information.

### **Precautionary Statements and Pictograms**

Precautionary information supplements the hazard information by briefly providing measures to be taken to minimize or prevent adverse effects from physical, health or environmental hazards. First aid is included in precautionary information. The GHS label should include appropriate precautionary information.

### **Product Identifier (Ingredient Disclosure)**

A product identifier should be used on a GHS label and it should match the product identifier used on the SDS.

The GHS label for a substance should include the chemical identity of the substance (name as determined by IUPAC, ISO, CAS or technical name). For mixtures/alloys, the label should include the chemical identities of all ingredients that contribute to acute toxicity, skin corrosion or serious eye damage, germ cell mutagenicity, carcinogenicity, reproductive toxicity, skin or respiratory sensitization, or Target Organ Systemic Toxicity (TOST), when these hazards appear on the label. Where a product is supplied exclusively for workplace use, the Competent Authority may give suppliers discretion to include chemical identities on the SDS, in lieu of including them on labels. The Competent Authority rules for confidential business information (CBI) take priority over the rules for product identification.

### **Supplier Identification**

The name, address and telephone number of the manufacturer or supplier of the product should be provided on the label.

### **Supplemental Information**

Supplemental label information is non-harmonized information on the container of a hazardous product that is not required or specified under the GHS. In some cases, this information may be required by a Competent Authority or it may be additional information provided at the discretion of the manufacturer / distributor. The labeler should have the option of providing supplementary information related to the hazard, such as physical state or route of exposure, with the hazard statement.

### **How are multiple hazards handled on labels?**

Where a substance or mixture presents more than one GHS hazard, there is a GHS precedence scheme for pictograms and signal words.

- For health hazards the following principles of precedence apply for symbols:
- If the skull and crossbones apply, the exclamation mark should not appear;

- If the corrosive symbol applies, the exclamation mark should not appear where it is used for skin or eye irritation;
- If the health hazard symbol appears for respiratory sensitization, the exclamation mark should not appear where it is used for skin sensitization or for skin or eye irritation.
- If the signal word 'Danger' applies, the signal word 'Warning' should not appear. All assigned hazard statements should appear on the label. The Competent Authority may choose to specify the order in which they appear.

## **Chemical Training**

Many chemicals used in construction today are toxic. Some of the most common materials can be toxic after long or repeated exposure. Some also have a delayed effect, causing health problems which are not noticed right away. Contact the Safety Department to answer any questions on how to work safely with chemicals.

Chemicals affect us through our skin, eyes, lungs, or by getting on our food. It is everyone's responsibility to protect themselves from these hazards by using proper clothing, gloves, goggles, respirators, good personal hygiene, and common sense.

Due to the infrequent use of chemicals on a construction site, all activities involving the use of chemicals shall be overseen by a Competent Person.

There are several kinds of chemical hazards:

### **Form Oils and Lubricants**

**Hazards:** These can cause a skin condition called dermatitis. Some might contain additives that have more serious effects such as cancer.

**Precautionary Measures:** Protective gloves and clothing must be worn when using these materials. Respiratory protection is required when they are sprayed, heated, or burned.

### **Gasoline and Propane**

**Hazards:** The primary danger with these chemicals is fire and explosion.

**Precautionary Measures:** The Superintendent should explain each of the following rules to each employee using or dispensing fuels.

- Never use fuels as solvents.
- Keep fuels only in approved, properly labeled containers which are in good condition.
- Store fuels away from any sources of ignition.
- Review the codes governing the storage of fuels.
- Provide adequate fire protection.
- Notify the local fire department of the location and amount of fuel stored on site.
- Post "No Smoking" signs.

## **Paints and Coatings**

**Hazards:** Hazards vary, as there is a wide variety of paints and coatings with different levels of toxicity. If there are questions about the hazards of a product, ask the Safety Department for more information.

**Paint or coating materials which may be toxic include the following:**

- Oil based paints
- Epoxies and urethanes
- Varnishes and shellacs

- Concrete sealers and coatings
- Cold galvanizing
- Treatments for wood, plastic, or metal
- Coatings that are sprayed, troweled, brushed, or poured
- Floor coatings
- Primers and bonding agents

**Precautionary Measures:** Different kinds of protection are needed, depending on the product that will be used. Skin and eyes should be protected with gloves, clothing, and goggles wherever contact is possible; consult the MSDS for the PPE requirements. Ventilation shall be used if vapors can accumulate, personnel in respirators may also be used if ventilation is not sufficient. With products other than latex paints, airline respirators may also be needed.

## Caulks, Mastics, and Glues

**Hazards:** Skin irritation and eye injury are the main hazards with these products. Some products can cause cancer with repeated skin contact. Toxic fumes can be a problem, especially in confined spaces. This is particularly true of petroleum and formaldehyde-based products and epoxy. Silicones are strong eye irritants. Cyanoacrylates (super glues) can bond skin on contact and cause immediate blindness upon eye contact.

**Precautionary Measures:** Gloves must always be used to prevent contact with the skin. Goggles must be worn if there is any chance of eye contact. Good personal hygiene is the best defense. Clean hands won't contaminate eyes, contact lenses, or food.

## Solvents

**Hazards:** Solvents often produce toxic vapors that make respiratory protection necessary. Some are so toxic that special air-supplied respirators must be used. Most are harmful to the skin. Many are very flammable. The hazards associated with solvents are even greater when they are used in areas with poor ventilation, or in large quantities.

**Precautionary Measures:** Protective clothing and respirators are minimum precautions. The Safety Department should be consulted with any questions regarding proper handling.

## Acids and Bases

**Hazards:** Hydrochloric acid, also called muriatic acid, can burn the skin and eyes, and create toxic fumes that can cause permanent lung damage. It is often used as a brick cleaner and for other jobs such as etching. Acids and bases can cause skin burns and must only be used with proper gloves, goggles, and respirators. These products include chlorine for tank cleaning, brick cleaners, and etching solutions.

**Precautionary Measures:** Use of proper gloves, goggles, body suits or chemical aprons and respirators.

## Cement, Mortar, and Grout

**Hazards:** Even though these materials aren't toxic, prolonged exposure can cause lung damage and severe skin burns. Eye contact can cause blindness.

**Precautionary Measures:** Goggles should always be worn. Where dust will be produced, respirators should also be used. Employees whose job involves contact must wear rubber gloves and protective clothing. When skin is exposed, the material should be washed off immediately and then neutralized.

## Sand Blasting, Dust, and Welding

**Hazards:** Sandblasting sand normally contains silica, as does much of the dust formed during general cleaning, concrete grinding and demolition work. Welding fumes from cutting or welding cad-plated galvanized or coated metals can be toxic. Use engineering controls like fans if possible.

**Precautionary Measures:** A respirator must be worn, and, in the case of sandblasting, only air-supplied hoods are allowed. Cutting and welding in confined spaces should be done only with the approval of the Superintendent. Oxygen deficiency, high fume concentrations, and explosion hazards can exist. Also review the possibility of Confined Space requirements.

### **Toxic Gas**

**Hazards:** Hydrogen sulfide and carbon monoxide are the two most common gases that pose problems.

- Hydrogen sulfide is usually encountered when connecting into sanitary sewers, and in some industrial settings like paper mills and refineries. It is very dangerous, because it impairs the sense of smell at about the same rate at which it becomes highly toxic, so workers have no warning of their exposure.
- Carbon monoxide is most commonly found as exhaust from combustion such as heaters, cars, compressors, or other equipment. It can cause problems during heated concrete pours, and when working in confined spaces with mobile equipment, particularly during winter in enclosures.

**Precautionary Measures:** Ventilation is the best source of protection. Testing should be performed when the possibility of air contamination exists. Consult with the Safety Department for other issues to review.



## STATE OF CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY

### OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986

#### CHEMICALS KNOWN TO THE STATE TO CAUSE CANCER OR REPRODUCTIVE TOXICITY NOVEMBER 8, 2013

The Safe Drinking Water and Toxic Enforcement Act of 1986 requires that the Governor revise and republish at least once per year the list of chemicals known to the State to cause cancer or reproductive toxicity. The identification number indicated in the following list is the Chemical Abstracts Service (CAS) Registry Number. No CAS number is given when several substances are presented as a single listing. The date refers to the initial appearance of the chemical on the list. For easy reference, chemicals which are shown underlined are newly added. Chemicals or endpoints shown in strikeout were placed on the **Proposition 65** list on the date noted and have subsequently been removed.

| Chemical                                   | Type of Toxicity    | Listing Mechanism | CAS No.    | Date Listed | NSRL or MADL (µg/day) <sup>a</sup> |
|--|---------------------|-------------------|------------|-------------|------------------------------------|
| A-alpha-C (2-Amino-9H-pyrido[2,3-b]indole) | cancer              | AB                | 26148-68-5 | 1-Jan-90    | <u>2</u>                           |
| Acetaldehyde                               | cancer              | SQE               | 75-07-0    | 1-Apr-88    | 90 (inhalation)                    |
| Acetamide                                  | cancer              | AB                | 60-35-5    | 1-Jan-90    | <u>10</u>                          |
| Acetazolamide                              | developmental       | <u>FR</u>         | 59-66-5    | 20-Aug-99   |                                    |
| Acetochlor                                 | cancer              | SQE               | 34256-82-1 | 1-Jan-89    |                                    |
| Acetohydroxamic acid                       | developmental       | FR                | 546-88-3   | 1-Apr-90    |                                    |
| 2-Acetylaminofluorene                      | cancer              | SQE               | 53-96-3    | 1-Jul-87    | <u>0.2</u>                         |
| Acifluorfen sodium                         | cancer              | AB                | 62476-59-9 | 1-Jan-90    |                                    |
| Acrylamide                                 | cancer              | AB                | 79-06-1    | 1-Jan-90    | 0.2                                |
| Acrylamide                                 | developmental, male | <u>AB</u>         | 79-06-1    | 25-Feb-11   | <u>140</u>                         |
| Acrylonitrile                              | cancer              | FR                | 107-13-1   | 1-Jul-87    | 0.7                                |

|   |                     |                     |                          |                          |                         |
|---|---------------------|---------------------|--------------------------|--------------------------|-------------------------|
| Actinomycin D   | cancer              | <a href="#">FR</a>  | 50-76-0                  | 1-Oct-89                 | <a href="#">0.00008</a> |
| Actinomycin D   | developmental       | FR                  | 50-76-0                  | 1-Oct-92                 |                         |
| AF-2;[2-(2-furyl)-3-(5-nitro-2-furyl)]acrylamide  | cancer              | SQE                 | 3688-53-7                | 1-Jul-87                 | <a href="#">3</a>       |
| Aflatoxins  | cancer              | SQE                 | ---                      | 1-Jan-88                 |                         |
| Alachlor  | cancer              | SQE                 | 15972-60-8               | 1-Jan-89                 |                         |
| Alcoholic beverages, when associated with alcohol abuse   | cancer              | SQE                 | ---                      | 1-Jul-88                 |                         |
| Aldrin  | cancer              | SQE                 | 309-00-2                 | 1-Jul-88                 | 0.04                    |
| All-trans retinoic acid   | developmental       | SQE                 | 302-79-4                 | 1-Jan-89                 |                         |
| <a href="#">Allyl chloride Delisted October 29, 1999 [Click here for the basis for delisting]</a> | <del>cancer</del>   | <a href="#">AB</a>  | <a href="#">107-05-1</a> | <a href="#">1-Jan-90</a> |                         |
| Alprazolam  | developmental       | FR                  | 28981-97-7               | 1-Jul-90                 |                         |
| Altretamine   | developmental, male | <a href="#">FR</a>  | 645-05-6                 | 20-Aug-99                |                         |
| Amantadine hydrochloride  | developmental       | <a href="#">FR</a>  | 665-66-7                 | 27-Feb-01                |                         |
| Amikacin sulfate  | developmental       | FR                  | 39831-55-5               | 1-Jul-90                 |                         |
| 2-Aminoanthraquinone  | cancer              | LC                  | 117-79-3                 | 1-Oct-89                 | <a href="#">20</a>      |
| <i>p</i> -Aminoazobenzene   | cancer              | AB                  | 60-09-3                  | 1-Jan-90                 |                         |
| <i>o</i> -Aminoazotoluene   | cancer              | SQE                 | 97-56-3                  | 1-Jul-87                 | <a href="#">0.2</a>     |
| 4-Aminobiphenyl (4-aminodiphenyl)   | cancer              | LC                  | 92-67-1                  | 27-Feb-87                | <a href="#">0.03</a>    |
| 1-Amino-2,4-dibromoanthraquinone  | cancer              | <a href="#">AB</a>  | 81-49-2                  | 26-Aug-97                |                         |
| 3-Amino-9-ethylcarbazole hydrochloride  | cancer              | SQE                 | 6109-97-3                | 1-Jul-89                 | <a href="#">9</a>       |
| 2-Aminofluorene   | cancer              | <a href="#">SQE</a> | 153-78-6                 | 29-Jan-99                |                         |
| Aminoglutethimide   | developmental       | FR                  | 125-84-8                 | 1-Jul-90                 |                         |
| Aminoglycosides   | developmental       | FR                  | ---                      | 1-Oct-92                 |                         |
| 1-Amino-2-methylantraquinone  | cancer              | LC                  | 82-28-0                  | 1-Oct-89                 | <a href="#">5</a>       |

|  |                             |                     |            |           |                      |
|--|-----------------------------|---------------------|------------|-----------|----------------------|
| 2-Amino-5-(5-nitro-2-furyl)-1,3,4-thiadiazole  | cancer                      | SQE                 | 712-68-5   | 1-Jul-87  | <a href="#">0.04</a> |
| 4-Amino-2-nitrophenol                          | cancer                      | <a href="#">SQE</a> | 119-34-6   | 29-Jan-99 |                      |
| Aminopterin                                    | developmental, female       | SQE                 | 54-62-6    | 1-Jul-87  |                      |
| Amiodarone hydrochloride                       | developmental, female, male | <a href="#">FR</a>  | 19774-82-4 | 26-Aug-97 |                      |
| Amitraz  | developmental               | <a href="#">AB</a>  | 33089-61-1 | 30-Mar-99 |                      |
| Amitrole                                       | cancer                      | SQE                 | 61-82-5    | 1-Jul-87  | <a href="#">0.7</a>  |
| Amoxapine                                      | developmental               | <a href="#">FR</a>  | 14028-44-5 | 15-May-98 |                      |
| Amsacrine                                      | cancer                      | <a href="#">LC</a>  | 51264-14-3 | 7-Aug-09  |                      |
| tert-Amyl methyl ether                         | developmental               | <a href="#">LC</a>  | 994-05-8   | 18-Dec-09 |                      |
| Anabolic steroids                              | female, male                | FR                  | ---        | 1-Apr-90  |                      |
| Analgesic mixtures containing Phenacetin       | cancer                      | LC                  | ---        | 27-Feb-87 |                      |
| Androstenedione                                | cancer                      | <a href="#">AB</a>  | 63-05-8    | 3-May-11  | -                    |
| Angiotensin converting enzyme (ACE) inhibitors | developmental               | FR                  | ---        | 1-Oct-92  |                      |
| Aniline  | cancer                      | AB                  | 62-53-3    | 1-Jan-90  | 100                  |
| Aniline hydrochloride                          | cancer                      | <a href="#">AB</a>  | 142-04-1   | 15-May-98 |                      |
| o-Anisidine                                    | cancer                      | SQE                 | 90-04-0    | 1-Jul-87  | <a href="#">5</a>    |
| o-Anisidine hydrochloride                      | cancer                      | SQE                 | 134-29-2   | 1-Jul-87  | <a href="#">7</a>    |
| Anisindione                                    | developmental               | FR                  | 117-37-3   | 1-Oct-92  |                      |
| Anthraquinone                                  | cancer                      | <a href="#">AB</a>  | 84-65-1    | 28-Sep-07 |                      |
| Antimony oxide (Antimony trioxide)             | cancer                      | AB                  | 1309-64-4  | 1-Oct-90  |                      |
| Aramite  | cancer                      | SQE                 | 140-57-8   | 1-Jul-87  | <a href="#">20</a>   |
| Areca nut                                      | cancer                      | <a href="#">LC</a>  | ---        | 3-Feb-06  |                      |
| Aristolochic acids                             | cancer                      | <a href="#">LC</a>  | ---        | 9-Jul-04  |                      |

|   |                          |                     |            |           |   |
|---|--------------------------|---------------------|------------|-----------|---|
| Arsenic (inorganic arsenic compounds)   | cancer                   | LC                  | --         | 27-Feb-87 | 0.06<br>(inhalation)<br>10 (except<br>inhalation) |
| Arsenic (inorganic oxides)  | developmental            | <a href="#">SQE</a> | ---        | 1-May-97  |   |
| Asbestos  | cancer                   | LC                  | 1332-21-4  | 27-Feb-87 | 100 fibers/day<br>(inhalation)                    |
| Aspirin (NOTE: It is especially important not to use aspirin during the last three months of pregnancy, unless specifically directed to do so by a physician because it may cause problems in the unborn child or complications during delivery.) | developmental,<br>female | SQE                 | 50-78-2    | 1-Jul-90  |   |
| Atenolol  | developmental            | <a href="#">FR</a>  | 29122-68-7 | 26-Aug-97 |   |
| Auramine  | cancer                   | SQE                 | 492-80-8   | 1-Jul-87  | <a href="#">0.8</a>                               |
| Auranofin   | developmental            | <a href="#">FR</a>  | 34031-32-8 | 29-Jan-99 |   |

|                             |                        |                    |            |           |                      |
|-----------------------------|------------------------|--------------------|------------|-----------|----------------------|
| Avermectin B1 (Abamectin)   | developmental          | <a href="#">AB</a> | 71751-41-2 | 3-Dec-10  | <a href="#">4.4</a>  |
| Azacididine                 | cancer                 | AB                 | 320-67-2   | 1-Jan-92  |                      |
| Azaserine                   | cancer                 | SQE                | 115-02-6   | 1-Jul-87  | <a href="#">0.06</a> |
| Azathioprine                | cancer                 | LC                 | 446-86-6   | 27-Feb-87 | <a href="#">0.4</a>  |
| Azathioprine                | developmental          | FR                 | 446-86-6   | 1-Sep-96  |                      |
| Azobenzene                  | cancer                 | AB                 | 103-33-3   | 1-Jan-90  | 6                    |
|                             |                        |                    |            |           |                      |
| Barbiturates                | developmental          | FR                 | ---        | 1-Oct-92  |                      |
| Beclomethasone dipropionate | developmental          | <a href="#">FR</a> | 5534-09-8  | 15-May-98 |                      |
| Benomyl                     | developmental,<br>male | SQE                | 17804-35-2 | 1-Jul-91  |                      |

|                                      |                        |                     |             |           |   |
|--------------------------------------|------------------------|---------------------|-------------|-----------|---|
| Benthiavalicarb-isopropyl            | cancer                 | <a href="#">AB</a>  | 177406-68-7 | 1-Jul-08  |   |
| Benz[a]anthracene                    | cancer                 | SQE                 | 56-55-3     | 1-Jul-87  | <a href="#">0.033 (oral)</a>                                  |
| Benzene                              | cancer                 | LC                  | 71-43-2     | 27-Feb-87 | <a href="#">6.4 (oral)</a><br><a href="#">13 (inhalation)</a> |
| Benzene                              | developmental,<br>male | <a href="#">SQE</a> | 71-43-2     | 26-Dec-97 | <a href="#">24 (oral)</a><br><a href="#">49 (inhalation)</a>  |
| Benzidine [and its salts]            | cancer                 | LC                  | 92-87-5     | 27-Feb-87 | 0.001   |
| Benzidine-based dyes                 | cancer                 | FR                  | ---         | 1-Oct-92  |   |
| Benzodiazepines                      | developmental          | FR                  | ---         | 1-Oct-92  |   |
| Benzo[b]fluoranthene                 | cancer                 | SQE                 | 205-99-2    | 1-Jul-87  | <a href="#">0.096 (oral)</a>                                  |
| Benzo[j]fluoranthene                 | cancer                 | SQE                 | 205-82-3    | 1-Jul-87  | <a href="#">0.11 (oral)</a>                                   |
| Benzo[k]fluoranthene                 | cancer                 | SQE                 | 207-08-9    | 1-Jul-87  |   |
| Benzofuran                           | cancer                 | AB                  | 271-89-6    | 1-Oct-90  | <a href="#">1.1</a>   |
| Benzophenone                         | cancer                 | <a href="#">LC</a>  | 119-61-9    | 22-Jun-12 | -   |
| Benzo[a]pyrene                       | cancer                 | SQE                 | 50-32-8     | 1-Jul-87  | 0.06  |
| Benzotrichloride                     | cancer                 | SQE                 | 98-07-7     | 1-Jul-87  |   |
| Benzphetamine hydrochloride          | developmental          | FR                  | 5411-22-3   | 1-Apr-90  |   |
| Benzyl chloride                      | cancer                 | AB                  | 100-44-7    | 1-Jan-90  | 4   |
| Benzyl violet 4B                     | cancer                 | SQE                 | 1694-09-3   | 1-Jul-87  | <a href="#">30</a>  |
| Beryllium and beryllium compounds    | cancer                 | SQE                 | ---         | 1-Oct-87  |   |
| Beryllium                            |                        |                     |             |           | 0.1   |
| Beryllium oxide                      |                        |                     |             |           | 0.1   |
| Beryllium sulfate                    |                        |                     |             |           | 0.0002  |
| Betel quid with tobacco              | cancer                 | AB                  | ---         | 1-Jan-90  |   |
| Betel quid without tobacco           | cancer                 | <a href="#">LC</a>  | ---         | 3-Feb-06  |   |
| 2,2-Bis(bromomethyl)-1,3-propanediol | cancer                 | AB                  | 3296-90-0   | 1-May-96  |   |
| Bis(2-chloroethyl)ether              | cancer                 | SQE                 | 111-44-4    | 1-Apr-88  | 0.3   |

|  |                             |                     |                         |                           |                    |
|--|-----------------------------|---------------------|-------------------------|---------------------------|--------------------|
| N,N-Bis(2-chloroethyl)-2-naphthylamine (Chlornapazine)   | cancer                      | LC                  | 494-03-1                | 27-Feb-87                 |                    |
| Bischloroethyl nitrosourea (BCNU) (Carmustine)   | cancer                      | SQE                 | 154-93-8                | 1-Jul-87                  |                    |
| Bischloroethyl nitrosourea (BCNU) (Carmustine)   | developmental               | FR                  | 154-93-8                | 1-Jul-90                  |                    |
| Bis(chloromethyl)ether   | cancer                      | LC                  | 542-88-1                | 27-Feb-87                 | 0.02               |
| Bis(2-chloro-1-methylethyl)ether, technical grade  | cancer                      | <a href="#">SQE</a> | ---                     | 29-Oct-99                 |                    |
| <a href="#">Bisphenol A (BPA) Delisted April 19, 2013 [Click here for the basis for delisting]</a> | developmental               | AB                  | <a href="#">80-05-7</a> | <a href="#">11-Apr-13</a> |                    |
| Bitumens, extracts of steam-refined and air refined  | cancer                      | AB                  | ---                     | 1-Jan-90                  |                    |
| Bracken fern   | cancer                      | AB                  | ---                     | 1-Jan-90                  |                    |
| Bromacil lithium salt  | developmental               | <a href="#">AB</a>  | 53404-19-6              | 18-May-99                 |                    |
| Bromacil lithium salt  | male                        | <a href="#">SQE</a> | 53404-19-6              | 17-Jan-03                 |                    |
| Bromate  | cancer                      | <a href="#">AB</a>  | 15541-45-4              | 31-May-02                 |                    |
| Bromochloroacetic acid   | cancer                      | <a href="#">AB</a>  | 5589-96-8               | 6-Apr-10                  |                    |
| Bromodichloromethane   | cancer                      | AB                  | 75-27-4                 | 1-Jan-90                  | 5                  |
| Bromoethane  | cancer                      | <a href="#">AB</a>  | 74-96-4                 | 22-Dec-00                 | <a href="#">96</a> |
| Bromoform  | cancer                      | AB                  | 75-25-2                 | 1-Apr-91                  | <a href="#">64</a> |
| 1-Bromopropane (1-BP)  | developmental, female, male | <a href="#">AB</a>  | 106-94-5                | 7-Dec-04                  |                    |
| 2-Bromopropane (2-BP)  | female, male                | <a href="#">AB</a>  | 75-26-3                 | 31-May-05                 |                    |
| Bromoxynil   | developmental               | FR                  | 1689-84-5               | 1-Oct-90                  |                    |
| Bromoxynil octanoate   | developmental               | <a href="#">AB</a>  | 1689-99-2               | 18-May-99                 |                    |
| Butabarbital sodium  | developmental               | FR                  | 143-81-7                | 1-Oct-92                  |                    |
| 1,3-Butadiene  | cancer                      | SQE                 | 106-99-0                | 1-Apr-88                  | 0.4                |
| 1,3-Butadiene  | developmental, female, male | <a href="#">AB</a>  | 106-99-0                | 16-Apr-04                 |                    |

|   |                             |                     |            |           |                             |
|---|-----------------------------|---------------------|------------|-----------|-----------------------------|
| 1,4-Butanediol dimethanesulfonate (Busulfan)                  | cancer                      | LC                  | 55-98-1    | 27-Feb-87 |                             |
| 1,4-Butanediol dimethanesulfonate (Busulfan)                  | developmental               | SQE                 | 55-98-1    | 1-Jan-89  |                             |
| Butylated hydroxyanisole                                      | cancer                      | AB                  | 25013-16-5 | 1-Jan-90  | 4000                        |
| Butyl benzyl phthalate (BBP) <sup>d</sup>                     | developmental               | <a href="#">AB</a>  | 85-68-7    | 2-Dec-05  | <a href="#">1200 (oral)</a> |
| n-Butyl glycidyl ether  | male                        | <a href="#">LC</a>  | 2426-08-6  | 7-Aug-09  |                             |
| beta-Butyrolactone  | cancer                      | SQE                 | 3068-88-0  | 1-Jul-87  | <a href="#">0.7</a>         |
|   |                             |                     |            |           |                             |
| Cacodylic acid  | cancer                      | AB                  | 75-60-5    | 1-May-96  |                             |
| Cadmium   | developmental, male         | <a href="#">SQE</a> | ---        | 1-May-97  | <a href="#">4.1 (oral)</a>  |
| Cadmium and cadmium compounds                                 | cancer                      | SQE                 | ---        | 1-Oct-87  |                             |
| Cadmium   |                             |                     |            |           | 0.05 (inhalation)           |
| Caffeic acid  | cancer                      | AB                  | 331-39-5   | 1-Oct-94  |                             |
| Captafol  | cancer                      | SQE                 | 2425-06-1  | 1-Oct-88  | <a href="#">5</a>           |
| Captan  | cancer                      | AB                  | 133-06-2   | 1-Jan-90  | <a href="#">300</a>         |
| Carbamazepine   | developmental               | <a href="#">FR</a>  | 298-46-4   | 29-Jan-99 |                             |
| Carbaryl  | cancer                      | <a href="#">AB</a>  | 63-25-2    | 5-Feb-10  | -                           |
| Carbaryl  | developmental, male         | <a href="#">LC</a>  | 63-25-2    | 7-Aug-09  |                             |
| Carbazole   | cancer                      | AB                  | 86-74-8    | 1-May-96  | <a href="#">4.1</a>         |
| Carbon black (airborne, unbound particles of respirable size) | cancer                      | <a href="#">AB</a>  | 1333-86-4  | 21-Feb-03 |                             |
| Carbon disulfide  | developmental, female, male | SQE                 | 75-15-0    | 1-Jul-89  |                             |
| Carbon monoxide   | developmental               | SQE                 | 630-08-0   | 1-Jul-89  |                             |
| Carbon tetrachloride  | cancer                      | SQE                 | 56-23-5    | 1-Oct-87  | 5                           |
| Carbon-black extracts   | cancer                      | AB                  | ---        | 1-Jan-90  |                             |



|  |                   |                     |                    |                     |                       |
|--|-------------------|---------------------|--------------------|---------------------|-----------------------|
| Carboplatin  | developmental     | FR                  | 41575-94-4         | 1-Jul-90            |                       |
| N-Carboxymethyl-N-nitrosourea  | cancer            | <a href="#">SQE</a> | 60391-92-6         | 25-Jan-02           | <a href="#">0.7</a>   |
| Catechol   | cancer            | <a href="#">AB</a>  | 120-80-9           | 15-Jul-03           |                       |
| Ceramic fibers (airborne particles of respirable size)   | cancer            | AB                  | ---                | 1-Jul-90            |                       |
| Certain combined chemotherapy for lymphomas  | cancer            | LC                  | ---                | 27-Feb-87           |                       |
| Chenodiol  | developmental     | FR                  | 474-25-9           | 1-Apr-90            |                       |
| Chloral  | cancer            | <a href="#">LC</a>  | 75-87-6            | 13-Sep-13           | -                     |
| Chloral hydrate  | cancer            | <a href="#">LC</a>  | 302-17-0           | 13-Sep-13           |                       |
| Chlorambucil   | cancer            | LC                  | 305-03-3           | 27-Feb-87           | <a href="#">0.002</a> |
| Chlorambucil   | developmental     | SQE                 | 305-03-3           | 1-Jan-89            |                       |
| <a href="#">Chloramphenicol Delisted January 4, 2013</a><br><a href="#">[Click here for the basis for delisting]</a> | <del>cancer</del> | <a href="#">LC</a>  | <del>56-75-7</del> | <del>1-Oct-89</del> |                       |
| Chloramphenicol sodium succinate   | cancer            | <a href="#">FR</a>  | 982-57-0           | 27-Sep-13           |                       |
| Chlorcyclizine hydrochloride   | developmental     | FR                  | 1620-21-9          | 1-Jul-87            |                       |
| Chlordane  | cancer            | SQE                 | 57-74-9            | 1-Jul-88            | 0.5                   |
| Chlordecone (Kepone)   | cancer            | SQE                 | 143-50-0           | 1-Jan-88            | <a href="#">0.04</a>  |
| Chlordecone (Kepone)   | developmental     | SQE                 | 143-50-0           | 1-Jan-89            |                       |
| Chlordiazepoxide   | developmental     | FR                  | 58-25-3            | 1-Jan-92            |                       |
| Chlordiazepoxide hydrochloride   | developmental     | FR                  | 438-41-5           | 1-Jan-92            |                       |
| Chlordimeform  | cancer            | SQE                 | 6164-98-3          | 1-Jan-89            |                       |
| Chlorendic acid  | cancer            | SQE                 | 115-28-6           | 1-Jul-89            | <a href="#">8</a>     |
| Chlorinated paraffins (Average chain length, C12;approximately 60 percent chlorine by weight)                        | cancer            | SQE                 | 108171-26-2        | 1-Jul-89            | <a href="#">8</a>     |
| <i>p</i> -Chloroaniline  | cancer            | AB                  | 106-47-8           | 1-Oct-94            | <a href="#">1.5</a>   |

|   |                   |                     |                     |                     |                              |
|---|-------------------|---------------------|---------------------|---------------------|------------------------------|
| <i>p</i> -Chloroaniline hydrochloride   | cancer            | <a href="#">AB</a>  | 20265-96-7          | 15-May-98           | <a href="#">1.9</a>          |
| <a href="#">Chlorodibromomethane Delisted October 29, 1999 [Click here for the basis for delisting]</a> | <del>cancer</del> | <a href="#">AB</a>  | <del>124-48-1</del> | <del>1-Jan-90</del> |                              |
| Chloroethane (Ethyl chloride)   | cancer            | AB                  | 75-00-3             | 1-Jul-90            | <a href="#">150</a>          |
| 1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU) (Lomustine)   | cancer            | SQE                 | 13010-47-4          | 1-Jan-88            |                              |
| 1-(2-Chloroethyl)-3-cyclohexyl-1-nitrosourea (CCNU) (Lomustine)   | developmental     | FR                  | 13010-47-4          | 1-Jul-90            |                              |
| 1-(2-Chloroethyl)-3-(4-methylcyclohexyl)-1-nitrosourea (Methyl-CCNU)                                    | cancer            | SQE                 | 13909-09-6          | 1-Oct-88            |                              |
| Chloroform  | cancer            | SQE                 | 67-66-3             | 1-Oct-87            | 20 (oral)<br>40 (inhalation) |
| Chloroform  | developmental     | <a href="#">LC</a>  | 67-66-3             | 7-Aug-09            |                              |
| Chloromethyl methyl ether (technical grade)   | cancer            | LC                  | 107-30-2            | 27-Feb-87           | <a href="#">0.3</a>          |
| 3-Chloro-2-methylpropene  | cancer            | SQE                 | 563-47-3            | 1-Jul-89            | <a href="#">5</a>            |
| 1-Chloro-4-nitrobenzene   | cancer            | <a href="#">SQE</a> | 100-00-5            | 29-Oct-99           |                              |
| 4-Chloro- <i>o</i> -phenylenediamine  | cancer            | SQE                 | 95-83-0             | 1-Jan-88            | <a href="#">40</a>           |
| Chloroprene   | cancer            | <a href="#">AB</a>  | 126-99-8            | 2-Jun-00            |                              |
| 2-Chloropropionic acid  | male              | <a href="#">LC</a>  | 598-78-7            | 7-Aug-09            |                              |
| Chloroethalonil   | cancer            | SQE                 | 1897-45-6           | 1-Jan-89            | <a href="#">41</a>           |
| <i>p</i> -Chloro- <i>o</i> -toluidine   | cancer            | AB                  | 95-69-2             | 1-Jan-90            | <a href="#">3</a>            |
| <i>p</i> -Chloro- <i>o</i> -toluidine, strong acid salts of   | cancer            | <a href="#">AB</a>  | ---                 | 15-May-98           |                              |
| <i>p</i> -Chloro- <i>o</i> -toluidine, hydrochloride  |                   |                     |                     |                     | <a href="#">3.3</a>          |
| 5-Chloro- <i>o</i> -toluidine and its strong acid salts   | cancer            | <a href="#">SQE</a> | ---                 | 24-Oct-97           |                              |
| Chlorotrianisene  | cancer            | FR                  | 569-57-3            | 1-Sep-96            |                              |
| Chlorozotocin   | cancer            | AB                  | 54749-90-5          | 1-Jan-92            | <a href="#">0.003</a>        |

|   |  |                     |                           |           |                             |
|---|--|---------------------|---------------------------|-----------|-----------------------------|
| <a href="#">Chlorsulfuron [Click here for the basis for removal of male reproductive toxicity endpoint]</a> | developmental, female, <del>male</del> | <a href="#">AB</a>  | 64902-72-3                | 14-May-99 |                             |
| Chromium (hexavalent compounds)   | cancer                                 | LC                  | ---                       | 27-Feb-87 | 0.001 (inhalation)          |
| Chromium (hexavalent compounds)   | developmental, female, male            | <a href="#">SQE</a> | ---                       | 19-Dec-08 | <a href="#">8.2 (oral)</a>  |
| Chrysene  | cancer                                 | AB                  | 218-01-9                  | 1-Jan-90  | <a href="#">0.35 (oral)</a> |
| C.I. Acid Red 114   | cancer                                 | AB                  | 6459-94-5                 | 1-Jul-92  |                             |
| C.I. Basic Red 9 monohydrochloride  | cancer                                 | SQE                 | 569-61-9                  | 1-Jul-89  | <a href="#">3</a>           |
| C.I. Direct Blue 15   | cancer                                 | <a href="#">AB</a>  | 2429-74-5                 | 26-Aug-97 |                             |
| C.I. Direct Blue 218  | cancer                                 | <a href="#">AB</a>  | 28407-37-6                | 26-Aug-97 | <a href="#">50</a>          |
| C.I. Disperse Yellow 3  | cancer                                 | <a href="#">SQE</a> | 2832-40-8                 | 8-Feb-13  | -                           |
| C.I. Solvent Yellow 14  | cancer                                 | <a href="#">AB</a>  | 842-07-9                  | 15-May-98 |                             |
| Ciclosporin (Cyclosporin A; Cyclosporine)   | cancer                                 | AB                  | 59865-13-3;<br>79217-60-0 | 1-Jan-92  |                             |
| Cidofovir   | cancer, developmental, female, male    | <a href="#">FR</a>  | 113852-37-2               | 29-Jan-99 |                             |
| Cinnamyl anthranilate   | cancer                                 | SQE                 | 87-29-6                   | 1-Jul-89  | <a href="#">200</a>         |
| Cisplatin   | cancer                                 | SQE                 | 15663-27-1                | 1-Oct-88  |                             |
| Citrus Red No. 2  | cancer                                 | LC                  | 6358-53-8                 | 1-Oct-89  |                             |
| Cladribine  | developmental                          | FR                  | 4291-63-8                 | 1-Sep-96  |                             |
| Clarithromycin  | developmental                          | <a href="#">FR</a>  | 81103-11-9                | 1-May-97  |                             |
| Clobetasol propionate   | developmental, female                  | <a href="#">FR</a>  | 25122-46-7                | 15-May-98 |                             |
| Clofibrate  | cancer                                 | FR                  | 637-07-0                  | 1-Sep-96  |                             |
| Clomiphene citrate  | cancer                                 | <a href="#">FR</a>  | 50-41-9                   | 24-May-13 |                             |
| Clomiphene citrate  | developmental                          | FR                  | 50-41-9                   | 1-Apr-90  |                             |

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| Clorazepate dipotassium  | developmental            | FR                 | 57109-90-7 | 1-Oct-92  |     |
| Cobalt metal powder  | cancer                   | AB                 | 7440-48-4  | 1-Jul-92  |     |
| Cobalt [II] oxide  | cancer                   | AB                 | 1307-96-6  | 1-Jul-92  |     |
| Cobalt sulfate   | cancer                   | <a href="#">LC</a> | 10124-43-3 | 20-May-05 |     |
| Cobalt sulfate heptahydrate  | cancer                   | <a href="#">AB</a> | 10026-24-1 | 2-Jun-00  |     |
| Cocaine  | developmental,<br>female | SQE                | 50-36-2    | 1-Jul-89  |     |
| Coconut oil diethanolamine condensate<br>(cocamide diethanolamine) | cancer                   | <a href="#">LC</a> | 68603-42-9 | 22-Jun-12 |     |
| Codeine phosphate  | developmental            | <a href="#">FR</a> | 52-28-8    | 15-May-98 |     |
| Coke oven emissions  | cancer                   | LC                 | ---        | 27-Feb-87 | 0.3 |
| Colchicine   | developmental,<br>male   | FR                 | 64-86-8    | 1-Oct-92  |     |
| Conjugated estrogens   | cancer                   | LC                 | ---        | 27-Feb-87 |     |

|  |               |                    |                          |                          |                   |
|--|---------------|--------------------|--------------------------|--------------------------|-------------------|
| Conjugated estrogens   | developmental | FR                 | ---                      | 1-Apr-90                 |                   |
| Creosotes  | cancer        | SQE                | ---                      | 1-Oct-88                 |                   |
| <i>p</i> -Cresidine  | cancer        | SQE                | 120-71-8                 | 1-Jan-88                 | <a href="#">5</a> |
| Cumene   | cancer        | <a href="#">AB</a> | 98-82-8                  | 6-Apr-10                 |                   |
| Cupferron  | cancer        | SQE                | 135-20-6                 | 1-Jan-88                 | <a href="#">3</a> |
| Cyanazine  | developmental | FR                 | 21725-46-2               | 1-Apr-90                 |                   |
| Cycasin  | cancer        | SQE                | 14901-08-7               | 1-Jan-88                 |                   |
| Cycloate   | developmental | <a href="#">AB</a> | 1134-23-2                | 19-Mar-99                |                   |
| <a href="#">Cyclohexanol Delisted January 25, 2002</a><br><a href="#">[Click here for the basis for delisting]</a> | male          | <a href="#">AB</a> | <a href="#">408-93-0</a> | <a href="#">6-Nov-98</a> |                   |
| Cycloheximide  | developmental | FR                 | 66-81-9                  | 1-Jan-89                 |                   |

|                              |                                |   |            |           |                      |
|------------------------------|--------------------------------|---|------------|-----------|----------------------|
| Cyclopenta[cd]pyrene         | cancer                         | <a href="#">LC</a>                          | 27208-37-3 | 29-Apr-11 | -                    |
| Cyclophosphamide (anhydrous) | cancer                         | LC  | 50-18-0    | 27-Feb-87 | <a href="#">1</a>    |
| Cyclophosphamide (anhydrous) | developmental,<br>female, male | SQE -<br>developmental<br>FR - female, male | 50-18-0    | 1-Jan-89  | -                    |
| Cyclophosphamide (hydrated)  | cancer                         | LC  | 6055-19-2  | 27-Feb-87 | <a href="#">1</a>    |
| Cyclophosphamide (hydrated)  | developmental,<br>female, male | SQE -<br>developmental<br>FR - female, male | 6055-19-2  | 1-Jan-89  |                      |
| Cyhexatin                    | developmental                  | FR  | 13121-70-5 | 1-Jan-89  |                      |
| Cytarabine                   | developmental                  | SQE   | 147-94-4   | 1-Jan-89  |                      |
| Cytembena                    | cancer                         | <a href="#">AB</a>                          | 21739-91-3 | 15-May-98 |                      |
|                              |                                |   |            |           |                      |
| D&C Orange No. 17            | cancer                         | AB  | 3468-63-1  | 1-Jul-90  |                      |
| D&C Red No. 8                | cancer                         | AB  | 2092-56-0  | 1-Oct-90  |                      |
| D&C Red No. 9                | cancer                         | AB  | 5160-02-1  | 1-Jul-90  | <a href="#">100</a>  |
| D&C Red No. 19               | cancer                         | AB  | 81-88-9    | 1-Jul-90  |                      |
| Dacarbazine                  | cancer                         | SQE   | 4342-03-4  | 1-Jan-88  | <a href="#">0.01</a> |
| Dacarbazine                  | developmental                  | <a href="#">FR</a>                          | 4342-03-4  | 29-Jan-99 |                      |

|   |               |     |            |          |                    |
|---|---------------|-----|------------|----------|--------------------|
| Daminozide                                      | cancer        | AB  | 1596-84-5  | 1-Jan-90 | <a href="#">40</a> |
| Danazol   | developmental | FR  | 17230-88-5 | 1-Apr-90 |                    |
| Dantron (Chrysazin; 1,8-Dihydroxyanthraquinone) | cancer        | AB  | 117-10-2   | 1-Jan-92 | <a href="#">9</a>  |
| Daunomycin                                      | cancer        | SQE | 20830-81-3 | 1-Jan-88 |                    |
| Daunorubicin hydrochloride                      | developmental | FR  | 23541-50-6 | 1-Jul-90 |                    |

|  |                             |                    |                          |                           |                                     |
|--|-----------------------------|--------------------|--------------------------|---------------------------|-------------------------------------|
| <a href="#">2,4-D butyric acid [Click here for the basis for the removal of developmental toxicity endpoint]</a> | developmental, male         | <a href="#">AB</a> | 94-82-6                  | 18-Jun-99                 | <a href="#">910</a>                 |
| DDD (Dichlorodiphenyl-dichloroethane)  | cancer                      | SQE                | 72-54-8                  | 1-Jan-89                  | 2<br>(DDT, DDE, DDD in combination) |
| DDE (Dichlorodiphenyl-dichloroethylene)  | cancer                      | SQE                | 72-55-9                  | 1-Jan-89                  | 2<br>(DDT, DDE, DDD in combination) |
| DDT (Dichlorodiphenyl-trichloroethane)   | cancer                      | SQE                | 50-29-3                  | 1-Oct-87                  | 2<br>(DDT, DDE, DDD in combination) |
| o,p'-DDT   | developmental, female, male | <a href="#">AB</a> | 789-02-6                 | 15-May-98                 |                                     |
| p,p'-DDT   | developmental, female, male | <a href="#">AB</a> | 50-29-3                  | 15-May-98                 |                                     |
| DDVP (Dichlorvos)  | cancer                      | SQE                | 62-73-7                  | 1-Jan-89                  | 2                                   |
| <a href="#">2,4-DP (dichloroprop) Delisted January 25, 2002 [Click here for delisting]</a>                       | developmental               | <a href="#">AB</a> | <a href="#">420-36-5</a> | <a href="#">27-Apr-99</a> |                                     |
| Demeclocycline hydrochloride (internal use)  | developmental               | FR                 | 64-73-3                  | 1-Jan-92                  |                                     |
| N,N'-Diacetylbenzidine   | cancer                      | LC                 | 613-35-4                 | 1-Oct-89                  |                                     |
| 2,4-Diaminoanisole   | cancer                      | FR                 | 615-05-4                 | 1-Oct-90                  | <a href="#">30</a>                  |
| 2,4-Diaminoanisole sulfate   | cancer                      | SQE                | 39156-41-7               | 1-Jan-88                  | <a href="#">50</a>                  |
| 4,4'-Diaminodiphenyl ether (4,4'-Oxydianiline)   | cancer                      | SQE                | 101-80-4                 | 1-Jan-88                  | <a href="#">5</a>                   |
| 2,4-Diaminotoluene   | cancer                      | SQE                | 95-80-7                  | 1-Jan-88                  | <a href="#">0.2</a>                 |
| Diaminotoluene (mixed)   | cancer                      | AB                 | ---                      | 1-Jan-90                  |                                     |
| Diazepam   | developmental               | FR                 | 439-14-5                 | 1-Jan-92                  |                                     |
| Diazoaminobenzene  | cancer                      | <a href="#">LC</a> | 136-35-6                 | 20-May-05                 |                                     |

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|--|---|--------------------|------------|-----------|--|
| Diazoxide  | developmental                           | <a href="#">FR</a> | 364-98-7   | 27-Feb-01 |  |
| Dibenz[a,h]acridine  | cancer                                  | SQE                | 226-36-8   | 1-Jan-88  |  |
| Dibenz[a,j]acridine  | cancer                                  | SQE                | 224-42-0   | 1-Jan-88  |  |
| Dibenz[a,h]anthracene                                      | cancer                                  | SQE                | 53-70-3    | 1-Jan-88  | <a href="#">0.2</a>  |
| 7H-Dibenzo[c,g]carbazole                                   | cancer                                  | SQE                | 194-59-2   | 1-Jan-88  | <a href="#">0.0030 (oral)</a>                                  |
| Dibenzo[a,e]pyrene   | cancer                                  | SQE                | 192-65-4   | 1-Jan-88  |  |
| Dibenzo[a,h]pyrene   | cancer                                  | SQE                | 189-64-0   | 1-Jan-88  | <a href="#">0.0054 (oral)</a>                                  |
| Dibenzo[a,i]pyrene   | cancer                                  | SQE                | 189-55-9   | 1-Jan-88  | <a href="#">0.0050 (oral)</a>                                  |
| Dibenzo[a,l]pyrene   | cancer                                  | SQE                | 191-30-0   | 1-Jan-88  |  |
| Dibromoacetic acid   | cancer                                  | <a href="#">AB</a> | 631-64-1   | 17-Jun-08 |  |
| Dibromoacetonitrile  | cancer                                  | <a href="#">AB</a> | 3252-43-5  | 3-May-11  | -  |
| 1,2-Dibromo-3-chloropropane (DBCP)                         | cancer                                  | FR                 | 96-12-8    | 1-Jul-87  | 0.1  |
| 1,2-Dibromo-3-chloropropane (DBCP)                         | male                                    | LC                 | 96-12-8    | 27-Feb-87 | <a href="#">3.1 (oral)</a><br><a href="#">4.3 (inhalation)</a> |
| 2,3-Dibromo-1-propanol                                     | cancer                                  | AB                 | 96-13-9    | 1-Oct-94  |  |
| Dichloroacetic acid  | cancer                                  | AB                 | 79-43-6    | 1-May-96  |  |
| <a href="#">Dichloroacetic acid</a>                        | <a href="#">developmental</a> ,<br>male | <a href="#">AB</a> | 79-43-6    | 7-Aug-09  |  |
| <i>p</i> -Dichlorobenzene                                  | cancer                                  | SQE                | 106-46-7   | 1-Jan-89  | 20   |
| 3,3'-Dichlorobenzidine                                     | cancer                                  | SQE                | 91-94-1    | 1-Oct-87  | 0.6  |
| 3,3'-Dichlorobenzidine dihydrochloride                     | cancer                                  | <a href="#">AB</a> | 612-83-9   | 15-May-98 |  |
| 1,1-Dichloro-2,2-bis( <i>p</i> -chloropheny)ethylene (DDE) | developmental,<br>male                  | <a href="#">AB</a> | 72-55-9    | 30-Mar-10 |  |
| 1,4-Dichloro-2-butene                                      | cancer                                  | AB                 | 764-41-0   | 1-Jan-90  |  |
| 3,3'-Dichloro-4,4'-diamino-diphenyl ether                  | cancer                                  | SQE                | 28434-86-8 | 1-Jan-88  |  |
| 1,1-Dichloroethane   | cancer                                  | AB                 | 75-34-3    | 1-Jan-90  | <a href="#">100</a>  |



|  |                        |                     |                    |                     |                                    |
|--|------------------------|---------------------|--------------------|---------------------|------------------------------------|
| Dichloromethane (Methylene chloride)   | cancer                 | SQE                 | 75-09-2            | 1-Apr-88            | 50<br>200 (inhalation)             |
| Dichlorophene  | developmental          | <a href="#">AB</a>  | 97-23-4            | 27-Apr-99           |                                    |
| Dichlorphenamide   | developmental          | <a href="#">FR</a>  | 120-97-8           | 27-Feb-01           |                                    |
| Diclofop-methyl  | cancer                 | <a href="#">AB</a>  | 51338-27-3         | 6-Apr-10            |                                    |
| Diclofop methyl  | developmental          | <a href="#">AB</a>  | 51338-27-3         | 5-Mar-99            |                                    |
| 1,2-Dichloropropane  | cancer                 | AB                  | 78-87-5            | 1-Jan-90            | <a href="#">9.7</a>                |
| 1,3-Dichloro-2-propanol (1,3-DCP)  | cancer                 | <a href="#">SQE</a> | 96-23-1            | 8-Oct-10            |                                    |
| 1,3-Dichloropropene  | cancer                 | SQE                 | 542-75-6           | 1-Jan-89            |                                    |
| Dicumarol  | developmental          | FR                  | 66-76-2            | 1-Oct-92            |                                    |
| Dieldrin   | cancer                 | SQE                 | 60-57-1            | 1-Jul-88            | 0.04                               |
| <a href="#">Dienestrol Delisted January 4, 2013 [Click here for the basis for delisting]</a> | <del>cancer</del>      | <a href="#">LC</a>  | <del>84-17-3</del> | <del>1-Jan-90</del> |                                    |
| Diepoxybutane  | cancer                 | SQE                 | 1464-53-5          | 1-Jan-88            |                                    |
| Diesel engine exhaust  | cancer                 | AB                  | ---                | 1-Oct-90            |                                    |
| Diethanolamine   | cancer                 | <a href="#">LC</a>  | 111-42-2           | 22-Jun-12           |                                    |
| Di(2-ethylhexyl)phthalate  | cancer                 | SQE                 | 117-81-7           | 1-Jan-88            | <a href="#">310</a>                |
| Di(2-ethylhexyl)phthalate  | developmental,<br>male | <a href="#">AB</a>  | 117-81-7           | 24-Oct-03           |                                    |
| Adult <sup>b</sup>   |                        | -                   |                    |                     | <a href="#">4200 (intravenous)</a> |
| Infant boys, age 29 days to 24 months <sup>b</sup>   |                        | -                   |                    |                     | <a href="#">600 (intravenous)</a>  |
| Neonatal infant boys, age 0 to 28 days <sup>b</sup>  |                        | -                   |                    |                     | <a href="#">210 (intravenous)</a>  |
| Adult <sup>b</sup>   |                        | -                   |                    |                     | <a href="#">410 (oral)</a>         |
| Infant boys, age 29 days to 24 months <sup>b</sup>   |                        | -                   |                    |                     | <a href="#">58 (oral)</a>          |
| Neonatal infant boys, age 0 to 28 days <sup>b</sup>  |                        | -                   |                    |                     | <a href="#">20 (oral)</a>          |

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| 1,2-Diethylhydrazine   | cancer                   | SQE                | 1615-80-1                 | 1-Jan-88  |                       |
| Diethylstilbestrol (DES)   | cancer                   | LC                 | 56-53-1                   | 27-Feb-87 | <a href="#">0.002</a> |
| Diethylstilbestrol (DES)   | developmental            | FR                 | 56-53-1                   | 1-Jul-87  |                       |
| Diethyl sulfate  | cancer                   | SQE                | 64-67-5                   | 1-Jan-88  |                       |
| Diflunisal   | developmental,<br>female | <a href="#">FR</a> | 22494-42-4                | 29-Jan-99 |                       |
| Diglycidyl ether   | male                     | <a href="#">LC</a> | 2238-07-5                 | 7-Aug-09  |                       |
| Diglycidyl resorcinol ether (DGRE)   | cancer                   | SQE                | 101-90-6                  | 1-Jul-89  | <a href="#">0.4</a>   |
| Dihydroergotamine mesylate   | developmental            | <a href="#">FR</a> | 6190-39-2                 | 1-May-97  |                       |
| Dihydrosafrole   | cancer                   | SQE                | 94-58-6                   | 1-Jan-88  | <a href="#">20</a>    |
| Diisopropyl sulfate  | cancer                   | AB                 | 2973-10-6                 | 1-Apr-93  |                       |
| Di-isodecyl phthalate (DIDP)   | developmental            | <a href="#">AB</a> | 68515-49-1/<br>26761-40-0 | 20-Apr-07 | <a href="#">2200</a>  |
| Diltiazem hydrochloride  | developmental            | <a href="#">FR</a> | 33286-22-5                | 27-Feb-01 |                       |
| 3,3'-Dimethoxybenzidine (o-Dianisidine)  | cancer                   | SQE                | 119-90-4                  | 1-Jan-88  | <a href="#">0.15</a>  |
| 3,3'-Dimethoxybenzidine dihydrochloride  | cancer                   | AB                 | 20325-40-0                | 1-Oct-90  | <a href="#">0.19</a>  |
| 3,3'-Dimethoxybenzidine-based dyes<br>metabolized to 3,3'-dimethoxybenzidine                   | cancer                   | <a href="#">AB</a> | ---                       | 11-Jun-04 |                       |
| N,N-Dimethylacetamide  | developmental            | <a href="#">LC</a> | 127-19-5                  | 21-May-10 |                       |
| 4-Dimethylaminoazobenzene  | cancer                   | SQE                | 60-11-7                   | 1-Jan-88  | <a href="#">0.2</a>   |
| <i>trans</i> -2-[(Dimethylamino)methylimino]-5-<br>[2-(5-nitro-2-furyl)vinyl]-1,3,4-oxadiazole | cancer                   | SQE                | 55738-54-0                | 1-Jan-88  | <a href="#">2</a>     |
| 7,12-Dimethylbenz(a)anthracene   | cancer                   | AB                 | 57-97-6                   | 1-Jan-90  | <a href="#">0.003</a> |
| 3,3'-Dimethylbenzidine (ortho-Tolidine)  | cancer                   | SQE                | 119-93-7                  | 1-Jan-88  | <a href="#">0.044</a> |
| 3,3'-Dimethylbenzidine dihydrochloride   | cancer                   | AB                 | 612-82-8                  | 1-Apr-92  | <a href="#">0.059</a> |

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|---|--------------------------------|---------------------|-------------|-----------|-----------------------------|
| 3,3'-Dimethylbenzidine-based dyes metabolized to 3,3'-dimethylbenzidine | cancer                         | <a href="#">AB</a>  | ---         | 11-Jun-04 |                             |
| Dimethylcarbamoyl chloride  | cancer                         | SQE                 | 79-44-7     | 1-Jan-88  | <a href="#">0.05</a>        |
| 1,1-Dimethylhydrazine (UDMH)  | cancer                         | LC                  | 57-14-7     | 1-Oct-89  |                             |
| 1,2-Dimethylhydrazine   | cancer                         | SQE                 | 540-73-8    | 1-Jan-88  | <a href="#">0.001</a>       |
| 2,6-Dimethyl-N-nitrosomorpholine (DMNM)                                 | cancer                         | <a href="#">SQE</a> | 1456-28-6   | 8-Feb-13  | -                           |
| Dimethyl sulfate  | cancer                         | SQE                 | 77-78-1     | 1-Jan-88  |                             |
| Dimethylvinylchloride   | cancer                         | SQE                 | 513-37-1    | 1-Jul-89  | <a href="#">20</a>          |
| Di- <i>n</i> -butyl phthalate (DBP)                                     | developmental,<br>female, male | <a href="#">AB</a>  | 84-74-2     | 2-Dec-05  | <a href="#">8.7</a>         |
| Di- <i>n</i> -hexyl phthalate (DnHP)                                    | female, male                   | <a href="#">AB</a>  | 84-75-3     | 2-Dec-05  | <a href="#">2200 (oral)</a> |
| <i>m</i> -Dinitrobenzene  | male                           | AB                  | 99-65-0     | 1-Jul-90  | <a href="#">38</a>          |
| <i>o</i> -Dinitrobenzene  | male                           | AB                  | 528-29-0    | 1-Jul-90  |                             |
| <i>p</i> -Dinitrobenzene  | male                           | AB                  | 100-25-4    | 1-Jul-90  |                             |
| 3,7-Dinitrofluoranthene   | cancer                         | <a href="#">AB</a>  | 105735-71-5 | 26-Aug-97 |                             |
| 3,9-Dinitrofluoranthene   | cancer                         | <a href="#">AB</a>  | 22506-53-2  | 26-Aug-97 |                             |
| 1,3-Dinitropyrene   | cancer                         | <a href="#">LC</a>  | 75321-20-9  | 2-Nov-12  | -                           |
| 1,6-Dinitropyrene   | cancer                         | AB                  | 42397-64-8  | 1-Oct-90  |                             |
| 1,8-Dinitropyrene   | cancer                         | AB                  | 42397-65-9  | 1-Oct-90  |                             |
| 2,4-Dinitrotoluene  | cancer                         | SQE                 | 121-14-2    | 1-Jul-88  | 2                           |
| 2,4-Dinitrotoluene  | male                           | <a href="#">AB</a>  | 121-14-2    | 20-Aug-99 |                             |
| 2,6-Dinitrotoluene  | cancer                         | SQE                 | 606-20-2    | 1-Jul-95  |                             |
| 2,6-Dinitrotoluene  | male                           | <a href="#">AB</a>  | 606-20-2    | 20-Aug-99 |                             |
| Dinitrotoluene (technical grade)  | female, male                   | <a href="#">AB</a>  | ---         | 20-Aug-99 |                             |
| Dinitrotoluene mixture, 2,4-/2,6-                                       | cancer                         | AB                  | ---         | 1-May-96  |                             |
| Dinocap   | developmental                  | FR                  | 39300-45-3  | 1-Apr-90  |                             |

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| Dinoseb  | developmental, male | FR                 | 88-85-7    | 1-Jan-89  |  |
| Di- <i>n</i> -propyl isocinchomeronate (MGK Repellent 326) | cancer              | AB                 | 136-45-8   | 1-May-96  |  |
| 1,4-Dioxane  | cancer              | SQE                | 123-91-1   | 1-Jan-88  | 30   |
| Diphenylhydantoin (Phenytoin)                              | cancer              | SQE                | 57-41-0    | 1-Jan-88  |  |
| Diphenylhydantoin (Phenytoin)                              | developmental       | SQE                | 57-41-0    | 1-Jul-87  |  |
| Diphenylhydantoin (Phenytoin), sodium salt                 | cancer              | SQE                | 630-93-3   | 1-Jan-88  |  |
| Direct Black 38 (technical grade)                          | cancer              | SQE                | 1937-37-7  | 1-Jan-88  | <a href="#">0.09</a>   |
| Direct Blue 6 (technical grade)                            | cancer              | SQE                | 2602-46-2  | 1-Jan-88  | <a href="#">0.09</a>   |
| Direct Brown 95 (technical grade)                          | cancer              | SQE                | 16071-86-6 | 1-Oct-88  | <a href="#">0.1</a>  |
| Disodium cyanodithioimidocarbonate                         | developmental       | <a href="#">AB</a> | 138-93-2   | 30-Mar-99 | <a href="#">56 (oral)<br/>170 (oral) as<br/>32% pesticidal<br/>formulation</a> |
| Disperse Blue 1  | cancer              | AB                 | 2475-45-8  | 1-Oct-90  | <a href="#">200</a>  |
| Diuron   | cancer              | <a href="#">AB</a> | 330-54-1   | 31-May-02 |  |
| Doxorubicin hydrochloride (Adriamycin)                     | cancer              | SQE                | 25316-40-9 | 1-Jul-87  |  |
| Doxorubicin hydrochloride (Adriamycin)                     | developmental, male | <a href="#">FR</a> | 25316-40-9 | 29-Jan-99 |  |
| Doxycycline (internal use)                                 | developmental       | FR                 | 564-25-0   | 1-Jul-90  |  |
| Doxycycline calcium (internal use)                         | developmental       | FR                 | 94088-85-4 | 1-Jan-92  |  |

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|--|---------------|--------------------|------------|----------|--|
| Doxycycline hyclate (internal use)     | developmental | FR                 | 24390-14-5 | 1-Oct-91 |  |
| Doxycycline monohydrate (internal use) | developmental | FR                 | 17086-28-1 | 1-Oct-91 |  |
| Emissions from combustion of coal      | cancer        | <a href="#">AB</a> | ---        | 7-Aug-13 |  |

|  |                          |                     |                           |           |  |
|--|--------------------------|---------------------|---------------------------|-----------|--|
| Endrin   | developmental            | <a href="#">AB</a>  | 72-20-8                   | 15-May-98 |  |
| Environmental tobacco smoke (ETS)                          | developmental            | <a href="#">SQE</a> | ---                       | 9-Jun-06  |  |
| Epichlorohydrin  | cancer                   | SQE                 | 106-89-8                  | 1-Oct-87  | 9  |
| Epichlorohydrin  | male                     | AB                  | 106-89-8                  | 1-Sep-96  |  |
| Epoiconazole   | cancer                   | <a href="#">AB</a>  | 135319-73-2               | 15-Apr-11 |  |
| Ergotamine tartrate  | developmental            | FR                  | 379-79-3                  | 1-Apr-90  |  |
| Erionite   | cancer                   | SQE                 | 12510-42-8;<br>66733-21-9 | 1-Oct-88  |  |
| Estradiol 17B  | cancer                   | SQE                 | 50-28-2                   | 1-Jan-88  | <a href="#">0.02</a>   |
| Estragole  | cancer                   | <a href="#">SQE</a> | 140-67-0                  | 29-Oct-99 |  |
| Estrogens, steroidal                                       | cancer                   | <a href="#">LC</a>  | ---                       | 19-Aug-05 |  |
| Estrogen-progestogen (combined) used as menopausal therapy | cancer                   | <a href="#">LC</a>  | ---                       | 4-Nov-11  |  |
| Estrone  | cancer                   | SQE                 | 53-16-7                   | 1-Jan-88  |  |
| Estropipate  | cancer,<br>developmental | <a href="#">FR</a>  | 7280-37-7                 | 26-Aug-97 |  |
| Ethanol in alcoholic beverages                             | cancer                   | <a href="#">LC</a>  | ---                       | 29-Apr-11 | -  |
| Ethinylestradiol   | cancer                   | SQE                 | 57-63-6                   | 1-Jan-88  |  |
| Ethionamide  | developmental            | <a href="#">FR</a>  | 536-33-4                  | 26-Aug-97 |  |
| Ethoprop   | cancer                   | <a href="#">AB</a>  | 13194-48-4                | 27-Feb-01 |  |
| Ethyl acrylate   | cancer                   | SQE                 | 140-88-5                  | 1-Jul-89  |  |
| Ethyl alcohol in alcoholic beverages                       | developmental            | SQE                 | ---                       | 1-Oct-87  |  |
| Ethylbenzene   | cancer                   | <a href="#">AB</a>  | 100-41-4                  | 11-Jun-04 | <a href="#">54 (inhalation)</a><br><a href="#">41 (oral)</a>               |
| Ethyl-tert-butyl ether                                     | male                     | <a href="#">LC</a>  | 637-92-3                  | 18-Dec-09 |  |
| Ethyl dipropylthiocarbamate                                | developmental            | <a href="#">AB</a>  | 759-94-4                  | 27-Apr-99 | <a href="#">700 (oral and inhalation)</a><br><a href="#">6700 (dermal)</a> |

|   |                          |                    |            |           |  |
|---|--------------------------|--------------------|------------|-----------|--|
| Ethyl-4,4'-dichlorobenzilate                          | cancer                   | AB                 | 510-15-6   | 1-Jan-90  | <a href="#">7</a>  |
| Ethylene dibromide                                    | cancer                   | FR                 | 106-93-4   | 1-Jul-87  | 0.2 (oral)<br>3 (inhalation)                                     |
| Ethylene dibromide                                    | developmental,<br>male   | <a href="#">AB</a> | 106-93-4   | 15-May-98 |  |
| Ethylene dichloride (1,2-Dichloroethane)              | cancer                   | SQE                | 107-06-2   | 1-Oct-87  | 10   |
| Ethylene glycol monoethyl ether                       | developmental,<br>male   | SQE                | 110-80-5   | 1-Jan-89  | <a href="#">750 (oral)</a><br><a href="#">960 (inhalation)</a>   |
| Ethylene glycol monoethyl ether acetate               | developmental,<br>male   | AB                 | 111-15-9   | 1-Jan-93  | <a href="#">1100 (oral)</a><br><a href="#">1400 (inhalation)</a> |
| Ethylene glycol monomethyl ether                      | developmental,<br>male   | SQE                | 109-86-4   | 1-Jan-89  | <a href="#">63 (oral)</a>  |
| Ethylene glycol monomethyl ether acetate              | developmental,<br>male   | AB                 | 110-49-6   | 1-Jan-93  | <a href="#">98 (oral)</a>  |
| Ethyleneimine   | cancer                   | SQE                | 151-56-4   | 1-Jan-88  | <a href="#">0.01</a>   |
| Ethylene oxide  | cancer                   | FR                 | 75-21-8    | 1-Jul-87  | 2  |
| Ethylene oxide  | female                   | LC                 | 75-21-8    | 27-Feb-87 | 20   |
| Ethylene oxide  | developmental,<br>male   | <a href="#">LC</a> | 75-21-8    | 7-Aug-09  |  |
| Ethylene thiourea                                     | cancer                   | AB                 | 96-45-7    | 1-Jan-88  | <a href="#">20</a>   |
| Ethylene thiourea                                     | developmental            | SQE                | 96-45-7    | 1-Jan-93  |  |
| 2-Ethylhexanoic acid                                  | developmental            | <a href="#">LC</a> | 149-57-5   | 7-Aug-09  |  |
| Ethyl methanesulfonate                                | cancer                   | SQE                | 62-50-0    | 1-Jan-88  |  |
| Etodolac  | developmental,<br>female | <a href="#">FR</a> | 41340-25-4 | 20-Aug-99 |  |
| Etoposide   | cancer                   | <a href="#">LC</a> | 33419-42-0 | 4-Nov-11  |  |
| Etoposide   | developmental            | FR                 | 33419-42-0 | 1-Jul-90  |  |
| Etoposide in combination with cisplatin and bleomycin | cancer                   | <a href="#">LC</a> | ---        | 4-Nov-11  |  |

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| Etretinate  | developmental            | SQE                | 54350-48-0  | 1-Jul-87  |                     |
|   |                          |                    |             |           |                     |
| Fenoxaprop ethyl                                  | developmental            | <a href="#">AB</a> | 66441-23-4  | 26-Mar-99 |                     |
| Fenoxycarb  | cancer                   | <a href="#">AB</a> | 72490-01-8  | 2-Jun-00  |                     |
| Filgrastim  | developmental            | <a href="#">FR</a> | 121181-53-1 | 27-Feb-01 |                     |
| Fluazifop butyl                                   | developmental            | <a href="#">AB</a> | 69806-50-4  | 6-Nov-98  |                     |
| Flunisolide                                       | developmental,<br>female | <a href="#">FR</a> | 3385-03-3   | 15-May-98 |                     |
| Fluorouracil                                      | developmental            | SQE                | 51-21-8     | 1-Jan-89  |                     |
| Fluoxymesterone                                   | developmental            | FR                 | 76-43-7     | 1-Apr-90  |                     |
| Flurazepam hydrochloride                          | developmental            | FR                 | 1172-18-5   | 1-Oct-92  |                     |
| Flurbiprofen                                      | developmental,<br>female | <a href="#">FR</a> | 5104-49-4   | 20-Aug-99 |                     |
| Flutamide   | developmental            | FR                 | 13311-84-7  | 1-Jul-90  |                     |
| Fluticasone propionate                            | developmental            | <a href="#">FR</a> | 80474-14-2  | 15-May-98 |                     |
| Fluvalinate                                       | developmental            | <a href="#">AB</a> | 69409-94-5  | 6-Nov-98  |                     |
| Folpet  | cancer                   | SQE                | 133-07-3    | 1-Jan-89  | 200                 |
| Formaldehyde (gas)                                | cancer                   | SQE                | 50-00-0     | 1-Jan-88  | 40                  |
| 2-(2-Formylhydrazino)-4-(5-nitro-2-furyl)thiazole | cancer                   | SQE                | 3570-75-0   | 1-Jan-88  | <a href="#">0.3</a> |
| Fumonisin B <sub>1</sub>                          | cancer                   | <a href="#">AB</a> | 116355-83-0 | 14-Nov-03 |                     |
| Furan   | cancer                   | AB                 | 110-00-9    | 1-Oct-93  |                     |
| Furazolidone                                      | cancer                   | AB                 | 67-45-8     | 1-Jan-90  |                     |
| Furmecyclox                                       | cancer                   | AB                 | 60568-05-0  | 1-Jan-90  | 20                  |
| Fusarin C   | cancer                   | SQE                | 79748-81-5  | 1-Jul-95  |                     |
|   |                          |                    |             |           |                     |



|   |                                   |                    |             |           |                      |
|---|-----------------------------------|--------------------|-------------|-----------|----------------------|
| Gallium arsenide  | cancer                            | <a href="#">LC</a> | 1303-00-0   | 1-Aug-08  |                      |
| Ganciclovir   | cancer,<br>developmental,<br>male | <a href="#">FR</a> | 82410-32-0  | 26-Aug-97 |                      |
| Ganciclovir sodium  | developmental,<br>male            | <a href="#">FR</a> | 107910-75-8 | 26-Aug-97 |                      |
| Gasoline engine exhaust<br>(condensates/extracts)             | cancer                            | AB                 | ---         | 1-Oct-90  |                      |
| Gemfibrozil   | cancer                            | <a href="#">FR</a> | 25812-30-0  | 22-Dec-00 |                      |
| Gemfibrozil   | female, male                      | <a href="#">FR</a> | 25812-30-0  | 20-Aug-99 |                      |
| Glass wool fibers (inhalable and<br>biopersistent)            | cancer                            | AB                 | ---         | 1-Jul-90  |                      |
| Glu-P-1 (2-Amino-6-methyldipyrdo[1,2-<br>a:3',2'-d]imidazole) | cancer                            | AB                 | 67730-11-4  | 1-Jan-90  | <a href="#">0.1</a>  |
| Glu-P-2 (2-Aminodipyrdo[1,2-a:3',2'-<br>d]imidazole)          | cancer                            | AB                 | 67730-10-3  | 1-Jan-90  | <a href="#">0.5</a>  |
| Glycidaldehyde  | cancer                            | SQE                | 765-34-4    | 1-Jan-88  |                      |
| Glycidol  | cancer                            | AB                 | 556-52-5    | 1-Jul-90  | <a href="#">0.54</a> |
| Goserelin acetate   | developmental,<br>female, male    | <a href="#">FR</a> | 65807-02-5  | 26-Aug-97 |                      |
| Griseofulvin  | cancer                            | AB                 | 126-07-8    | 1-Jan-90  |                      |
| Gyromitrin (Acetaldehyde<br>methylformylhydrazone)            | cancer                            | SQE                | 16568-02-8  | 1-Jan-88  | <a href="#">0.07</a> |
|   |                                   |                    |             |           |                      |
| Halazepam   | developmental                     | FR                 | 23092-17-3  | 1-Jul-90  |                      |
| Halobetasol propionate  | developmental                     | <a href="#">FR</a> | 66852-54-8  | 20-Aug-99 |                      |
| Haloperidol   | developmental,<br>female          | <a href="#">FR</a> | 52-86-8     | 29-Jan-99 |                      |
| Halothane   | developmental                     | FR                 | 151-67-7    | 1-Sep-96  |                      |
| HC Blue 1   | cancer                            | SQE                | 2784-94-3   | 1-Jul-89  | <a href="#">10</a>   |
| Heptachlor  | cancer                            | SQE                | 76-44-8     | 1-Jul-88  | 0.2                  |

|  |                     |                    |            |           |                            |
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| Heptachlor   | developmental       | <a href="#">AB</a> | 76-44-8    | 20-Aug-99 |                            |
| Heptachlor epoxide   | cancer              | SQE                | 1024-57-3  | 1-Jul-88  | 0.08                       |
| Herbal remedies containing plant species of the genus Aristolochia | cancer              | <a href="#">LC</a> | ---        | 9-Jul-04  |                            |
| Hexachlorobenzene  | cancer              | SQE                | 118-74-1   | 1-Oct-87  | 0.4                        |
| Hexachlorobenzene  | developmental       | SQE                | 118-74-1   | 1-Jan-89  |                            |
| Hexachlorobutadiene  | cancer              | <a href="#">AB</a> | 87-68-3    | 3-May-11  | -                          |
| Hexachlorocyclohexane (technical grade)                            | cancer              | SQE                | ---        | 1-Oct-87  | 0.2                        |
| Hexachlorocyclohexane (alpha isomer)                               |                     |                    |            |           | 0.3                        |
| Hexachlorocyclohexane (beta isomer)                                |                     |                    |            |           | 0.5                        |
| Hexachlorocyclohexane (gamma isomer)                               |                     |                    |            |           | 0.6                        |
| Hexachlorodibenzodioxin  | cancer              | SQE                | 34465-46-8 | 1-Apr-88  | 0.0002                     |
| Hexachloroethane   | cancer              | AB                 | 67-72-1    | 1-Jul-90  | <a href="#">20</a>         |
| 2,4-Hexadienal (89% trans, trans isomer; 11% cis, trans isomer)    | cancer              | <a href="#">AB</a> | ---        | 4-Mar-05  |                            |
| Hexafluoroacetone  | male                | <a href="#">LC</a> | 684-16-2   | 1-Aug-08  |                            |
| Hexamethylphosphoramide  | cancer              | SQE                | 680-31-9   | 1-Jan-88  |                            |
| Hexamethylphosphoramide  | male                | AB                 | 680-31-9   | 1-Oct-94  |                            |
| Histrelin acetate  | developmental       | <a href="#">FR</a> | ---        | 15-May-98 |                            |
| Hydramethylnon   | developmental, male | <a href="#">AB</a> | 67485-29-4 | 5-Mar-99  | <a href="#">120 (oral)</a> |
| Hydrazine  | cancer              | SQE                | 302-01-2   | 1-Jan-88  | 0.04                       |
| Hydrazine sulfate  | cancer              | SQE                | 10034-93-2 | 1-Jan-88  | 0.2                        |
| Hydrazobenzene (1,2-Diphenylhydrazine)                             | cancer              | SQE                | 122-66-7   | 1-Jan-88  | <a href="#">0.8</a>        |
| Hydrogen cyanide (HCN) and cyanide salts (CN salts)                | male                | <a href="#">AB</a> | ---        | 5-Jul-13  | -                          |

|  |                     |                    |                             |                     |                           |
|--|---------------------|--------------------|-----------------------------|---------------------|---------------------------|
| Cyanide salts that readily dissociate in solution (expressed as cyanide) <sup>f</sup>                            |                     | -                  |                             |                     | <a href="#">9.8</a>       |
| Hydrogen cyanide <sup>f</sup>  |                     | -                  |                             |                     | <a href="#">10 (oral)</a> |
| Sodium cyanide <sup>f</sup>  |                     | -                  |                             |                     | <a href="#">19 (oral)</a> |
| Potassium cyanide <sup>f</sup>   |                     | -                  |                             |                     | <a href="#">25 (oral)</a> |
| 1-Hydroxyanthraquinone   | cancer              | <a href="#">LC</a> | 129-43-1                    | 27-May-05           |                           |
| Hydroxyurea  | developmental       | <a href="#">FR</a> | 127-07-1                    | 1-May-97            |                           |
|  |                     |                    |                             |                     |                           |
| Idarubicin hydrochloride   | developmental, male | <a href="#">FR</a> | 57852-57-0                  | 20-Aug-99           |                           |
| Ifosfamide   | developmental       | FR                 | 3778-73-2                   | 1-Jul-90            |                           |
| Iodine-131   | developmental       | SQE                | 10043-66-0                  | 1-Jan-89            |                           |
| Imazalil   | cancer              | <a href="#">AB</a> | 35554-44-0                  | 20-May-11           | <a href="#">11</a>        |
| Indeno [1,2,3-cd]pyrene  | cancer              | SQE                | 193-39-5                    | 1-Jan-88            |                           |
| Indium phosphide   | cancer              | <a href="#">AB</a> | 22398-80-7                  | 27-Feb-01           |                           |
| IQ (2-Amino-3-methylimidazo[4,5-f]quinoline)   | cancer              | AB                 | 76180-96-6                  | 1-Apr-90            | <a href="#">0.5</a>       |
| Iprodione  | cancer              | AB                 | 36734-19-7                  | 1-May-96            |                           |
| Iprovalicarb   | cancer              | <a href="#">AB</a> | 140923-17-7/<br>140923-25-7 | 1-Jun-07            |                           |
| Iron dextran complex   | cancer              | SQE                | 9004-66-4                   | 1-Jan-88            |                           |
| Isobutyl nitrite   | cancer              | AB                 | 542-56-3                    | 1-May-96            | <a href="#">7.4</a>       |
| Isoprene   | cancer              | AB                 | 78-79-5                     | 1-May-96            |                           |
| Isopyrazam   | cancer              | <a href="#">AB</a> | 881685-58-1                 | 24-Jul-12           |                           |
| <a href="#">Isosafrole Delisted December 8, 2006</a><br><a href="#">[Click here for the basis for delisting]</a> | <del>cancer</del>   | <a href="#">LC</a> | <del>120-58-1</del>         | <del>1-Oct-89</del> |                           |
| Isotretinoin   | developmental       | SQE                | 4759-48-2                   | 1-Jul-87            |                           |

|                         |                                |                    |             |           |                           |
|-------------------------|--------------------------------|--------------------|-------------|-----------|---------------------------|
| Isoxaflutole            | cancer                         | <a href="#">AB</a> | 141112-29-0 | 22-Dec-00 |                           |
| -                       | -                              | -                  | -           | -         |                           |
| Kresoxim-methyl         | cancer                         | <a href="#">AB</a> | 143390-89-0 | 3-Feb-12  |                           |
| -                       | -                              | -                  | -           | -         |                           |
| Lactofen                | cancer                         | SQE                | 77501-63-4  | 1-Jan-89  |                           |
| Lasiocarpine            | cancer                         | SQE                | 303-34-4    | 1-Apr-88  | <a href="#">0.09</a>      |
| Lead                    | developmental,<br>female, male | LC                 | ---         | 27-Feb-87 | 0.5                       |
| Lead and lead compounds | cancer                         | AB                 | ---         | 1-Oct-92  |                           |
| Lead                    |                                |                    |             |           | <a href="#">15 (oral)</a> |
| Lead acetate            | cancer                         | SQE                | 301-04-2    | 1-Jan-88  | <a href="#">23 (oral)</a> |
| Lead phosphate          | cancer                         | SQE                | 7446-27-7   | 1-Apr-88  | <a href="#">58 (oral)</a> |
| Lead subacetate         | cancer                         | LC                 | 1335-32-6   | 1-Oct-89  | <a href="#">41 (oral)</a> |
| Leather dust            | cancer                         | <a href="#">LC</a> | ---         | 29-Apr-11 | -                         |
| Leuprolide acetate      | developmental,<br>female, male | <a href="#">FR</a> | 74381-53-6  | 26-Aug-97 |                           |
| Levodopa                | developmental                  | <a href="#">FR</a> | 59-92-7     | 29-Jan-99 |                           |
| Levonorgestrel implants | female                         | <a href="#">FR</a> | 797-63-7    | 15-May-98 |                           |

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| Lindane and other hexachlorocyclohexane isomers | cancer        | LC                 | ---        | 1-Oct-89  |                     |
| Linuron   | developmental | <a href="#">AB</a> | 330-55-2   | 19-Mar-99 | <a href="#">460</a> |
| Lithium carbonate                               | developmental | FR                 | 554-13-2   | 1-Jan-91  |                     |
| Lithium citrate                                 | developmental | FR                 | 919-16-4   | 1-Jan-91  |                     |
| Lorazepam                                       | developmental | FR                 | 846-49-1   | 1-Jul-90  |                     |
| Lovastatin                                      | developmental | FR                 | 75330-75-5 | 1-Oct-92  |                     |
| Lynestrenol                                     | cancer        | <a href="#">AB</a> | 52-76-6    | 27-Feb-01 |                     |

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| -  | -             | -                   | -           | -         |                       |
| Malonaldehyde, sodium salt                             | cancer        | <a href="#">AB</a>  | 24382-04-5  | 29-Apr-11 |                       |
| Mancozeb   | cancer        | AB                  | 8018-01-7   | 1-Jan-90  |                       |
| Maneb  | cancer        | AB                  | 12427-38-2  | 1-Jan-90  |                       |
| Marijuana smoke  | cancer        | <a href="#">SQE</a> | ---         | 19-Jun-09 |                       |
| Me-A-alpha-C (2-Amino-3-methyl-9H-pyrido[2,3-b]indole) | cancer        | AB                  | 68006-83-7  | 1-Jan-90  | <a href="#">0.6</a>   |
| Mebendazole  | developmental | <a href="#">FR</a>  | 31431-39-7  | 20-Aug-99 |                       |
| Medroxyprogesterone acetate                            | cancer        | AB                  | 71-58-9     | 1-Jan-90  |                       |
| Medroxyprogesterone acetate                            | developmental | FR                  | 71-58-9     | 1-Apr-90  |                       |
| Megestrol acetate                                      | developmental | FR                  | 595-33-5    | 1-Jan-91  |                       |
| MeIQ (2-Amino-3,4-dimethylimidazo[4,5-f]quinoline)     | cancer        | AB                  | 77094-11-2  | 1-Oct-94  | <a href="#">0.46</a>  |
| MeIQx (2-Amino-3,8-dimethylimidazo[4,5-f]quinoxaline)  | cancer        | AB                  | 77500-04-0  | 1-Oct-94  | <a href="#">0.41</a>  |
| Melphalan  | cancer        | LC                  | 148-82-3    | 27-Feb-87 | <a href="#">0.005</a> |
| Melphalan  | developmental | FR                  | 148-82-3    | 1-Jul-90  |                       |
| Menotropins  | developmental | FR                  | 9002-68-0   | 1-Apr-90  |                       |
| Mepanipyrim  | cancer        | <a href="#">AB</a>  | 110235-47-7 | 1-Jul-08  |                       |
| Meprobamate  | developmental | FR                  | 57-53-4     | 1-Jan-92  |                       |
| Mercaptopurine   | developmental | FR                  | 6112-76-1   | 1-Jul-90  |                       |
| Mercury and mercury compounds                          | developmental | AB                  | ---         | 1-Jul-90  |                       |
| Merphalan  | cancer        | SQE                 | 531-76-0    | 1-Apr-88  |                       |
| Mestranol  | cancer        | SQE                 | 72-33-3     | 1-Apr-88  |                       |
| Metam potassium  | cancer        | <a href="#">AB</a>  | 137-41-7    | 31-Dec-10 |                       |
| Methacycline hydrochloride                             | developmental | FR                  | 3963-95-9   | 1-Jan-91  |                       |

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| Metham sodium                                | cancer        | <a href="#">AB</a> | 137-42-8   | 6-Nov-98  |  |
| Metham sodium                                | developmental | <a href="#">AB</a> | 137-42-8   | 15-May-98 |  |
| Methanol                                     | developmental | <a href="#">AB</a> | 67-56-1    | 16-Mar-12 | <a href="#">47,000 (inhalation)</a><br><a href="#">23,000 (oral)</a> |
| Methazole                                    | developmental | <a href="#">AB</a> | 20354-26-1 | 1-Dec-99  |  |
| Methimazole                                  | developmental | FR                 | 60-56-0    | 1-Jul-90  |  |
| Methotrexate                                 | developmental | SQE                | 59-05-2    | 1-Jan-89  |  |
| Methotrexate sodium                          | developmental | FR                 | 15475-56-6 | 1-Apr-90  |  |
| 5-Methoxypsoralen with ultraviolet A therapy | cancer        | SQE                | 484-20-8   | 1-Oct-88  |  |
| 8-Methoxypsoralen with ultraviolet A therapy | cancer        | LC                 | 298-81-7   | 27-Feb-87 |  |
| 2-Methylaziridine (Propyleneimine)           | cancer        | SQE                | 75-55-8    | 1-Jan-88  | <a href="#">0.028</a>  |
| Methylazoxymethanol                          | cancer        | SQE                | 590-96-5   | 1-Apr-88  |  |
| Methylazoxymethanol acetate                  | cancer        | SQE                | 592-62-1   | 1-Apr-88  |  |
| Methyl bromide, as a structural fumigant     | developmental | FR                 | 74-83-9    | 1-Jan-93  | <a href="#">810 (inhalation)</a>                                     |
| Methyl carbamate                             | cancer        | <a href="#">AB</a> | 598-55-0   | 15-May-98 | <a href="#">160</a>  |
| Methyl chloride                              | developmental | <a href="#">AB</a> | 74-87-3    | 10-Mar-00 |  |
| Methyl chloride                              | male          | <a href="#">LC</a> | 74-87-3    | 7-Aug-09  |  |
| 3-Methylcholanthrene                         | cancer        | AB                 | 56-49-5    | 1-Jan-90  | <a href="#">0.03</a>   |
| 5-Methylchrysene                             | cancer        | SQE                | 3697-24-3  | 1-Apr-88  | <a href="#">0.0084 (oral)</a>  |
| 4,4'-Methylene bis(2-chloroaniline)          | cancer        | FR                 | 101-14-4   | 1-Jul-87  | <a href="#">0.5</a>  |
| 4,4'-Methylene bis(N,N-dimethyl)benzenamine  | cancer        | LC                 | 101-61-1   | 1-Oct-89  | 20   |
| 4,4'-Methylene bis(2-methylaniline)          | cancer        | SQE                | 838-88-0   | 1-Apr-88  | <a href="#">0.8</a>  |
| 4,4'-Methylenedianiline                      | cancer        | SQE                | 101-77-9   | 1-Jan-88  | <a href="#">0.4</a>  |

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|---|-----------------------|---------------------|------------|-----------|---|
| 4,4'-Methylenedianiline dihydrochloride             | cancer                | SQE                 | 13552-44-8 | 1-Jan-88  | <a href="#">0.6</a>   |
| Methyleugenol                                       | cancer                | <a href="#">AB</a>  | 93-15-2    | 16-Nov-01 |   |
| Methylhydrazine and its salts                       | cancer                | AB                  | ---        | 1-Jul-92  |   |
| Methylhydrazine                                     |                       |                     |            |           | <a href="#">0.058 (oral)</a><br><a href="#">0.090 (inhalation)</a>  |
| Methylhydrazine sulfate                             |                       |                     |            |           | <a href="#">0.18</a>  |
| 2-Methylimidazole                                   | cancer                | <a href="#">LC</a>  | 693-98-1   | 22-Jun-12 | -   |
| 4-Methylimidazole                                   | cancer                | <a href="#">AB</a>  | 822-36-6   | 7-Jan-11  | <a href="#">29</a>  |
| Methyl iodide                                       | cancer                | SQE                 | 74-88-4    | 1-Apr-88  |   |
| Methyl isobutyl ketone                              | cancer                | <a href="#">LC</a>  | 108-10-1   | 4-Nov-11  |   |
| Methyl isocyanate (MIC)                             | developmental, female | <a href="#">SQE</a> | 624-83-9   | 12-Nov-10 |   |
| Methyl isopropyl ketone                             | developmental         | <a href="#">LC</a>  | 563-80-4   | 17-Feb-12 | -   |
| Methyl mercury                                      | developmental         | SQE                 | ---        | 1-Jul-87  |   |
| Methylmercury compounds                             | cancer                | AB                  | ---        | 1-May-96  |   |
| Methyl methanesulfonate                             | cancer                | SQE                 | 66-27-3    | 1-Apr-88  | <a href="#">7</a>   |
| Methyl n-butyl ketone                               | male                  | <a href="#">LC</a>  | 591-78-6   | 7-Aug-09  |   |
| 2-Methyl-1-nitroanthraquinone (of uncertain purity) | cancer                | SQE                 | 129-15-7   | 1-Apr-88  | <a href="#">0.2</a>   |
| N-Methyl-N'-nitro-N-nitrosoguanidine                | cancer                | SQE                 | 70-25-7    | 1-Apr-88  | <a href="#">0.08</a>  |
| N-Methylolacrylamide                                | cancer                | AB                  | 924-42-5   | 1-Jul-90  |   |
| N-Methylpyrrolidone                                 | developmental         | <a href="#">AB</a>  | 872-50-4   | 15-Jun-01 | <a href="#">3200 (inhalation)</a><br><a href="#">17000 (dermal)</a> |
| α-Methyl styrene (alpha-Methylstyrene)              | cancer                | <a href="#">LC</a>  | 98-83-9    | 2-Nov-12  | -   |
| α-Methyl styrene                                    | female                | <a href="#">LC</a>  | 98-83-9    | 29-Jul-11 | -   |



|   |                                |                     |             |           |                         |
|---|--------------------------------|---------------------|-------------|-----------|-------------------------|
| Methyltestosterone  | developmental                  | FR                  | 58-18-4     | 1-Apr-90  |                         |
| Methylthiouracil  | cancer                         | LC                  | 56-04-2     | 1-Oct-89  | <a href="#">2</a>       |
| Metiram   | cancer                         | AB                  | 9006-42-2   | 1-Jan-90  |                         |
| Metiram   | developmental                  | <a href="#">AB</a>  | 9006-42-2   | 30-Mar-99 |                         |
| Metronidazole   | cancer                         | SQE                 | 443-48-1    | 1-Jan-88  |                         |
| Michler's ketone  | cancer                         | SQE                 | 90-94-8     | 1-Jan-88  | <a href="#">0.8</a>     |
| Midazolam hydrochloride   | developmental                  | FR                  | 59467-96-8  | 1-Jul-90  |                         |
| Minocycline hydrochloride (internal use)                              | developmental                  | FR                  | 13614-98-7  | 1-Jan-92  |                         |
| Mirex   | cancer                         | SQE                 | 2385-85-5   | 1-Jan-88  | <a href="#">0.04</a>    |
| Misoprostol   | developmental                  | FR                  | 59122-46-2  | 1-Apr-90  |                         |
| Mitomycin C   | cancer                         | SQE                 | 50-07-7     | 1-Apr-88  | <a href="#">0.00009</a> |
| Mitoxantrone hydrochloride  | developmental                  | FR                  | 70476-82-3  | 1-Jul-90  |                         |
| Molinate  | developmental,<br>female, male | <a href="#">AB</a>  | 2212-67-1   | 11-Dec-09 |                         |
| MON 4660 (dichloroacetyl-1-oxa-4-azaspiro(4,5)-decane                 | cancer                         | <a href="#">AB</a>  | 71526-07-3  | 22-Mar-11 |                         |
| MON 13900 (furilazole)  | cancer                         | <a href="#">AB</a>  | 121776-33-8 | 22-Mar-11 |                         |
| 3-Monochloropropane-1,2-diol (3-MCDP)                                 | cancer                         | <a href="#">SQE</a> | 96-24-2     | 8-Oct-10  |                         |
| Monocrotaline   | cancer                         | SQE                 | 315-22-0    | 1-Apr-88  | <a href="#">0.07</a>    |
| MOPP (vincristine-prednisone-nitrogen mustard-procarbazine mixture)   | cancer                         | <a href="#">LC</a>  | 113803-47-7 | 4-Nov-11  | -                       |
| 5-(Morpholinomethyl)-3-[(5-nitrofurfurylidene)-amino]-2-oxazolidinone | cancer                         | SQE                 | 139-91-3    | 1-Apr-88  | <a href="#">0.18</a>    |
| Mustard Gas   | cancer                         | LC                  | 505-60-2    | 27-Feb-87 |                         |
| MX (3-chloro-4-dichloromethyl-5-hydroxy-2(5H)-furanone)               | cancer                         | <a href="#">SQE</a> | 77439-76-0  | 22-Dec-00 | <a href="#">0.11</a>    |

|                   |                        |                    |            |           |  |
|-------------------|------------------------|--------------------|------------|-----------|--|
| Myclobutanil      | developmental,<br>male | <a href="#">AB</a> | 88671-89-0 | 16-Apr-99 |  |
| Nabam             | developmental          | <a href="#">AB</a> | 142-59-6   | 30-Mar-99 |  |
| Nafarelin acetate | developmental          | FR                 | 86220-42-0 | 1-Apr-90  |  |
| Nafenopin         | cancer                 | SQE                | 3771-19-5  | 1-Apr-88  |  |

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|--|---------------|--------------------|---------------------------|-----------|---------------------|
| Nalidixic acid   | cancer        | <a href="#">AB</a> | 389-08-2                  | 15-May-98 | <a href="#">28</a>  |
| Naphthalene  | cancer        | <a href="#">AB</a> | 91-20-3                   | 19-Apr-02 | <a href="#">5.8</a> |
| 1-Naphthylamine  | cancer        | LC                 | 134-32-7                  | 1-Oct-89  |                     |
| 2-Naphthylamine  | cancer        | LC                 | 91-59-8                   | 27-Feb-87 | <a href="#">0.4</a> |
| Neomycin sulfate (internal use)                            | developmental | FR                 | 1405-10-3                 | 1-Oct-92  |                     |
| Netilmicin sulfate   | developmental | FR                 | 56391-57-2                | 1-Jul-90  |                     |
| Nickel (Metallic)  | cancer        | LC                 | 7440-02-0                 | 1-Oct-89  |                     |
| Nickel acetate   | cancer        | LC                 | 373-02-4                  | 1-Oct-89  |                     |
| Nickel carbonate   | cancer        | LC                 | 3333-67-3                 | 1-Oct-89  |                     |
| Nickel carbonyl  | cancer        | SQE                | 13463-39-3                | 1-Oct-87  |                     |
| Nickel carbonyl  | developmental | AB                 | 13463-39-3                | 1-Sep-96  |                     |
| Nickel compounds   | cancer        | <a href="#">LC</a> | ---                       | 7-May-04  |                     |
| Nickel hydroxide   | cancer        | LC                 | 12054-48-7;<br>12125-56-3 | 1-Oct-89  |                     |
| Nickelocene  | cancer        | LC                 | 1271-28-9                 | 1-Oct-89  |                     |
| Nickel oxide   | cancer        | LC                 | 1313-99-1                 | 1-Oct-89  |                     |
| Nickel refinery dust from the<br>pyrometallurgical process | cancer        | SQE                | ---                       | 1-Oct-87  | 0.8                 |
| Nickel subsulfide  | cancer        | SQE                | 12035-72-2                | 1-Oct-87  | 0.4                 |
| Nicotine   | developmental | FR                 | 54-11-5                   | 1-Apr-90  |                     |

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| Nifedipine   | developmental, female, male | <a href="#">FR</a> | 21829-25-4              | 29-Jan-99                |                     |
| Nimodipine   | developmental               | <a href="#">FR</a> | 66085-59-4              | 24-Apr-01                |                     |
| Niridazole   | cancer                      | SQE                | 61-57-4                 | 1-Apr-88                 |                     |
| Nitrapyrin   | cancer                      | <a href="#">AB</a> | 1929-82-4               | 5-Oct-05                 |                     |
| Nitrapyrin   | developmental               | <a href="#">AB</a> | 1929-82-4               | 30-Mar-99                |                     |
| Nitrioltriacetic acid  | cancer                      | SQE                | 139-13-9                | 1-Jan-88                 | <a href="#">100</a> |
| Nitrioltriacetic acid, trisodium salt monohydrate  | cancer                      | SQE                | 18662-53-8              | 1-Apr-89                 | <a href="#">70</a>  |
| 5-Nitroacenaphthene  | cancer                      | SQE                | 602-87-9                | 1-Apr-88                 | <a href="#">6</a>   |
| <a href="#">5-Nitro-o-anisidine Delisted December 8, 2006 [Click here for the basis for delisting]</a> | <a href="#">cancer</a>      | <a href="#">LC</a> | <a href="#">99-59-2</a> | <a href="#">1-Oct-89</a> | <a href="#">40</a>  |
| o-Nitroanisole   | cancer                      | AB                 | 91-23-6                 | 1-Oct-92                 |                     |
| Nitrobenzene   | cancer                      | <a href="#">AB</a> | 98-95-3                 | 26-Aug-97                |                     |
| Nitrobenzene   | male                        | <a href="#">AB</a> | 98-95-3                 | 30-Mar-10                |                     |
| 4-Nitrobiphenyl  | cancer                      | SQE                | 92-93-3                 | 1-Apr-88                 |                     |
| 6-Nitrochrysene  | cancer                      | AB                 | 7496-02-8               | 1-Oct-90                 |                     |
| Nitrofen (technical grade)   | cancer                      | SQE                | 1836-75-5               | 1-Jan-88                 | <a href="#">9</a>   |
| 2-Nitrofluorene  | cancer                      | AB                 | 607-57-8                | 1-Oct-90                 |                     |
| Nitrofurantoin   | male                        | AB                 | 67-20-9                 | 1-Apr-91                 |                     |
| Nitrofurazone  | cancer                      | AB                 | 59-87-0                 | 1-Jan-90                 | <a href="#">0.5</a> |
| 1-[(5-Nitrofurfurylidene)-amino]-2-imidazolidinone   | cancer                      | SQE                | 555-84-0                | 1-Apr-88                 | <a href="#">0.4</a> |
| N-[4-(5-Nitro-2-furyl)-2-thiazoly]acetamide  | cancer                      | SQE                | 531-82-8                | 1-Apr-88                 | <a href="#">0.5</a> |
| Nitrogen mustard (Mechlorethamine)   | cancer                      | SQE                | 51-75-2                 | 1-Jan-88                 |                     |
| Nitrogen mustard (Mechlorethamine)   | developmental               | SQE                | 51-75-2                 | 1-Jan-89                 |                     |

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| Nitrogen mustard hydrochloride (Mechlorethamine hydrochloride) | cancer        | SQE                | 55-86-7    | 1-Apr-88 |                       |
| Nitrogen mustard hydrochloride (Mechlorethamine hydrochloride) | developmental | FR                 | 55-86-7    | 1-Jul-90 |                       |
| Nitrogen mustard N-oxide                                       | cancer        | SQE                | 126-85-2   | 1-Apr-88 |                       |
| Nitrogen mustard N-oxide hydrochloride                         | cancer        | SQE                | 302-70-5   | 1-Apr-88 |                       |
| Nitromethane   | cancer        | <a href="#">AB</a> | 75-52-5    | 1-May-97 | <a href="#">39</a>    |
| 2-Nitropropane   | cancer        | SQE                | 79-46-9    | 1-Jan-88 |                       |
| 1-Nitropyrene  | cancer        | AB                 | 5522-43-0  | 1-Oct-90 |                       |
| 4-Nitropyrene  | cancer        | AB                 | 57835-92-4 | 1-Oct-90 |                       |
| N-Nitrosodiethanolamine  | cancer        | SQE                | 1116-54-7  | 1-Jan-88 | 0.3                   |
| N-Nitrosodiethylamine  | cancer        | SQE                | 55-18-5    | 1-Oct-87 | 0.02                  |
| N-Nitrosodimethylamine   | cancer        | SQE                | 62-75-9    | 1-Oct-87 | 0.04                  |
| N-Nitrosodi- <i>n</i> -butylamine                              | cancer        | SQE                | 924-16-3   | 1-Oct-87 | 0.06                  |
| N-Nitrosodi- <i>n</i> -propylamine                             | cancer        | SQE                | 621-64-7   | 1-Jan-88 | 0.1                   |
| <i>p</i> -Nitrosodiphenylamine                                 | cancer        | SQE                | 156-10-5   | 1-Jan-88 | <a href="#">30</a>    |
| N-Nitrosodiphenylamine   | cancer        | SQE                | 86-30-6    | 1-Apr-88 | 80                    |
| 3-(N-Nitrosomethylamino) propionitrile                         | cancer        | AB                 | 60153-49-3 | 1-Apr-90 |                       |
| 4-(N-Nitrosomethylamino)-1-(3-pyridyl)1-butanone               | cancer        | AB                 | 64091-91-4 | 1-Apr-90 | <a href="#">0.014</a> |
| N-Nitrosomethylethylamine                                      | cancer        | LC                 | 10595-95-6 | 1-Oct-89 | 0.03                  |
| N-Nitrosomethylvinylamine                                      | cancer        | SQE                | 4549-40-0  | 1-Jan-88 |                       |
| N-Nitrosomorpholine  | cancer        | SQE                | 59-89-2    | 1-Jan-88 | <a href="#">0.1</a>   |
| N-Nitroso-N-ethylurea  | cancer        | SQE                | 759-73-9   | 1-Oct-87 | 0.03                  |
| N-Nitroso-N-methylurea   | cancer        | SQE                | 684-93-5   | 1-Oct-87 | 0.006                 |
| N-Nitroso-N-methylurethane                                     | cancer        | SQE                | 615-53-2   | 1-Apr-88 | <a href="#">0.006</a> |
| N-Nitrosornicotine   | cancer        | SQE                | 16543-55-8 | 1-Jan-88 | <a href="#">0.5</a>   |
| N-Nitrosopiperidine  | cancer        | SQE                | 100-75-4   | 1-Jan-88 | <a href="#">0.07</a>  |

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|---|---------------------------------------|--------------------|---------------------|-----------|-----|
| N-Nitrosopyrrolidine                              | cancer                                | SQE                | 930-55-2            | 1-Oct-87  | 0.3 |
| N-Nitrososarcosine                                | cancer                                | SQE                | 13256-22-9          | 1-Jan-88  |     |
| o-Nitrotoluene                                    | cancer                                | <a href="#">AB</a> | 88-72-2             | 15-May-98 |     |
| <a href="#">Nitrous oxide</a>                     | developmental, <a href="#">female</a> | <a href="#">AB</a> | 10024-97-2          | 1-Aug-08  |     |
| Norethisterone (Norethindrone)                    | cancer                                | LC                 | 68-22-4             | 1-Oct-89  |     |
| Norethisterone (Norethindrone)                    | developmental                         | FR                 | 68-22-4             | 1-Apr-90  |     |
| Norethisterone acetate (Norethindrone acetate)    | developmental                         | FR                 | 51-98-9             | 1-Oct-91  |     |
| Norethisterone (Norethindrone) /Ethinyl estradiol | developmental                         | FR                 | 68-22-4/<br>57-63-6 | 1-Apr-90  |     |
| Norethisterone (Norethindrone) /Mestranol         | developmental                         | FR                 | 68-22-4/<br>72-33-3 | 1-Apr-90  |     |
| Norethynodrel                                     | cancer                                | <a href="#">AB</a> | 68-23-5             | 27-Feb-01 |     |
| Norgestrel  | developmental                         | FR                 | 6533-00-2           | 1-Apr-90  |     |
|   |                                       |                    |                     |           |     |
| Ochratoxin A                                      | cancer                                | AB                 | 303-47-9            | 1-Jul-90  |     |
| Oil Orange SS                                     | cancer                                | SQE                | 2646-17-5           | 1-Apr-88  |     |
| Oral contraceptives, combined                     | cancer                                | LC                 | ---                 | 1-Oct-89  |     |
| Oral contraceptives, sequential                   | cancer                                | LC                 | ---                 | 1-Oct-89  |     |
| Oryzalin  | cancer                                | <a href="#">AB</a> | 19044-88-3          | 12-Sep-08 |     |
| Oxadiazon   | cancer                                | SQE                | 19666-30-9          | 1-Jul-91  |     |
| Oxadiazon   | developmental                         | <a href="#">AB</a> | 19666-30-9          | 15-May-98 |     |
| Oxazepam  | cancer                                | AB                 | 604-75-1            | 1-Oct-94  |     |
| Oxazepam  | developmental                         | FR                 | 604-75-1            | 1-Oct-92  |     |
| p,p'-Oxybis(benzenesulfonyl hydrazide)            | developmental                         | <a href="#">LC</a> | 80-51-3             | 7-Aug-09  |     |
| Oxydemeton methyl                                 | female, male                          | <a href="#">AB</a> | 301-12-2            | 6-Nov-98  |     |
| Oxymetholone                                      | cancer                                | SQE                | 434-07-1            | 1-Jan-88  |     |

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|--|-----------------------------|--------------------|------------|-----------|-----------------------|
| Oxymetholone                                 | developmental               | <a href="#">FR</a> | 434-07-1   | 1-May-97  |                       |
| Oxytetracycline (internal use)               | developmental               | FR                 | 79-57-2    | 1-Jan-91  |                       |
| Oxytetracycline hydrochloride (internal use) | developmental               | FR                 | 2058-46-0  | 1-Oct-91  |                       |
| Oxythioquinox (Chinomethionat)               | cancer                      | <a href="#">AB</a> | 2439-01-2  | 20-Aug-99 |                       |
| Oxythioquinox (Chinomethionat)               | developmental               | <a href="#">AB</a> | 2439-01-2  | 6-Nov-98  |                       |
|  |                             |                    |            |           |                       |
| Paclitaxel                                   | developmental, female, male | <a href="#">FR</a> | 33069-62-4 | 26-Aug-97 |                       |
| Palygorskite fibers (> 5mm in length)        | cancer                      | <a href="#">AB</a> | 12174-11-7 | 28-Dec-99 |                       |
| Panfuran S                                   | cancer                      | SQE                | 794-93-4   | 1-Jan-88  |                       |
| Paramethadione                               | developmental               | FR                 | 115-67-3   | 1-Jul-90  |                       |
| Penicillamine                                | developmental               | FR                 | 52-67-5    | 1-Jan-91  |                       |
| Pentachlorophenol                            | cancer                      | AB                 | 87-86-5    | 1-Jan-90  | 40                    |
| Pentobarbital sodium                         | developmental               | FR                 | 57-33-0    | 1-Jul-90  |                       |
| Pentostatin                                  | developmental               | FR                 | 53910-25-1 | 1-Sep-96  |                       |
| Phenacemide                                  | developmental               | FR                 | 63-98-9    | 1-Jul-90  |                       |
| Phenacetin                                   | cancer                      | LC                 | 62-44-2    | 1-Oct-89  | <a href="#">300</a>   |
| Phenazopyridine                              | cancer                      | SQE                | 94-78-0    | 1-Jan-88  | <a href="#">4</a>     |
| Phenazopyridine hydrochloride                | cancer                      | SQE                | 136-40-3   | 1-Jan-88  | <a href="#">5</a>     |
| Phenesterin                                  | cancer                      | SQE                | 3546-10-9  | 1-Jul-89  | <a href="#">0.005</a> |
| Phenobarbital                                | cancer                      | AB                 | 50-06-6    | 1-Jan-90  | <a href="#">2</a>     |
| Phenolphthalein                              | cancer                      | <a href="#">AB</a> | 77-09-8    | 15-May-98 |                       |
| Phenoxybenzamine                             | cancer                      | SQE                | 59-96-1    | 1-Apr-88  | <a href="#">0.2</a>   |
| Phenoxybenzamine hydrochloride               | cancer                      | SQE                | 63-92-3    | 1-Apr-88  | <a href="#">0.3</a>   |

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| Phenprocoumon  | developmental         | FR                 | 435-97-2    | 1-Oct-92  |                     |
| o-Phenylenediamine and its salts   | cancer                | <a href="#">AB</a> | 95-54-5     | 15-May-98 |                     |
| o-Phenylenediamine   |                       |                    |             |           | <a href="#">26</a>  |
| o-Phenylenediamine dihydrochloride   |                       |                    |             |           | <a href="#">44</a>  |
| Phenyl glycidyl ether  | cancer                | AB                 | 122-60-1    | 1-Oct-90  | <a href="#">5</a>   |
| Phenyl glycidyl ether  | male                  | <a href="#">LC</a> | 122-60-1    | 7-Aug-09  |                     |
| Phenylhydrazine and its salts  | cancer                | AB                 | ---         | 1-Jul-92  |                     |
| Phenylhydrazine  |                       |                    |             |           | <a href="#">1</a>   |
| Phenylhydrazine hydrochloride  |                       |                    |             |           | <a href="#">1.4</a> |
| o-Phenylphenate, sodium  | cancer                | AB                 | 132-27-4    | 1-Jan-90  | <a href="#">200</a> |
| o-Phenylphenol   | cancer                | <a href="#">AB</a> | 90-43-7     | 4-Aug-00  |                     |
| Phenylphosphine  | developmental         | <a href="#">LC</a> | 638-21-1    | 7-Aug-09  |                     |
| PhiP(2-Amino-1-methyl-6-phenylimidazol[4,5-b]pyridine)                                 | cancer                | AB                 | 105650-23-5 | 1-Oct-94  |                     |
| Pimozide   | developmental, female | <a href="#">FR</a> | 2062-78-4   | 20-Aug-99 |                     |
| Pipobroman   | developmental         | FR                 | 54-91-1     | 1-Jul-90  |                     |
| Pirimicarb   | cancer                | <a href="#">AB</a> | 23103-98-2  | 1-Jul-08  |                     |
| Plicamycin   | developmental         | FR                 | 18378-89-7  | 1-Apr-90  |                     |
| Polybrominated biphenyls   | cancer                | SQE                | ---         | 1-Jan-88  | 0.02                |
| Polybrominated biphenyls   | developmental         | AB                 | ---         | 1-Oct-94  |                     |
| Polychlorinated biphenyls  | cancer                | LC                 | ---         | 1-Oct-89  | 0.09                |
| Polychlorinated biphenyls  | developmental         | SQE                | ---         | 1-Jan-91  |                     |
| Polychlorinated biphenyls (containing 60 or more percent chlorine by molecular weight) | cancer                | SQE                | ---         | 1-Jan-88  |                     |
| Polychlorinated dibenzo- <i>p</i> -dioxins   | cancer                | FR                 | ---         | 1-Oct-92  |                     |



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| Polychlorinated dibenzofurans                | cancer        | FR                 | ---        | 1-Oct-92  |                      |
| Polygeenan                                   | cancer        | SQE                | 53973-98-1 | 1-Jan-88  | <a href="#">1200</a> |
| Ponceau MX                                   | cancer        | SQE                | 3761-53-3  | 1-Apr-88  | <a href="#">200</a>  |
| Ponceau 3R                                   | cancer        | SQE                | 3564-09-8  | 1-Apr-88  | <a href="#">40</a>   |
| Potassium bromate                            | cancer        | AB                 | 7758-01-2  | 1-Jan-90  | <a href="#">1</a>    |
| Potassium dimethyldithiocarbamate            | developmental | <a href="#">AB</a> | 128-03-0   | 30-Mar-99 | <a href="#">720</a>  |
| Pravastatin sodium                           | developmental | <a href="#">FR</a> | 81131-70-6 | 3-Mar-00  |                      |
| Prednisolone sodium phosphate                | developmental | <a href="#">FR</a> | 125-02-0   | 20-Aug-99 |                      |
| Primidone                                    | cancer        | <a href="#">AB</a> | 125-33-7   | 20-Aug-99 |                      |
| Procarbazine                                 | cancer        | SQE                | 671-16-9   | 1-Jan-88  | <a href="#">0.05</a> |
| Procarbazine hydrochloride                   | cancer        | SQE                | 366-70-1   | 1-Jan-88  | <a href="#">0.06</a> |
| Procarbazine hydrochloride                   | developmental | FR                 | 366-70-1   | 1-Jul-90  |                      |
| Procymidone                                  | cancer        | AB                 | 32809-16-8 | 1-Oct-94  |                      |
| Progesterone                                 | cancer        | SQE                | 57-83-0    | 1-Jan-88  |                      |
| Pronamide                                    | cancer        | AB                 | 23950-58-5 | 1-May-96  |                      |
| Propachlor                                   | cancer        | <a href="#">AB</a> | 1918-16-7  | 27-Feb-01 |                      |
| 1,3-Propane sultone                          | cancer        | SQE                | 1120-71-4  | 1-Jan-88  | <a href="#">0.3</a>  |
| Propargite                                   | cancer        | AB                 | 2312-35-8  | 1-Oct-94  |                      |
| Propargite                                   | developmental | <a href="#">AB</a> | 2312-35-8  | 15-Jun-99 |                      |
| beta-Propiolactone                           | cancer        | SQE                | 57-57-8    | 1-Jan-88  | <a href="#">0.05</a> |
| Propoxur                                     | cancer        | <a href="#">AB</a> | 114-26-1   | 11-Aug-06 |                      |
| Propylene glycol mono- <i>t</i> -butyl ether | cancer        | <a href="#">AB</a> | 57018-52-7 | 11-Jun-04 |                      |
| Propylene oxide                              | cancer        | SQE                | 75-56-9    | 1-Oct-88  |                      |
| Propylthiouracil                             | cancer        | SQE                | 51-52-5    | 1-Jan-88  | <a href="#">0.7</a>  |
| Propylthiouracil                             | developmental | FR                 | 51-52-5    | 1-Jul-90  |                      |

|  |                          |                     |                         |                          |                      |
|--|--------------------------|---------------------|-------------------------|--------------------------|----------------------|
| Pymetrozine  | cancer                   | AB                  | 123312-89-0             | 22-Mar-11                |                      |
| Pyridine   | cancer                   | <a href="#">AB</a>  | 110-86-1                | 17-May-02                |                      |
| Pyrimethamine  | developmental            | <a href="#">FR</a>  | 58-14-0                 | 29-Jan-99                |                      |
|  |                          |                     |                         |                          |                      |
| Quazepam   | developmental            | <a href="#">FR</a>  | 36735-22-5              | 26-Aug-97                |                      |
| Quinoline and its strong acid salts  | cancer                   | <a href="#">SQE</a> | ---                     | 24-Oct-97                |                      |
| Quizalofop-ethyl   | male                     | <a href="#">SQE</a> | 76578-14-8              | 24-Dec-99                | <a href="#">590</a>  |
|  |                          |                     |                         |                          |                      |
| Radionuclides  | cancer                   | SQE                 | ---                     | 1-Jul-89                 |                      |
| Reserpine  | cancer                   | LC                  | 50-55-5                 | 1-Oct-89                 | <a href="#">0.06</a> |
| Residual (heavy) fuel oils   | cancer                   | AB                  | ---                     | 1-Oct-90                 |                      |
| Resmethrin   | cancer                   | <a href="#">AB</a>  | 10453-86-8              | 1-Jul-08                 |                      |
| Resmethrin   | developmental            | <a href="#">AB</a>  | 10453-86-8              | 6-Nov-98                 |                      |
| Retinol/retinyl esters, when in daily dosages in excess of 10,000 IU, or 3,000 retinol equivalents. (NOTE: Retinol/retinyl esters are required and essential for maintenance of normal reproductive function. The recommended daily level during pregnancy is 8,000 IU.) | developmental            | SQE                 | ---                     | 1-Jul-89                 |                      |
| Ribavirin  | developmental            | FR                  | 36791-04-5              | 1-Apr-90                 |                      |
| Ribavirin  | male                     | <a href="#">FR</a>  | 36791-04-5              | 27-Feb-01                |                      |
| Riddelliine  | cancer                   | <a href="#">LC</a>  | 23246-96-0              | 3-Dec-04                 |                      |
| Rifampin   | developmental,<br>female | <a href="#">FR</a>  | 13292-46-1              | 27-Feb-01                |                      |
|  |                          |                     |                         |                          |                      |
| <a href="#">Saccharin Delisted April 6, 2001 [Click here for the basis for delisting]</a>  | cancer                   | LC                  | <a href="#">81-07-2</a> | <a href="#">1-Oct-89</a> |                      |

|  |                             |     |             |           |  |
|--|-----------------------------|-----|-------------|-----------|--|
| <a href="#">Saccharin, sodium Delisted January 17, 2003 [Click here for the basis for delisting]</a> | cancer                      | SQE | 128-44-9    | 1-Jan-88  |  |
| Safrole  | cancer                      | SQE | 94-59-7     | 1-Jan-88  | <a href="#">3</a>  |
| Salted fish, Chinese-style   | cancer                      | LC  | ---         | 29-Apr-11 | -  |
| Secobarbital sodium  | developmental               | FR  | 309-43-3    | 1-Oct-92  |  |
| Selenium sulfide   | cancer                      | LC  | 7446-34-6   | 1-Oct-89  |  |
| Sermorelin acetate   | developmental               | FR  | ---         | 20-Aug-99 |  |
| Shale-oils   | cancer                      | AB  | 68308-34-9  | 1-Apr-90  |  |
| Silica, crystalline (airborne particles of respirable size)  | cancer                      | SQE | ---         | 1-Oct-88  |  |
| Sodium dimethyldithiocarbamate   | developmental               | AB  | 128-04-1    | 30-Mar-99 | <a href="#">23 (oral)</a><br><a href="#">58 (oral) as a 40% pesticidal formulation</a> |
| Sodium fluoroacetate   | male                        | AB  | 62-74-8     | 6-Nov-98  |  |
| Soots, tars, and mineral oils (untreated and mildly treated oils and used engine oils)               | cancer                      | LC  | ---         | 27-Feb-87 |  |
| Spirodiclofen  | cancer                      | AB  | 148477-71-8 | 8-Oct-10  |  |
| Spironolactone   | cancer                      | FR  | 52-01-7     | 1-May-97  |  |
| Stanozolol   | cancer                      | FR  | 10418-03-8  | 1-May-97  |  |
| Sterigmatocystin   | cancer                      | SQE | 10048-13-2  | 1-Apr-88  | <a href="#">0.02</a>   |
| Streptomycin sulfate   | developmental               |     | 3810-74-0   | 1-Jan-91  |  |
| Streptozocin (streptozotocin)  | developmental, female, male | FR  | 18883-66-4  | 20-Aug-99 |  |
| Streptozotocin (streptozocin)  | cancer                      | SQE | 18883-66-4  | 1-Jan-88  | <a href="#">0.006</a>  |
| Strong inorganic acid mists containing sulfuric acid   | cancer                      | AB  | ---         | 14-Mar-03 |  |
| Styrene oxide  | cancer                      | SQE | 96-09-3     | 1-Oct-88  | <a href="#">4</a>  |
| Sulfallate   | cancer                      | SQE | 95-06-7     | 1-Jan-88  | <a href="#">4</a>  |

|   |                          |                     |            |           |                       |
|---|--------------------------|---------------------|------------|-----------|-----------------------|
| Sulfasalazine (salicylazosulfapyridine)             | cancer                   | <a href="#">AB</a>  | 599-79-1   | 15-May-98 |                       |
| Sulfasalazine (salicylazosulfapyridine)             | male                     | <a href="#">FR</a>  | 599-79-1   | 29-Jan-99 |                       |
| Sulfur dioxide <sup>e</sup>                         | developmental            | <a href="#">SQE</a> | 7446-09-5  | 29-Jul-11 | <a href="#">10000</a> |
| Sulindac  | developmental,<br>female | <a href="#">FR</a>  | 38194-50-2 | 29-Jan-99 |                       |
|   |                          |                     |            |           |                       |
| Talc containing asbestiform fibers                  | cancer                   | AB                  | ---        | 1-Apr-90  |                       |
| Tamoxifen and its salts                             | cancer                   | SQE                 | 10540-29-1 | 1-Sep-96  |                       |
| Tamoxifen citrate                                   | developmental            | FR                  | 54965-24-1 | 1-Jul-90  |                       |
| Temazepam   | developmental            | FR                  | 846-50-4   | 1-Apr-90  |                       |
| Teniposide  | developmental            | FR                  | 29767-20-2 | 1-Sep-96  |                       |
| Terbacil  | developmental            | <a href="#">AB</a>  | 5902-51-2  | 18-May-99 |                       |
| Terrazole   | cancer                   | AB                  | 2593-15-9  | 1-Oct-94  |                       |
| Testosterone and its esters                         | cancer                   | SQE                 | 58-22-0    | 1-Apr-88  |                       |
| Testosterone cypionate                              | developmental            | FR                  | 58-20-8    | 1-Oct-91  |                       |
| Testosterone enanthate                              | developmental            | FR                  | 315-37-7   | 1-Apr-90  |                       |
| 3,3',4,4'-Tetrachloroazobenzene                     | cancer                   | AB                  | 14047-09-7 | 24-Jul-12 |                       |
| 2,3,7,8-Tetrachlorodibenzo- <i>p</i> -dioxin (TCDD) | cancer                   | SQE                 | 1746-01-6  | 1-Jan-88  | 0.000005              |
| 2,3,7,8-Tetrachlorodibenzo- <i>p</i> -dioxin (TCDD) | developmental            | AB                  | 1746-01-6  | 1-Apr-91  |                       |
| 1,1,1,2-Tetrachloroethane                           | cancer                   | <a href="#">LC</a>  | 630-20-8   | 13-Sep-13 |                       |
| 1,1,2,2-Tetrachloroethane                           | cancer                   | AB                  | 79-34-5    | 1-Jul-90  | <a href="#">3</a>     |
| Tetrachloroethylene (Perchloroethylene)             | cancer                   | SQE                 | 127-18-4   | 1-Apr-88  | 14                    |
| <i>p</i> - <i>a,a,a</i> -Tetrachlorotoluene         | cancer                   | AB                  | 5216-25-1  | 1-Jan-90  |                       |

|   |                             |                    |            |           |                            |
|---|-----------------------------|--------------------|------------|-----------|----------------------------|
| Tetracycline (internal use)                                       | developmental               | FR                 | 60-54-8    | 1-Oct-91  |                            |
| Tetracyclines (internal use)                                      | developmental               | FR                 | ---        | 1-Oct-92  |                            |
| Tetracycline hydrochloride (internal use)                         | developmental               | FR                 | 64-75-5    | 1-Jan-91  |                            |
| Tetrafluoroethylene   | cancer                      | <a href="#">AB</a> | 116-14-3   | 1-May-97  |                            |
| Tetranitromethane   | cancer                      | AB                 | 509-14-8   | 1-Jul-90  | <a href="#">0.059</a>      |
| Thalidomide   | developmental               | SQE                | 50-35-1    | 1-Jul-87  |                            |
| Thioacetamide   | cancer                      | SQE                | 62-55-5    | 1-Jan-88  | <a href="#">0.1</a>        |
| 4,4'-Thiodianiline  | cancer                      | SQE                | 139-65-1   | 1-Apr-88  | <a href="#">0.05</a>       |
| Thiodicarb  | cancer                      | <a href="#">AB</a> | 59669-26-0 | 20-Aug-99 |                            |
| Thioguanine   | developmental               | FR                 | 154-42-7   | 1-Jul-90  |                            |
| Thiophanate methyl  | female, male                | <a href="#">AB</a> | 23564-05-8 | 18-May-99 | <a href="#">600 (oral)</a> |
| Thiouracil  | cancer                      | <a href="#">AB</a> | 141-90-2   | 11-Jun-04 |                            |
| Thiourea  | cancer                      | SQE                | 62-56-6    | 1-Jan-88  | <a href="#">10</a>         |
| Thorium dioxide   | cancer                      | LC                 | 1314-20-1  | 27-Feb-87 |                            |
| Titanium dioxide (airborne, unbound particles of respirable size) | cancer                      | <a href="#">LC</a> | ---        | 2-Sep-11  | -                          |
| Tobacco, oral use of smokeless products                           | cancer                      | SQE                | ---        | 1-Apr-88  |                            |
| Tobacco smoke   | cancer                      | SQE                | ---        | 1-Apr-88  |                            |
| Tobacco smoke (primary)   | developmental, female, male | SQE                | ---        | 1-Apr-88  |                            |
| Tobramycin sulfate  | developmental               | FR                 | 49842-07-1 | 1-Jul-90  |                            |
| Toluene   | developmental               | SQE                | 108-88-3   | 1-Jan-91  | 7000°                      |
| Toluene   | female                      | <a href="#">LC</a> | 108-88-3   | 7-Aug-09  |                            |
| Toluene diisocyanate  | cancer                      | LC                 | 26471-62-5 | 1-Oct-89  | <a href="#">20</a>         |
| o-Toluidine   | cancer                      | SQE                | 95-53-4    | 1-Jan-88  | <a href="#">4</a>          |

|  |                                |                     |                          |                          |  |
|--|--------------------------------|---------------------|--------------------------|--------------------------|--|
| o-Toluidine hydrochloride  | cancer                         | SQE                 | 636-21-5                 | 1-Jan-88                 | <a href="#">5</a>  |
| <a href="#">para-Toluidine Delisted October 29, 1999</a><br><a href="#">[Click here for the basis for delisting]</a> | <del>cancer</del>              | <a href="#">AB</a>  | <a href="#">106-49-0</a> | <a href="#">1-Jan-90</a> |  |
| Toxaphene (Polychlorinated camphenes)  | cancer                         | SQE                 | 8001-35-2                | 1-Jan-88                 | 0.6  |
| Toxins derived from <i>Fusarium moniliforme</i> ( <i>Fusarium verticillioides</i> )                                  | cancer                         | <a href="#">LC</a>  | ---                      | 7-Aug-09                 |  |
| Treosulfan   | cancer                         | LC                  | 299-75-2                 | 27-Feb-87                |  |
| Triadimefon  | developmental,<br>female, male | <a href="#">AB</a>  | 43121-43-3               | 30-Mar-99                |  |
| Triazolam  | developmental                  | FR                  | 28911-01-5               | 1-Apr-90                 |  |
| S,S,S-Tributyl phosphorotrithioate<br>(Tribufos, DEF)  | cancer                         | <a href="#">AB</a>  | 78-48-8                  | 25-Feb-11                |  |
| Tributyltin methacrylate   | developmental                  | <a href="#">AB</a>  | 2155-70-6                | 1-Dec-99                 |  |
| Trichlormethine (Trimustine hydrochloride)   | cancer                         | AB                  | 817-09-4                 | 1-Jan-92                 |  |
| Trichloroacetic acid   | cancer                         | <a href="#">LC</a>  | 76-03-9                  | 13-Sep-13                |  |
| Trichloroethylene  | cancer                         | SQE                 | 79-01-6                  | 1-Apr-88                 | <a href="#">14 (oral)</a><br><a href="#">50 (inhalation)</a> |
| 2,4,6-Trichlorophenol  | cancer                         | SQE                 | 88-06-2                  | 1-Jan-88                 | 10   |
| 1,2,3-Trichloropropane   | cancer                         | AB                  | 96-18-4                  | 1-Oct-92                 |  |
| Trientine hydrochloride  | developmental                  | <a href="#">FR</a>  | 38260-01-4               | 27-Feb-01                |  |
| Triforine  | developmental                  | <a href="#">AB</a>  | 26644-46-2               | 18-Jun-99                |  |
| 1,3,5-Triglycidyl-s-triazinetrione   | male                           | <a href="#">LC</a>  | 2451-62-9                | 7-Aug-09                 |  |
| Trilostane   | developmental                  | FR                  | 13647-35-3               | 1-Apr-90                 |  |
| Trimethadione  | developmental                  | FR                  | 127-48-0                 | 1-Jan-91                 |  |
| 2,4,5-Trimethylaniline and its strong acid salts   | cancer                         | <a href="#">SQE</a> | ---                      | 24-Oct-97                |  |
| Trimethyl phosphate  | cancer                         | AB                  | 512-56-1                 | 1-May-96                 | <a href="#">24</a>   |

|  |                             |                     |                    |                     |                      |
|--|-----------------------------|---------------------|--------------------|---------------------|----------------------|
| Trimetrexate glucuronate   | developmental               | <a href="#">FR</a>  | 82952-64-5         | 26-Aug-97           |                      |
| 2,4,6-Trinitrotoluene (TNT)  | cancer                      | <a href="#">SQE</a> | 118-96-7           | 19-Dec-08           | <a href="#">8.2</a>  |
| Triphenyltin hydroxide   | cancer                      | AB                  | 76-87-9            | 1-Jul-92            |                      |
| Triphenyltin hydroxide   | developmental               | <a href="#">AB</a>  | 76-87-9            | 18-Mar-02           |                      |
| <a href="#">Tris(aziridinyl)-p-benzoquinone (Triaziquone) Delisted December 8, 2006 [Click here for the basis for delisting]</a> | <del>cancer</del>           | <del>LC</del>       | <del>68-76-8</del> | <del>1-Oct-89</del> |                      |
| Tris(1-aziridinyl)phosphine sulfide (Thiotepa)   | cancer                      | SQE                 | 52-24-4            | 1-Jan-88            | <a href="#">0.06</a> |
| Tris(2-chloroethyl) phosphate  | cancer                      | AB                  | 115-96-8           | 1-Apr-92            |                      |
| Tris(2,3-dibromopropyl)phosphate   | cancer                      | SQE                 | 126-72-7           | 1-Jan-88            | <a href="#">0.3</a>  |
| Tris(1,3-dichloro-2-propyl) phosphate (TDCPP)  | cancer                      | SQE                 | 13674-87-8         | 28-Oct-11           | <a href="#">5.4</a>  |
| Trp-P-1 (Tryptophan-P-1)   | cancer                      | SQE                 | 62450-06-0         | 1-Apr-88            | <a href="#">0.03</a> |
| Trp-P-2 (Tryptophan-P-2)   | cancer                      | SQE                 | 62450-07-1         | 1-Apr-88            | <a href="#">0.2</a>  |
| Trypan blue (commercial grade)   | cancer                      | LC                  | 72-57-1            | 1-Oct-89            |                      |
|  |                             |                     |                    |                     |                      |
| Unleaded gasoline (wholly vaporized)   | cancer                      | SQE                 | ---                | 1-Apr-88            |                      |
| Uracil mustard   | cancer                      | SQE                 | 66-75-1            | 1-Apr-88            |                      |
| Uracil mustard   | developmental, female, male | FR                  | 66-75-1            | 1-Jan-92            |                      |
| Urethane (Ethyl carbamate)   | cancer                      | SQE                 | 51-79-6            | 1-Jan-88            | 0.7                  |
| Urethane (Ethyl carbamate)   | developmental               | AB                  | 51-79-6            | 1-Oct-94            |                      |
| Urofollitropin   | developmental               | FR                  | 97048-13-0         | 1-Apr-90            |                      |
|  |                             |                     |                    |                     |                      |
| Valproate (Valproic acid)  | developmental               | SQE                 | 99-66-1            | 1-Jul-87            |                      |
| Vanadium pentoxide (orthorhombic crystalline form)   | cancer                      | <a href="#">AB</a>  | 1314-62-1          | 11-Feb-05           |                      |

|  |                                     |                    |                       |                     |                     |
|--|-------------------------------------|--------------------|-----------------------|---------------------|---------------------|
| Vinblastine sulfate  | developmental                       | FR                 | 143-67-9              | 1-Jul-90            |                     |
| Vinclozolin  | cancer                              | <a href="#">AB</a> | 50471-44-8            | 20-Aug-99           |                     |
| Vinclozolin  | developmental                       | <a href="#">AB</a> | 50471-44-8            | 15-May-98           |                     |
| Vincristine sulfate  | developmental                       | FR                 | 2068-78-2             | 1-Jul-90            |                     |
| Vinyl bromide  | cancer                              | SQE                | 593-60-2              | 1-Oct-88            |                     |
| Vinyl chloride   | cancer                              | LC                 | 75-01-4               | 27-Feb-87           | 3                   |
| 4-Vinylcyclohexene   | cancer                              | AB                 | 100-40-3              | 1-May-96            |                     |
| 4-Vinylcyclohexene   | female, male                        | <a href="#">LC</a> | 100-40--3             | 7-Aug-09            |                     |
| 4-Vinyl-1-cyclohexene diepoxide (Vinyl cyclohexenedioxide)                               | cancer                              | AB                 | 106-87-6              | 1-Jul-90            |                     |
| Vinyl cyclohexene dioxide (4-Vinyl-1-cyclohexene diepoxide)                              | female, male                        | <a href="#">LC</a> | 106-87-6              | 1-Aug-08            |                     |
| Vinyl fluoride   | cancer                              | <a href="#">AB</a> | 75-02-5               | 1-May-97            |                     |
| Vinyl trichloride (1,1,2-Trichloroethane)  | cancer                              | AB                 | 79-00-5               | 1-Oct-90            | <a href="#">10</a>  |
|  |                                     |                    |                       |                     |                     |
| Warfarin   | developmental                       | SQE                | 81-81-2               | 1-Jul-87            |                     |
| Wood dust  | cancer                              | <a href="#">LC</a> | ---                   | 18-Dec-09           |                     |
|  |                                     |                    |                       |                     |                     |
| 2,6-Xylidine (2,6-Dimethylaniline)   | cancer                              | AB                 | 87-62-7               | 1-Jan-91            | <a href="#">110</a> |
|  |                                     |                    |                       |                     |                     |
| Zalcitabine  | cancer                              | <a href="#">LC</a> | 7481-89-2             | 7-Aug-09            |                     |
| Zidovudine (AZT)   | cancer                              | <a href="#">LC</a> | 30516-87-1            | 18-Dec-09           |                     |
| Zileuton   | cancer,<br>developmental,<br>female | <a href="#">FR</a> | 111406-87-2           | 22-Dec-00           |                     |
| <a href="#">Zineb Delisted October 29, 1999 [Click here for the basis for delisting]</a> | <del>cancer</del>                   | <a href="#">AB</a> | <del>42422-67-7</del> | <del>4-Jan-90</del> |                     |



<sup>a</sup> Where a source or product results in exposures by multiple routes, the total exposure must be considered. For example, the MADL for benzene is exceeded when the absorbed dose exceeds 24 µg/day. If only inhalation and oral exposure occurs, the benzene MADL is exceeded when: (oral dose ÷ 24 µg/day) + (inhalation dose ÷ 49 µg/day) > 1.0.

<sup>b</sup> Levels for male children and adolescents were calculated by application of the default bodyweights specified in Section 25703(a)(8) to the procedure specified in Sections 25801 and 25803

<sup>c</sup> Level represents absorbed dose (rounded from 6,525 µg/day). Since 100% of ingested toluene is absorbed, oral dose is equivalent to administered dose. It is assumed that roughly 50% of the dose administered by the inhalation route is absorbed. Therefore, the MADL for inhaled toluene is 13,000 µg/day (rounded from 13,050 µg/day), corresponding to an absorbed dose of 6,525 µg/day.

<sup>d</sup> Butyl benzyl phthalate MADL was adopted June 25, 2013, but pursuant to Government Code section 11343.4 it becomes effective October 1, 2013.

<sup>e</sup> Sulfur dioxide MADL was adopted July 11, 2013, but pursuant to Government Code section 11343.4 it becomes effective October 1, 2013.

<sup>f</sup> Hydrogen cyanide and cyanide salts MADLs were adopted on August 7, 2013, but pursuant to Government Code section 11343.4 they become effective October 1, 2013

## Glossary

**Aerosols** - any non-refillable receptacles made of metal, glass or plastics and containing a gas compressed, liquefied or dissolved under pressure, with or without a liquid, paste or powder, and fitted with a release device allowing the contents to be ejected as solid or liquid particles in suspension in a gas, as a foam, paste or powder or in a liquid state or in a gaseous state. Aerosol includes aerosol dispensers.

**Alloy** - a metallic material, homogeneous to the naked eye, consisting of two or more elements so combined that they cannot be readily separated by mechanical means. Alloys are considered to be mixtures for the purpose of classification under the GHS.

**Aspiration** - the entry of a liquid or solid chemical product into the trachea and lower respiratory system directly through the oral or nasal cavity, or indirectly from vomiting;

**ASTM** - the "American Society of Testing and Materials".

**BCF** - "bio concentration factor".

**BOD/COD** - "biochemical oxygen demand/chemical oxygen demand".

**CA** - "competent authority".

**Carcinogen** - a chemical substance or a mixture of chemical substances which induce cancer or increase its incidence.

**CAS** - "Chemical Abstract Service".

**CBI** - "confidential business information".

**Chemical identity** - a name that will uniquely identify a chemical. This can be a name that is in accordance with the nomenclature systems of the International Union of Pure and Applied Chemistry (IUPAC) or the Chemical Abstracts Service (CAS), or a technical name.

**Competent authority** - any national body(ies) or authority(ies) designated or otherwise recognized as such in connection with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

**Compressed gas** - a gas which when packaged under pressure is entirely gaseous at -50°C; including all gases with a critical temperature  $\leq$  -50°C.

**Contact sensitizer** - a substance that will induce an allergic response following skin contact. The definition for "contact sensitizer" is equivalent to "skin sensitizer".

**Corrosive to metal** - a substance or a mixture which by chemical action will materially damage, or even destroy, metals.

**Criteria** - the technical definition for the physical, health and environmental hazards;

**Critical temperature** - the temperature above which a pure gas cannot be liquefied, regardless of the degree of compression.

**Dermal Corrosion:** see skin corrosion;

**Dermal irritation:** see skin irritation.

**Dissolved gas** - a gas which when packaged under pressure is dissolved in a liquid phase solvent.

**EC<sub>50</sub>** - the effective concentration of a substance that causes 50% of the maximum response.

**EC Number or (ECN<sup>o</sup>)** - a reference number used by the European Communities to identify dangerous substances, in particular those registered under EINECS.

**ECOSOC** - the "Economic and Social Council of the United Nations".

**EINECS** - "European Inventory of Existing Commercial Chemical Substances".

**End Point** - physical, health and environmental hazards;

**ErC<sub>50</sub>** - EC<sub>50</sub> in terms of reduction of growth rate.

**EU** - "European Union".

**Explosive article** - an article containing one or more explosive substances.

**Explosive substance** - a solid or liquid substance (or mixture of substances) which is in itself capable by chemical reaction of producing gas at such a temperature and pressure and at such a speed as to cause damage to the surroundings. Pyrotechnic substances are included even when they do not emit gases.

**Eye irritation** - the production of changes in the eye following the application of test substance to the front surface of the eye, which are fully reversible within 21 days of application.

**Flammable gas** - a gas having a flammable range with air at 20°C and a standard pressure of 101.3kPa.

**Flammable liquid** - a liquid having a flash point of not more than 93°C.

**Flammable solid** - a solid which is readily combustible, or may cause or contribute to fire through friction.

**Flash point** - the lowest temperature (corrected to a standard pressure of 101.3 kPa) at which the application of an ignition source causes the vapors of a liquid to ignite under specified test conditions.

**Gas** - a substance which (i) at 50 °C has a vapor pressure greater than 300 kPa; or (ii) is completely gaseous at 20 °C at a standard pressure of 101.3 kPa.

**GESAMP** - "the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection of IMO/FAO/UNESCO/WMO/WHO/IAEA/UN/UNEP."

**GHS** - "the Globally Harmonized System of Classification and # Labeling of Chemicals".

**Hazard category** - the division of criteria within each hazard class, e.g., oral acute toxicity includes five hazard categories and flammable liquids includes four hazard categories. These categories compare hazard severity within a hazard class and should not be taken as a comparison of hazard categories more generally.

**Hazard class** - the nature of the physical, health or environmental hazard, e.g., flammable solid carcinogen, oral acute toxicity.

**Hazard statement** - a statement assigned to a hazard class and category that describes the nature of the hazards of a hazardous product, including, where appropriate, the degree of hazard;

**IARC** - the "International Agency for the Research on Cancer".

**ILO** - the "International Labor Organization".

**IMO** - the "International Maritime Organization".

**Initial boiling point** - the temperature of a liquid at which its vapor pressure is equal to the standard pressure (101.3kPa), i.e., the first gas bubble appears.

**IOMC** - the "Inter-organization Program on the Sound Management of Chemicals".

**IPCS** - the "International Program on Chemical Safety".

**ISO** - International Standards Organization.

**IUPAC** - the "International Union of Pure and Applied Chemistry".

**Label** - an appropriate group of written, printed or graphic information elements concerning a hazardous product, selected as relevant to the target sector(s), that is affixed to, printed on, or attached to the immediate container of a hazardous product, or to the outside packaging of a hazardous product.

**Label element** - one type of information that has been harmonized for use in a label, e.g., pictogram, signal word.

**LC<sub>50</sub> (50% lethal concentration)** - the concentration of a chemical in air or of a chemical in water which causes the death of 50% (one-half) of a group of test animals.

**LD<sub>50</sub>** - the amount of a chemical, given all at once, which causes the death of 50% (one half) of a group of test animals.

**L(E)C<sub>50</sub>** - LC<sub>50</sub> or EC<sub>50</sub>.

**Liquefied gas** - a gas which when packaged under pressure, is partially liquid at temperatures above -50°C. A distinction is made between.

**High pressure liquefied gas** - a gas with a critical temperature between -50°C and +65°C;

**Low pressure liquefied gas** - a gas with a critical temperature above +65°C.

**Liquid** - a substance or mixture which at 50°C has a vapor pressure of not more than 300kPa (3bar), which is not completely gaseous at 20 °C and at a standard pressure of 101.3kPa, and which has a melting point or initial melting point of 20°C or less at a standard pressure of 101.3 kPa. A viscous substance or mixture for which a specific melting point cannot be determined shall be subjected to the ASTM D 4359-90 test; or to the test for determining fluidity (penetrometer test) prescribed in section 2.3.4 of Annex A of the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR).

**MARPOL** - the "International Convention for the Prevention of Pollution from Ships".

**Mixture** - a mixture or a solution composed of two or more substances in which they do not react.

**SDS** - "Material Safety Data Sheet" and in this document is used interchangeably with Safety Data Sheet (SDS).

**Mutagen** - an agent giving rise to an increased occurrence of mutations in populations of cells and /or organisms.

**Mutation** - a permanent change in the amount or structure of the genetic material in a cell;

**NGO** - "non-governmental organization".

**NOEC** - the "no observed effect concentration".

**OECD** - "The Organization for Economic Cooperation and Development".

**Organic peroxide** - a liquid or solid organic substance which contains the bivalent -O-O- structure and may be considered a derivative of hydrogen peroxide, where one or both of the hydrogen atoms have been replaced by organic radicals. The term also includes organic peroxide formulation (mixtures).

**Oxidizing gas** - any gas which may, generally by providing oxygen, cause or contribute to the combustion of other material more than air does.

**Oxidizing liquid** - a liquid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.

**Oxidizing solid** - a solid which, while in itself not necessarily combustible, may, generally by yielding oxygen, cause, or contribute to, the combustion of other material.

**QSAR** - "quantitative structure-activity relationships".

**Pictogram** - a graphical composition that may include a symbol plus other graphic elements, such as a border, background pattern or color that is intended to convey specific information.

**Precautionary statement** - a phrase (and/or pictogram) that describes recommended measures that should be taken to minimize or prevent adverse effects resulting from exposure to a hazardous product, or improper storage or handling of a hazardous product. **Product identifier** means the name or number used for a hazardous product on a label or in the SDS. It provides a unique means by which the product user can identify the substance or mixture within the particular use setting (e.g. transport, consumer or workplace).

**Pyrophoric liquid** - a liquid which, even in small quantities, is liable to ignite within five minutes after coming into

contact with air.

**Pyrophoric solid** - a solid which, even in small quantities, is liable to ignite within five minutes after coming into contact with air.

**Pyrotechnic article** - an article containing one or more pyrotechnic substances;

**Pyrotechnic substance** - a substance or mixture of substances designed to produce an effect by heat, light, sound, gas or smoke or a combination of these as the result of non-detonative, self-sustaining exothermic (heat-related) chemical reactions.

**Readily combustible solid** - a substance or mixture of powdered, granular, or pasty form which is dangerous if it can be easily ignited by brief contact with an ignition source, such as a burning match, and if the flame spreads rapidly.

**Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria** - the latest revised edition of the United Nations publication bearing this title, and any published amendment thereto.

**Recommendations on the Transport of Dangerous Goods, Model Regulations** - the latest revised edition of the United Nations publication bearing this title, and any published amendment thereto.

**Refrigerated liquefied gas** - a gas which when packaged is made partially liquid because of its low temperature.

**Respiratory sensitizer** - a substance that induces hypersensitivity of the airways following inhalation of the substance.

**RID** - The Regulations concerning the International Carriage of Dangerous Goods by Rail [Annex 1 to Appendix B (Uniform Rules concerning the Contract for International Carriage of Goods by Rail) (CIM) of COTIF (Convention concerning international carriage by rail)], as amended.

**SAR** - "Structure Activity Relationship".

**SDS** - "Safety Data Sheet" and in this document is used interchangeably with Material Safety Data Sheet (SDS).

**Self-Accelerating Decomposition Temperature (SADT)** - the lowest temperature at which self-accelerating decomposition may occur with substance as packaged.

**Self-heating substance** - a solid or liquid substance, other than a pyrophoric substance, which, by reaction with air and without energy supply, is liable to self-heat; this substance differs from a pyrophoric substance in that it will ignite only when in large amounts (kilograms) and after long periods of time (hours or days).

**Self-reactive substance** - a thermally unstable liquid or solid substance liable to undergo a strongly exothermic decomposition even without participation of oxygen (air). This definition excludes substances or mixtures classified under the GHS as explosive, organic peroxides or as oxidizing.

**Serious eye damage** - the production of tissue damage in the eye, or serious physical decay of vision, following application of a test substance to the front surface of the eye, which is not fully reversible within 21 days of application.

**Signal word** - a word used to indicate the relative level of severity of hazard and alert the reader to a potential hazard on the label. The GHS uses 'Danger' and 'Warning' as signal words.

**Skin corrosion** - the production of irreversible damage to the skin following the application of a test substance for up to 4 hours.

**Skin irritation** - the production of reversible damage to the skin following the application of a test substance for up to 4 hours.

**Skin sensitizer** - a substance that will induce an allergic response following skin contact. The definition for "skin sensitizer" is equivalent to "contact sensitizer".

**Solid** - a substance or mixture which does not meet the definitions of a liquid or gas.

**SPR** - "Structure Property Relationship".

**Substance** - chemical elements and their compounds in the natural state or obtained by any production process, including any additive necessary to preserve the stability of the product and any impurities deriving from the process used, but excluding any solvent which may be separated without affecting the stability of the substance or changing its composition.

**Substance which, in contact with water, emits flammable gases** - a solid or liquid substance or mixture which, by interaction with water, is liable to become spontaneously flammable or to give off flammable gases in dangerous quantities.

**Supplemental label element** - any additional non-harmonized type of information supplied on the container of a hazardous product that is not required or specified under the GHS. In some cases this information may be required by other competent authorities or it may be additional information provided at the discretion of the manufacturer/distributor.

**Symbol** - a graphical element intended to succinctly convey information.

**Technical name** - a name that is generally used in commerce, regulations and codes to identify a substance or mixture, other than the IUPAC or CAS name, and that is recognized by the scientific community. Examples of technical names include those used for complex mixtures (e.g., petroleum fractions or natural products), pesticides (e.g., ISO or ANSI systems), dyestuffs (Color Index system) and minerals.

**UNCED** - the "United Nations Conference on Environment and Development".

**UNCETDG/GHS** - the "United Nations Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labeling of Chemicals".

**UNITAR** - the "United Nations Institute for Training and Research";

**UNSCGHS** - the "United Nations Sub-Committee of Experts on the Globally Harmonized System of Classification and Labeling of Chemicals".

**UNSCETDG** - the "United Nations Sub-Committee of Experts on the Transport of Dangerous Goods". The Hazard Communication Standard requires that manufacturers, distributors and suppliers of hazardous chemicals provide copies of Safety Data Sheets (SDS) to customers.

**Chemical Inventory**

| <b>Chemical Index (Updated Monthly)</b> | <b>Date</b> |
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# Hearing Conservation

## 1.0 Purpose

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- 1.1. The purpose of this program is to identify and control noise hazards and to protect all personnel who have the potential to develop noise-induced hearing loss. Also, this standard provides all BNB operations with standardized hearing conservation guidelines in order to ensure a uniform level of hearing conservation.

## 2.0 Scope

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- 1.1. Any time sound levels exceed an 8-hour time-weighted average of 85 decibels on an A-weighted scale or greater, hearing conservation practices must be enacted. The contents of this section provide the minimum standards for reducing and controlling noise exposures.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. Project Management will be responsible for acquiring HS&E Submittals from subcontractors prior to the start of work. When subcontractors are identified who will be generating noise levels greater than a TWA of 85 dBA, it is required that they have a plan to reduce and/or control noise exposure for themselves and other personnel on site. It is recommended that they have a comprehensive hearing conservation program that includes at a minimum:
  - 3.1.1.1. personnel monitoring;
  - 3.1.1.2. noise dosimetry data from typical exposures due to the work performed;
  - 3.1.1.3. noise survey data from typical exposures due to the work performed; and
  - 3.1.1.4. training records for personnel.
  - 3.1.1.5. Project Management must ensure that HS&E Programs, PTPs, and JHAs cover hazardous noise exposures and controls.

### 3.2 Supervision

- 3.2.1. Ensure hazardous noise is eliminated or controlled and identified on PTPs. Ensure personnel exposed to hazardous noise levels have adequate training and protection methods. Ensure all visitors and new personnel are advised of high noise areas and provided protection.

### 3.3 Workers

- 3.3.1. Workers are responsible for wearing hearing protection when sound levels exceed a TWA of 85 dBA. A chart is attached to this standard that may help workers identify tasks and tools where noise levels may be hazardous. Encourage others—especially new personnel to wear hearing protection as required. Workers must maintain their hearing protection devices and ask for new ones as needed. They must also ask their supervisor for instructions on proper use and care of hearing protection. Lastly, workers must notify supervisors of noise hazards that have not been identified, or problems with hearing protective measures taken.

## 4.0 Definitions

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- 4.1. **Steady Noise** - Routine exposure of 15 minutes or greater to steady noise levels of 85 decibels or greater is considered hazardous. Steady noise may be continuous (as with generators), intermittent (as with air compressors), or fluctuating with the sound level varying (as with bulldozers).
- 4.2. **Intermittent/Impulsive Noise** – any exposure to impulse noise is hazardous. Hazardous impulse noise is that which exceeds 140 dBA and occurs with non-hazardous intervals greater than one second between peaks.
- 4.3. **85 dBA TWA** – OSHA’s action level for hearing conservation.
- 4.4. **PEL** – Permissible Exposure Limit
- 4.5. **Noise Reduction Rating (NRR)** – a unit of measurement used to determine the effectiveness of hearing protection devices to decrease sound exposure within a given working environment.



**5.0 Procedure**

**5.1 Hazards**

All workers shall be protected against the effects of exposure to noise, which exceeds the permissible noise exposure shown in the table, listed below.

**5.1.1 Permissible Noise Exposures**

| Duration per day - Hours | Sound Level - dba | <p>Note: For the purpose of this table, the sound levels in decibels are measured on a standard sound level meter operating on the weighing network with slow meter response.</p> <p>In all cases where the sound levels exceed the values shown, it is recommended that employees be provided with an audiometric examination at the time of employment and at reasonable intervals thereafter not exceeding regulatory requirements.</p> |
|--------------------------|-------------------|--|
| 8                        | 85                |  |
| 6                        | 87                |  |
| 4                        | 90                |  |
| 3                        | 92                |  |
| 2                        | 95                |  |
| 1.5                      | 97                |  |
| 1                        | 100               |  |
| 0.75                     | 102               |  |
| 0.5                      | 105               |  |
| 0.25                     | 110               |  |

**5.2 Hazard Controls**

**5.2.1 Engineering Controls**

5.2.1.1. Every hazardous noise exposure is required to be evaluated for engineering solutions such as plywood walls/screens/curtains/walls/barriers to reduce exposures to others. If possible, prefabrication of components in an off-site and controlled environment or tools with manufacturer-recommended noise suppressors may decrease exposing others to hazardous noise on job sites.

**5.2.2 Administrative Controls**

- 5.2.2.1. Tools may be labeled with stickers which indicate the type of appropriate hearing protection needed during operation.
- 5.2.2.2. If hazardous noise cannot be controlled, the area must be isolated via a controlled access zone to prevent exposure to the public and other personnel—barriers and signage may be adequate for isolation.
- 5.2.2.3. Any area or operation that exposes employees to noise in excess of 85 dba shall be posted as "High Noise Area" or "Hearing Protection Required." In areas posted as "Hearing Protection Required" or "High Noise Area", hearing protection shall be provided and worn at all times. For temporary high noise work areas (85 dba), the area shall be barricaded, and hearing protection provided to anyone requiring access.
- 5.2.2.4. Hearing conservation programs will cover all employees exposed to noise over 85dBA for 8 hours a day as a part of their normal work activities. Part of enrolling in that program will include training on the hazards of noise exposure and an audiometric exam.

**5.2.3 Personal Protective Equipment**

- 5.2.3.1. One-time-use hearing protection must not be re-used.
- 5.2.3.2. For the majority of construction personnel, hearing protection should be carried on their person or readily available.

- 5.2.3.3. Appropriate hearing protection devices must be selected by considering the noise level in the work area and the noise reduction rating of the hearing protection.
- 5.2.3.4. Headphones / earbuds / speakers / non-communication radios that play audio or music are not allowed on BNB projects.

### 5.3 Training

- 5.3.1. All workers exposed to levels exceeding 8-hour TWA of 85 dBA must have training on the hazards of working in high noise levels. Training must include the attenuation of various types of hearing protection, along with selection, fitting, use and care of them.
- 5.3.2. Worker training on their employer's Hearing Conservation Program will include discussions of noise sampling in their work areas, methods to reduce noise exposures (engineering), and PPE available for their use, and its location.

### 5.4 Annual Audiometric Testing (Washington State only)

- 5.4.1. BNB Project Management is responsible for ensuring new employees receive access to a baseline audiometric testing within 180 days after the employee's first assignment, which is organized by BNB Safety. Project Management must ensure this testing is provided at no cost to employees. Employees hired for less than one year may be part of a hearing protection audit program as an alternative.
- 5.4.2. All employees that are exposed to noise that equals or exceeds 85 dBA TWA<sub>8</sub> must have access to annual audiograms for the duration of employment. Each employee must be informed of their testing results, which must indicate any declines or improvements in hearing level.
- 5.4.3. Annual employee testing results must be compared against the employee's baseline assessment by an audiologist, otolaryngologist, qualified physician, or technician conducting the test to determine if a standard threshold shift has occurred. Baseline audiograms and annual testing results are to be maintained by BNB for the duration of the employee's exposure.

## 6.0 References

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[FED / OSHA 29 CFR 1926.52 – Hearing Conservation](#)

[L&I WAC 296-817 – Hearing Loss Prevention](#)

[CALOSHA Title 8 Subchapter 7 Article 105 – Hearing Conservation](#)

## 7.0 Attachments

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[Demolition Permit](#)

[Coring & Saw Cutting Checklist](#)

# Heat Illness Prevention

## 1.0 Purpose

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- 1.1 Heat produced stress on the human body must be dissipated in order to allow a person to work safely and efficiently, and to maintain overall good health. Environmental conditions contribute dramatically to the body’s ability to efficiently remove this generated heat. Ambient air temperature, humidity, wind and sunshine must all be considered when considering work activities to be performed. Every supervisor must remain constantly mindful of the hazards associated with working in heat, sun, wind and humidity, and ensure that everyone in his or her area(s) of responsibility follows this procedure.

## 2.0 Scope

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- 2.1 This procedure applies to the control of risk and occurrence of heat illness and shall apply to all outdoor places of employment at those times when the environmental risk factors, as defined in the “Definitions” section are present.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1 BNB Project Management and Supervision will ensure that each subcontractor submits an adequate Heat Illness Prevention Plan at least two weeks prior to the subcontractor’s start of work.
- 3.1.2 Each BNB project team will verify that workers on their project have been trained on their respective company’s Heat Illness Prevention Plan by requesting a list of trained workers on their company letterhead, on a class roster with the company name, or via employee training cards. Project teams should file the proof of HIPP training behind the subcontractor’s HIPP on file.
- 3.1.3 BNB Project Management & Supervision are to learn, follow, and enforce the contents of this standard and the BNB Heat Illness Prevention Plan.

### 3.2 Subcontractors

- 3.2.1 All subcontractors are responsible for implementing their own Heat Illness Prevention Program which includes the training of all workers. Each subcontractor must provide the BNB project team with their company’s HIPP not less than two weeks prior to their start of work on a project. Also, each subcontractor must provide a list of trained workers on their company letterhead, on a class roster with the company name, or via employee training cards.
- 3.2.2 Lastly, subcontractors must identify heat related exposures on their JHA(s) and PTP(s) to ensure control measures are in place and enforced. Subcontractor workers will be responsible for following the requirements set forth in their company’s HIPP as well as following control measures identified on their JHAs and PTPs

## 4.0 Definitions

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- 4.1 **Acclimatization** - temporary adaptation of the body to work in the heat that occurs gradually when a person is exposed to it. Acclimatization peaks in most people within four to fourteen days of regular work for at least two hours per day in the heat.
- 4.2 **Heat Illness** - a group of serious medical conditions resulting from the body’s inability to cope with a particular heat load, and includes heat cramps, heat exhaustion, heat syncope and heat stroke.
- 4.3 **Environmental risk factors for heat illness** - working conditions that affect the possibility that heat illness could occur, including air temperature, relative humidity, radiant heat from the sun and other sources, conductive heat sources such as the ground, air movement, workload severity and duration, protective clothing and personal protective equipment worn by employees.

- 4.4 **Personal risk factors for heat illness** - factors such as an individual's age, degree of acclimatization, health, water consumption, alcohol consumption, caffeine consumption, and use of prescription medications that affect the body's water retention or other physiological responses to heat.
- 4.5 **Shade** - blockage of direct sunlight. Canopies, umbrellas and other temporary structures or devices may be used to provide shade. One indicator that blockage is sufficient is when objects do not cast a shadow in the area of blocked shade, which is to allow the body to cool. For example, a car sitting in the sun does not provide acceptable shade to a person inside it, unless the car is running with air conditioning.
- 4.6 **Recovery Period** - a period of time to recover from the heat in order to prevent heat illness.

## 5.0 Procedure

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### 5.1 Procedure for Provision of Water

- 5.1.1 BNB work sites will have provisions of water located inside the jobsite trailer or offices.
- 5.1.2 Water must be "fresh, pure, suitably cool" and located as close as practicable to where personnel are working, with exceptions when the Senior BNB Team Member can demonstrate infeasibility.
- 5.1.3 Each subcontractor supervisor will bring adequate amounts of drinking water containers (of 5 to 10 gallons each) to the site, so that at least 2 quarts per employee are available at the start of the shift. The supervisor will also bring adequate quantities of paper cone rims or bags of disposable cups and the necessary cup dispensers to ensure that enough disposable cups are made available for each worker and are kept clean until used. A trash receptacle must also be located in close proximity of the water for the disposal of drinking cups.
- 5.1.4 Supervisors will check the water level of all containers every 30 minutes, and more frequently when the temperature exceeds 90F.
- 5.1.5 When the temperature exceeds 90 degrees, each trade supervisor will carry ice in separate containers, so that when necessary, it will be added to the drinking water to keep it cool.
- 5.1.6 Each supervisor will check the work site and place the water as close as possible to the workers. If field terrain prevents the water from being placed as close as possible to the workers, each supervisor will bring bottled water or individual containers (in addition to disposable cups and water containers), so that workers can have drinking water readily accessible.
- 5.1.7 Each supervisor will ensure that the water containers are relocated to follow along as the crew moves, so drinking water will be readily accessible.
- 5.1.8 Each supervisor will be responsible for cleaning the water containers and ensuring that they are kept in sanitary condition (all necessary cleaning supplies are provided by the company).
- 5.1.9 The subcontractor company will reimburse their supervisors for any cost incurred for them to fill up their water containers as needed on a daily basis or to purchase necessary disposable cups or cleaning supplies.
- 5.1.10 Each supervisor will point out daily the location of the water coolers to the workers and remind them to drink water frequently. When the temperature exceeds or is expected to exceed 90 degrees F, each supervisor will hold a brief 'tailgate' meeting each morning to review with employees the importance of drinking water, the number and schedule of water and rest breaks and the signs and symptoms of heat illness.
- 5.1.11 Each supervisor will use audible devices (such as whistles or air horns) to remind employees to drink water.
- 5.1.12 When the temperature equals or exceeds 95F or during a heat wave, each supervisor will increase the number of water breaks, and will remind workers throughout the work shift to drink water.

### 5.2 Procedure for Access to Shade

- 5.2.1 BNB Staff shall have access to adequate shade located inside the jobsite trailer or offices. Shade must be present at 80 degrees and accommodate all personnel on recovery or rest periods, and those onsite taking meal periods.
- 5.2.2 Each trade supervisor will bring a minimum of one shade structure to the site, to accommodate all of their employees on the shift and either chairs, benches, sheets, towels or any other items to allow employees to sit and rest without contacting the bare ground. However, chairs, benches, etc. are not required for acceptable sources of shade such as trees.
- 5.2.3 Each supervisor will ensure that at a minimum of one shade structure is opened and placed as close as practical to the workers, when the temperature equals or exceeds 80F. When the temperature is below 80F, the shade structures will be brought to the site, but will be opened and set in place upon worker(s) request. Note: The interior of a vehicle may not be used to provide shade unless the vehicle is air-conditioned, and the air conditioner is on.
- 5.2.4 Each supervisor will point out the daily location of the shade structures to the workers as well as allow and encourage employees to take a 5-minute cool-down rest in the shade, when they feel the need to do so to protect themselves from overheating.
- 5.2.5 Each supervisor will ensure that the shade structures are relocated to follow along with the crew and double-check that they are as close as practical to the employees, so that access to shade is provided at all times.
- 5.2.6 In situations where trees or other vegetation are used to provide shade (in sports fields), each supervisor will evaluate the thickness and shape of the shaded area (given the changing angles of the sun during the entire shift), before assuming that sufficient shadow is being cast to protect employees.
- 5.2.7 In situations where it is not safe or feasible to provide shade, each supervisor will document how this determination was made in their daily reports, and what steps will be taken to provide shade upon request or other alternative cooling measures with equivalent protection.

### 5.3 Procedure for Monitoring the Weather

- 5.3.1 Daily, the BNB Project Superintendent will go to [www.nws.noaa.gov](http://www.nws.noaa.gov) or a similar website to view the extended weather forecast in order to monitor the weather, plan the work schedule, and to know if a heat wave is expected. In the event of a heat wave, the BNB Superintendent will notify all trade supervisors if schedule modifications will be necessary. This type of advance planning should take place during all summer months. Prior to each workday, the BNB Project Superintendent will review the forecasted temperature and humidity for the worksite and compare it against the National Weather service Heat Index to evaluate the risk level for heat illness. It is important to keep in mind that the temperature at which these warnings occur must be lowered as much as 15 degrees if the workers under consideration are in direct sunlight.
- 5.3.2 Once the temperature reaches 80<sup>0</sup> F, the BNBuilders Project Superintendent will be responsible for monitoring the weather for sudden increases in temperature and shade structures are to be opened and accessible to the workers.
- 5.3.3 Once the temperature equals or exceeds 90<sup>0</sup> F, additional preventive measures such as the High Heat Procedures are to be implemented.

### 5.4 Procedure for Heat Waves

- 5.4.1 If schedule modifications are not possible and workers have to work during a heat wave, each trade supervisor will provide a tailgate meeting to reinforce heat illness prevention with emergency response procedures and review the weather forecast with the workers.
- 5.4.2 In addition, each supervisor will institute alternative preventive measures such as provide workers with an increase number of water and rest breaks every hour, supervise workers

to ensure that they do stop work and take these breaks, and observe closely all workers for signs and symptoms of heat illness.

- 5.4.3 During a heat wave or heat spike (e.g., a sudden increase in daytime temperature of 9 degrees or more), and the start of the workday, each supervisor will hold a tailgate meeting with the workers to review the company heat illness prevention procedures, the weather forecast and emergency response.
- 5.4.4 All supervisors will assign each employee a “buddy” to be on the lookout for signs and symptoms of heat illness and ensure that emergency procedures are initiated when someone displays possible signs or symptoms of heat illness.

## **5.5 Procedure for High Heat (temperature exceeds 90 degrees Fahrenheit)**

- 5.5.1 Each supervisor will ensure effective observation and monitoring, including a mandatory buddy system and regular communication with employees working by themselves. During high heat, personnel must be provided with a minimum 10-minute cool-down period every two hours.
- 5.5.2 Communication may be made by voice, observation, or electronic means so long as personnel may effectively contact their supervisor. If the supervisor is unable to be near the workers to observe or communicate with them, then an electronic device such as a cell phone may be used for this purpose only if reception in the area is reliable.
- 5.5.3 During a heat wave, each supervisor will observe all employees closely (or maintain frequent communication via phone or radio) and be alert for possible symptoms of heat illness.
- 5.5.4 Supervisors must ensure employees take at minimum the following cool-down rest periods in the shade:
  - 5.5.4.1 10 minutes every two hours at or above 90F
  - 5.5.4.2 15 minutes per hour at or above 100F

## **5.6 Procedure for Acclimatization**

- 5.6.1 Supervisors will monitor the weather and heat wave(s) and will closely observe all personnel during temperatures of 80 degrees and higher. Supervisors will closely supervise new employees or assign a “buddy”/experienced coworker for the first 14 days of the employee’s employment.
- 5.6.2 For new employees, each supervisor will try to find ways to lessen the intensity of the employee’s work during a two-week break-in period (such as scheduling slower paced, less physically demanding work during the hot parts of the day and the heaviest work activities during the cooler parts of the day (early-morning or evening). Steps taken to lessen the intensity of the workload for new employees will be documented. Each supervisor will be extra-vigilant with new employees and stay alert to the presence of heat related symptoms. Each BNB supervisor will assign new employees a “buddy” or experienced coworker to watch each other closely for discomfort or symptoms of heat illness.
- 5.6.3 Each supervisor will train employees on the importance of acclimatization, how it is developed and how these procedures address it.

## **5.7 Procedure for Emergency Response**

- 5.7.1 Emergency response procedures include effective communication, response to signs and symptoms of heat illness and procedures for contacting emergency responders to help stricken workers.
- 5.7.2 Prior to mobilizing on a project, a member of the BNB Project Team is required to fill out the Crisis Management Plan’s section for Emergency Medical Services. Upon completion, the plan shall be posted near the job telephone or otherwise made available to the employees where no job site telephone exists.
- 5.7.3 Prior to assigning a crew to a particular worksite, each subcontractor supervisor will provide workers and the foreman a map along with clear and precise directions (such as streets or road names,



distinguishing features and distances to major roads) of the site, to avoid a delay of emergency medical services.

- 5.7.4 Prior to assigning a crew to a particular worksite, each supervisor will ensure that a qualified, appropriately trained and equipped person will be available at the site, to render first aid if necessary.
- 5.7.5 Prior to the start of the shift, each supervisor will determine if a language barrier is present at the site and take steps (such as assigning the responsibility to call emergency medical services to the foreman or an English speaking worker) to ensure that emergency medical services can be immediately called in the event of an emergency.
- 5.7.6 Supervisors will carry cell phones or other means of communication, to ensure that emergency medical services can be called and check that these are functional at the worksite prior to each shift.
- 5.7.7 When an employee is showing symptoms of possible heat illness, each supervisor will take immediate steps to keep the stricken employee cool and comfortable once emergency service responders have been called (to reduce the progression to more serious illness).
- 5.7.8 At remote locations such as rural farms, lots or undeveloped areas, each supervisor will designate an employee or employees to physically go to the nearest road or highway where emergency responders can see them. If daylight is diminished, the designated employee(s) shall be given reflective vest or flashlights in order to direct emergency personnel to the location of the work- site, which may not be visible from the road or highway.
- 5.7.9 During a heat wave or hot temperatures, workers will be reminded and encouraged to immediately report to their supervisor any signs or symptoms they are experiencing.
- 5.7.10 Training for employees and supervisors will include every detail of these written emergency procedures.

**5.8 Procedure for Handling Sick Workers**

- 5.8.1 If someone displays possible signs or symptoms of heat illness, a trained first aid worker or supervisor will check the person and determine whether resting in the shade and drinking cool water will suffice or if emergency service providers will need to be called. Do not leave a sick worker alone in the shade, as he or she can take a turn for the worse! If someone displays possible signs or symptoms of heat illness and no trained first aid worker or supervisor is available at the site, call emergency service providers.
- 5.8.2 Employees taking a "preventative cool-down rest" must be monitored for symptoms of heat illness, encouraged to remain in the shade and not ordered back to work until symptoms are gone. Employees with symptoms must be provided appropriate first aid or emergency response.
- 5.8.3 Call emergency service providers immediately if an employee displays signs or symptoms of heat illness (loss of consciousness, incoherent speech, convulsions, red and hot face), does not look OK or does not get better after drinking cool water and resting in the shade. While the ambulance is in route, initiate first aid (cool the worker: place in the shade, remove excess layers of clothing, place ice pack in the armpits and join area and fan the victim). Do not let a sick worker leave the site, as they can get lost or die (when not being transported by ambulance and treatment has not been started by paramedics) before reaching a hospital!
- 5.8.4 If an employee does not look OK and displays signs or symptoms of severe heat illness (loss of consciousness, incoherent speech, convulsions, red and hot face), and the worksite is located more than 20 min away from a hospital, call emergency service providers, communicate the signs and symptoms of the victim and request Air Ambulance.

**5.9 Training**

- 5.9.1 Training for BNB employees will consist of coverage of this standard and the BNB Heat Illness Prevention Plan.
- 5.9.2 All BNB supervisors must be trained on this policy prior to overseeing work in outdoor temperatures that exceed 80F.
- 5.9.3 Training for subcontractor personnel will consist of coverage of the subcontractor’s HIPP, this standard, and site-specific heat information.
- 5.9.4 Each subcontractor supervisor will train workers on the site-specific steps that will be followed for contacting emergency medical services, including how they are to proceed when there are non-English speaking workers, how clear and precise directions to the site will be provided as well as stress the need to make visual contact with emergency responders at the nearest road or landmark to direct them to their worksite.

**5.9.5 Prior to working outside, training must be conducted and cover these specific items:**

- 5.9.5.1** Written procedures, standards, HIPP
- 5.9.5.2** Environmental and personal risk factors for heat illness
- 5.9.5.3** Procedures for identifying, evaluating, and controlling exposures to the environmental and personal risk factors for heat illness
- 5.9.5.4** The importance of frequent consumption of small quantities of water, up to 4 cups per hour under extreme conditions of work and heat
- 5.9.5.5** The importance of acclimatization
- 5.9.5.6** The different types of heat illness and the common signs and symptoms of heat illness
- 5.9.5.7** The importance of immediately reporting symptoms of heat illness in oneself or co-workers
- 5.9.5.8** Procedures for responding to symptoms of possible heat illness, including how emergency medical services will be provided should they become necessary
- 5.9.5.9** Procedures for contacting emergency medical services, and if necessary, for transporting employees to a point where they can be reached by an emergency medical service provider.

**6.0 References**

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[CALOSHA Subchapter 7 – General Industry Safety Orders Group 2 – Safe Practices and Personal Protection Article 10 -Personal Safety Devices and Safeguard SS3395 – Heat Illness Prevention](#)

[WA L&I 296-62-095 Outdoor heat exposure](#)

**7.0 Attachments**

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[OSHA Heat Illness Guidelines](#)



# Heavy Equipment

## 1.0 Purpose

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- 1.1. The use of heavy equipment on BNBuilders Projects introduces a vast array of potential exposures to personnel and the public. The delivery, use, operation, staging, delineation, inspection, etc. of heavy equipment must be planned for prior to equipment arriving on site. The purpose of this standard is to require that equipment is operated in a safe manner; that the equipment is properly maintained; and that ground personnel are properly protected.

## 2.0 Scope

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- 2.1. This standard addresses requirements and best practices for heavy equipment that operate on BNB projects.  
**2.2. For additional information, please reference any of the below:**

- 2.2.1. [Cranes](#)
- 2.2.2. [Forklifts](#)
- 2.2.3. [Excavation](#)
- 2.2.4. [Utility Avoidance](#)

## 3.0 Responsibility

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### 3.1 Project Management

**3.1.1. Project Management is responsible for:**

- 3.1.1.1. site logistics planning and implementation to minimize exposure of personnel and public to heavy equipment.
- 3.1.1.2. acquiring and reviewing submittals such as operator training certifications.
- 3.1.1.3. reviewing completed Pre-Task Plans and Job/Activity Hazard Analysis Forms to ensure inclusion of heavy equipment routes, operations, safe practices, etc.
- 3.1.1.4. ensuring safe work practices are carried out regarding heavy equipment.

### 3.2 Workers

**3.2.1. Workers are responsible for:**

- 3.2.1.1. following site logistics requirements for the BNB Project.
- 3.2.1.2. completing an adequate Job/Activity Hazard Analysis and daily Pre-Task Plans that include provisions for heavy equipment.
- 3.2.1.3. operating, inspecting, documenting, and maintaining equipment in accordance with manufacturer and regulatory requirements.

## 4.0 Definitions

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- 4.1. **Barricade** - an obstruction to deter the passage of persons or vehicles.
- 4.2. **Exclusion/controlled access zone** – an area where entry is only permitted to authorized personnel
- 4.3. **Flagger** – a person who’s responsible to signal or warn (a person, automobile, etc.) with a flag
- 4.4. **Heavy Equipment** - excavators, track hoes, dump trucks, end dumps, bob cats, pavers, rollers, earth moving equipment, forklifts, front-end loaders, scrapers, cranes, etc.
- 4.5. **Signals** - moving signs, provided by workers, such as flaggers, or by devices, such as flashing lights, to warn of possible or existing hazards.
- 4.6. **Signs** - the warnings of hazard, temporarily or permanently affixed or placed, at locations where hazards exist.
- 4.7. **Tags** - temporary signs, usually attached to a piece of equipment or part of a structure, to warn of existing or immediate hazards.

## 5.0 Procedure

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## 5.1 General Heavy Equipment Requirements

- 5.1.1. Pre-Task Plans and Job/Activity Hazard Analyses must identify heavy equipment to be used, associated hazards, and controls. Equipment operators must address the presence of personnel on foot in the areas of their operations. Likewise, personnel on foot in areas with moving equipment must address the equipment hazard in their planning.
- 5.1.1.1. Personnel should not be within ten feet of moving vehicles without adequate protective measures as outlined in the Hazard Control section of this standard.
  - 5.1.1.2. Personnel shall not alter any equipment or systems without prior approval from the equipment/tool manufacturer and BNB Project Management/Supervision.
  - 5.1.1.3. Cell phone use is not allowed while operating equipment.
  - 5.1.1.4. A valid driver's license is required for operating any vehicle or heavy machinery on the job site or corresponding right-of-way.
  - 5.1.1.5. The speed limit on site, including parking lots, is 10 M.P.H. unless otherwise posted.
  - 5.1.1.6. Engines must not be allowed to idle on BNB Projects. Vehicle engines shall not be allowed to run in closed garages or other enclosed places, unless vents are provided which effectively remove the exhaust gases from the building.
  - 5.1.1.7. Combustible and flammable materials shall be removed from the immediate area prior to operations.
  - 5.1.1.8. Equipment shall be equipped with a fire extinguisher having a 5 BC rating or higher.
  - 5.1.1.9. Whenever the equipment is parked, the parking brake shall be set. Equipment parked on inclines must have the wheels chocked and the parking brake set.
  - 5.1.1.10. Equipment must have sufficient drip tubs to prevent leaks from contacting the soil. Leaks must be corrected IMMEDIATELY upon observation.
  - 5.1.1.11. If equipment will be leaving the site, track out must be prevented by adequate means.
  - 5.1.1.12. Where vehicles are operated, temporary covers for conduits, trenches and manholes and their supports, when located in roadways and vehicular aisles, shall be designed to carry at least 2 times the maximum intended vehicular live load and they shall be designed and installed as to prevent accidental displacement.
  - 5.1.1.13. No equipment having an obstructed view to the rear will be allowed unless:
    - 5.1.1.13.1. The vehicle has a reverse signal alarm audible above the surrounding noise level.
    - 5.1.1.13.2. The vehicle is backed up only when a flagger, signal person, or spotter signals that it is safe to do so.
    - 5.1.1.13.3. The vehicle is equipped with a back-up camera.
    - 5.1.1.13.4. The operator follows a hands-off-the-controls/levers method when personnel are on foot in the area if feasible.
  - 5.1.1.14. Tools and material shall be secured to prevent movement when transported in the same compartment with employees.
  - 5.1.1.15. When mounting or dismounting a piece of equipment, personnel must maintain three points of contact and face the equipment. Non-slip surfaces should be in place on equipment.
  - 5.1.1.16. Where a hazard exists to personnel because of traffic or haulage conditions at work sites that encroach upon public streets or highways, a system of traffic controls in conformance with the latest edition of "Manual on Uniform Traffic Control Devices for Streets and Highways" shall be required so as to abate the hazard. Additional means of traffic control, such as continuous patrol, detours, hard barricades, or other techniques for the safety of employees may be employed.
  - 5.1.1.17. Slow-moving vehicles (less than 25 mph) driven on public roadways shall be clearly identified by posting a triangular emblem, colored fluorescent yellow-orange with dark red reflective border.
  - 5.1.1.18. Equipment that must pass under overhead utilities must be fully lowered. See [Utility Avoidance](#).

### 5.1.2 Roll-Over Protective Structures (ROPS) and Cab Protection

- 5.1.2.1. ROPS and seat belts shall be installed and used on all equipment that was provided with a ROPS by the manufacturer. ROPS shall provide operator protection against the hazard of

falling objects. ROPS system manufacturer's labels must be intact and legible.

- 5.1.2.2. All cab glass shall be safety glass, or equivalent, that introduces no visible distortion affecting the safe operation.
- 5.1.2.3. All vehicles with cabs shall be equipped with windshields and powered wipers. Cracked and broken glass shall be replaced. Vehicles operating in areas or under conditions that cause fogging or frosting of the windshields shall be equipped with operable defogging or defrosting devices.
- 5.1.2.4. All haulage vehicles, whose pay load is loaded by means of cranes, power shovels, loaders, or similar equipment, shall have a cab shield and/or canopy adequate to protect the operator from shifting or falling materials.

### **5.1.3 Required Components**

- 5.1.3.1. All vehicles shall have a service brake system, an emergency brake system, and a parking brake system. These systems may use common components and shall be maintained in operable condition.
- 5.1.3.2. Whenever visibility conditions warrant additional light, all vehicles, or combinations of vehicles, in use shall be equipped with at least two headlights and two taillights in operable condition.
- 5.1.3.3. All vehicles, or combination of vehicles, shall have brake lights in operable condition regardless of light conditions.
- 5.1.3.4. Proximity Alarms – As a best practice, all equipment with a field of vision less than 270 degrees (i.e. rough terrain/all-terrain tele-handlers) should be equipped with an operational proximity alarm (this is different than the back-up alarm requirement). This alarm will have an audio and visual component. Proximity alarms will be installed in a position to best mitigate the blind spot hazard.
- 5.1.3.5. Quick Hitch Releases – All equipment having quick hitch release mechanisms to change buckets or features on the equipment will be thoroughly reviewed and operators must provide evidence of training and knowledge, of their use and verify safety devices are engaged and fully locked.
- 5.1.3.6. All vehicles must be equipped with an operable audible warning device (horn) at the operator's station.
- 5.1.3.7. The wearing of seatbelts is mandatory on all equipment at all times. Riding in the beds of trucks, trailers or in/on any vehicle that does not provide safe seating for passengers is prohibited. Seat belts and anchorages meeting the requirements of 49 CFR Part 571 (Department of Transportation, Federal Motor Vehicle Safety Standards) shall be installed in all motor vehicles.
- 5.1.3.8. Vehicles used to transport employees shall have seats firmly secured and adequate for the number of employees to be carried.

### **5.1.4 Inspection Requirements**

- 5.1.4.1. All heavy equipment shall have a documented inspection at the beginning of each shift to ensure that the equipment is within safe operating conditions as required by the manufacturer and free of apparent damage that could cause failure while in use. All defects shall be corrected before the vehicle is placed in service. See the attached “Heavy Equipment, Forklift, Telehandler Daily Inspection Checklist.”
- 5.1.4.2. Mobile equipment without the proper safety devices shall be reported to the person in charge of equipment maintenance for correction.

### **5.1.5 Maintenance**

- 5.1.5.1. Maintenance of heavy equipment must be in accordance with manufacturer and other applicable requirements. Only qualified personnel are allowed to maintain equipment and must abide by the BNB Project's requirements and have provisions for lone working (see [Lone Work](#)). Maintenance personnel must have and follow written Lock Out Tag Out procedures (or block out procedures. See [Electrical](#)). Waste materials and liquids must be properly disposed of.

- 5.1.5.2. Except for emergency field repairs, a safety tire rack, cage, or equivalent protection shall be used when inflating truck or equipment tires after mounting on a rim, if such tires depend upon a locking ring or similar device to hold them on the rim.

### **5.1.6 Flaggers**

- 5.1.6.1. A flagger or flaggers shall be utilized at locations on a construction site where barricades and warning signs cannot control the moving traffic. Flaggers shall be utilized in accordance with the Manual on Uniform Traffic Control Devices for Streets and Highways published by the State Department of Transportation.
- 5.1.6.2. Flaggers shall be trained by persons with the qualifications and experience necessary to effectively instruct the employee in the proper fundamentals of flagging moving traffic. Online training resources are available for flagger certification. Certification of flaggers is available for look up by anyone and is stored online.
- 5.1.6.3. Flaggers must be certified and shall wear warning garments such as vests, jackets, or shirts manufactured in accordance with the requirements of the American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) 107-2004, High Visibility Safety Apparel and Headwear. During the hours of darkness, flaggers' stations shall be illuminated such that the flagger will be clearly visible to approaching traffic and flaggers shall be outfitted with reflectorized garments manufactured in accordance with the requirements of the American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) 107-2004, High Visibility Safety Apparel and Headwear. The retroreflective material shall be visible at a minimum distance of 1,000 feet. White outer garments with retroreflective material that meets the above requirements may be worn during hours of darkness but not during snow or fog conditions, in lieu of colored vests, jackets and/or shirts.

### **5.1.7 Haulage Vehicle Operation**

- 5.1.7.1. Haulage vehicles shall be under positive control during all periods of operation. When descending grades, the vehicles shall be kept in gear.
- 5.1.7.2. The operator shall not leave the controls of the vehicle while it is moving under its own engine power.
- 5.1.7.3. No loading device shall be left unattended until the load or bucket is lowered to the ground, unless proper precautions such as blocking are taken to prevent accidental lowering.
- 5.1.7.4. Loading buckets, scoops, blades or similar attachments on haulage vehicles which do not provide fall protection shall not be used as work platforms or to elevate or transport personnel.

### **5.1.8 Fueling**

- 5.1.8.1. No internal combustion engine fuel tank shall be refilled with a flammable liquid while the engine is running. Fueling shall be done in such a manner that the likelihood of spillage is minimal. If a spill occurs, it shall be adequately cleaned up, evaporated, or equivalent action taken to control vapors before restarting the engine. Fuel tank caps shall be replaced before starting the engine.
- 5.1.8.2. A good metal-to-metal contact shall be kept between fuel supply tank or nozzle of supply hose and the fuel tank.
- 5.1.8.3. No open lights, welding, or sparking equipment shall be used near internal combustion equipment being fueled or near storage tanks.
- 5.1.8.4. No smoking shall be permitted outside of designated areas. Post a conspicuous sign in each fuel storage and fueling area stating: "NO SMOKING WITHIN 50 FEET."
- 5.1.8.5. Class I liquids shall not be dispensed by pressure from drums, barrels, and similar containers. Approved pumps taking suction through the top of the container or approved self-closing faucets shall be used.
- 5.1.8.6. No repairs shall be made to equipment while it is being fueled.
- 5.1.8.7. Each fuel storage tank or drum shall have the word "Flammable" conspicuously marked thereon and should also have a similarly sized word indicating the contents of the container.
- 5.1.8.8. A dry chemical or carbon dioxide fire extinguisher rated 6:BC or larger shall be in a location accessible to the fueling area.

## 5.1.9 Pile Driving

- 5.1.9.1. Boilers and piping systems which are a part of, or used with, pile driving equipment shall meet the applicable requirements of the American Society of Mechanical Engineers, Power Boilers (section I). All pressure vessels which are a part of, or used with, pile driving equipment shall meet the applicable requirements of the American Society of Mechanical Engineers, Pressure Vessels (section VIII).
- 5.1.9.2. Overhead protection, which will not obscure the vision of the operator shall be provided. Protection shall be the equivalent of 2-inch planking or other solid material of equivalent strength.
- 5.1.9.3. Stop blocks shall be provided for the leads to prevent the hammer from being raised against the head block.
- 5.1.9.4. A blocking device, capable of safely supporting the weight of the hammer, shall be provided for placement in the leads under the hammer at all times while employees are working under the hammer.
- 5.1.9.5. Guards shall be provided across the top of the head block to prevent the cable from jumping out of the sheaves.
- 5.1.9.6. When the leads must be inclined in the driving of batter piles, provisions shall be made to stabilize the leads.
- 5.1.9.7. Fixed leads shall be provided with ladder, and adequate rings, or similar attachment points, so that the loft worker may engage his safety belt lanyard to the leads. If the leads are provided with loft platforms(s), such platform(s) shall be protected by standard guardrails.
- 5.1.9.8. Steam hose leading to a steam hammer or jet pipe shall be securely attached to the hammer with an adequate length of at least 1/4-inch diameter chain or cable to prevent whipping in the event the joint at the hammer is broken. Air hammer hoses shall be provided with the same protection as required for steam lines.
- 5.1.9.9. Safety chains, or equivalent means, shall be provided for each hose connection to prevent the line from thrashing around in case the coupling becomes disconnected.
- 5.1.9.10. Guys, outriggers, thrust-outs, or counterbalances shall be provided as necessary to maintain stability of pile driver rigs.
- 5.1.9.11. Engineers and winchmen shall accept signals only from the designated signalmen.
- 5.1.9.12. All employees shall be kept clear when piling is being hoisted into the leads.
- 5.1.9.13. When piles are being driven in an excavated pit, the walls of the pit shall be sloped to the angle of repose or sheet-piled and braced.
- 5.1.9.14. When steel tube piles are being "blown out", employees shall be kept well beyond the range of falling materials.
- 5.1.9.15. When it is necessary to cut off the tops of driven piles, pile driving operations shall be suspended except where the cutting operations are located at least twice the length of the longest pile from the driver.
- 5.1.9.16. When driving jacked piles, all access pits shall be provided with ladders and bulkheaded curbs to prevent material from falling into the pit.

## 5.2 Hazards

### 5.2.1. The following is a list of hazards associated with heavy equipment:

- 5.2.1.1. Personnel unable to be seen due to their physical positioning (crouched down or standing in a blind spot)
- 5.2.1.2. Roll/tip over of equipment due to steep grade/incline/soft ground/etc.
- 5.2.1.3. Struck-by flying objects
- 5.2.1.4. Hydraulic line damage
- 5.2.1.5. Leaking/spilling/spraying fluids such as oil, grease, fuel, etc.
- 5.2.1.6. Contacting overhead and underground utilities
- 5.2.1.7. Falls from heavy equipment- see [Fall protection](#)
- 5.2.1.8. Exhaust from idling/operating equipment
- 5.2.1.9. Inappropriate use of a piece of equipment
- 5.2.1.10. Improperly maintained equipment
- 5.2.1.11. Broken, disconnected, deactivated safety equipment
- 5.2.1.12. Blind spots due to equipment configuration

## 5.3 Hazard Controls

### 5.3.1 Engineering Controls

#### 5.3.1.1. Site logistics planning considerations:

- 5.3.1.1.1. Separation of people and equipment by establishing designated travel routes
- 5.3.1.1.2. Availability of separate site entrances for equipment and people
- 5.3.1.1.3. Designated and protected break areas

### 5.3.2 Administrative Controls

- 5.3.2.1. Exclusion/controlled access zones must be established to keep personnel out of equipment radiuses during operation. Barricades, signage, and cross walks are suitable for establishing exclusion zones.
- 5.3.2.2. All personnel must be familiar with blind spot parameters. Posters may be erected on project sites where they can be viewed and shown to new hires.
- 5.3.2.3. Dust generated during use of heavy equipment must be controlled.
- 5.3.2.4. Spotters, flaggers, and back-up alarms also serve as administrative controls.

### 5.3.3 Personal Protective Equipment

#### **Personal Protective Equipment for heavy equipment may consist of the following:**

- 5.3.3.1. Cab shielding
- 5.3.3.2. Personal visibility flag
- 5.3.3.3. Seat belts
- 5.3.3.4. Hard hats
- 5.3.3.5. Eye protection
- 5.3.3.6. Hearing protection
- 5.3.3.7. Reflective clothing:
- 5.3.3.8. Personnel (on foot) exposed to the hazard of vehicular traffic shall wear warning garments such as vests, jackets, or shirts manufactured in accordance with the requirements of the American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) 107-2004, High Visibility Safety Apparel and Headwear. Continued on next page...
- 5.3.3.9. During hours of darkness, warning garments shall be retro reflective and shall be manufactured in accordance with the requirements of the American National Standards Institute (ANSI)/International Safety Equipment Association (ISEA) 107-2004, High Visibility Safety Apparel and Headwear. The retro reflective material shall be visible at a minimum of 1,000 feet. White outer garments with retro reflective material that meets the above requirements may be worn during hours of darkness but not during snow or fog conditions, in lieu of colored vests, jackets and/or shirts.

## 5.4 Training

### 5.4.1. Personnel must be trained on:

- 5.4.1.1. project site logistics features including any separation measures that are in place.
- 5.4.1.2. safe work practices regarding the dangers of construction machinery.
- 5.4.1.3. the danger of passing between swinging superstructures of large construction equipment and solid objects.
- 5.4.1.4. the danger of walking or working within an equipment's operating radius.
- 5.4.1.5. Operators of equipment must be trained on the specific make and model of equipment. Operators of forklifts, tele-handlers, and cranes must provide proof of training.
- 5.4.1.6. Flaggers shall be trained in the proper fundamentals of flagging moving traffic before being assigned as flaggers. Signaling directions used by flaggers shall conform to the MUTCD.

**5.4.2. The training and instructions shall be based on the MUTCD, work site conditions, and include the following:**

- 5.4.2.1. flagger equipment which must be used,
- 5.4.2.2. layout of the work zone and flagging station,
- 5.4.2.3. methods to signal traffic to stop, proceed or slow down,
- 5.4.2.4. methods of one-way traffic control,
- 5.4.2.5. trainee demonstration of proper flagging methodology and operations,
- 5.4.2.6. emergency vehicles traveling through the work zone,
- 5.4.2.7. handling emergency situations,
- 5.4.2.8. methods of dealing with hostile drivers,
- 5.4.2.9. flagging procedures when a single flagger is used (when applicable).

## **6.0 References**

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[Fed/OSHA 1926.600-603 - Equipment](#)

[Cal/OSHA T8 CCR Subchapter 4, Article 11 – Vehicles, Traffic Control, Flaggers, Barricades, and Warning Signs](#)

[Cal/OSHA T8 CCR Subchapter 4, Article 10 – Haulage and Earth Moving](#)

[L&I WAC Title 296-155-600 to 296-155-630 – Motor Vehicles, Mechanized Equipment, and Marine Operations](#)

[L&I WAC Title 296-155-950 to 295-155-965 – Rollover Protective Structures and Overhead Protection](#)

## **7.0 Attachments**

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[Aerial Work Platform Inspection Checklist](#)

[Equipment User Agreement Form](#)

[Fall Protection Work Plan](#)



# Housekeeping

## 1.0 Purpose

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- 1.1. Good housekeeping is an essential element of incident prevention. It should be a primary concern to all Staff subcontractors and workers on site. Good housekeeping should be planned at the beginning of the job, carefully supervised and followed to final clean-up. Confusion will be reduced and operations will be more efficient with a higher morale when the work area is clean and orderly. A project that is not organized and clean is not safe.

## 2.0 Scope

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- 2.1. BNB projects and work areas shall be kept clean at all times. Regular cleaning shall be conducted throughout the course of work in order to maintain safe and sanitary conditions. Housekeeping should be a concern to all personnel.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. BNB Project Management is responsible for ensuring that adequate housekeeping requirements are set forth in contracts with all subcontractors. Project Managers may add an additional provision to contracts that requires composite clean-up (see procedures section). BNB Staff may remedy non-conforming situations as deemed necessary. Project Supervision will ensure that housekeeping is adequate. Project Supervision will also set the tone for housekeeping from the beginning of the project by leading as an example.

### 3.2 Workers

- 3.2.1. Each worker is responsible for housekeeping throughout the course of each work task. Workers must ensure that production does not get ahead of clean-up efforts in order to have a safe workplace. Workers must follow requirements in the procedures section of this standard.

## 4.0 Definitions

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- 4.1. **Housekeeping** - The maintenance of a construction project.
- 4.2. **Combustible** - Capable of catching fire and burning.
- 4.3. **Sweeping Compound** - A material that is used to trap dust on flooring prior to sweeping. It can be used on cement, concrete, marble, etc.
- 4.4. **Indoor Air Quality**- A term which refers to the air quality within and around buildings and structures, especially as it relates to the health and comfort of building occupants.
- 4.5. **Composite Clean Up**- A crew composed of workers from each trade that works together to perform scheduled clean-up sessions on a site.

## 5.0 Procedure

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### 5.1 General Housekeeping Procedures

- 5.1.1. Housekeeping and daily cleanup should be made a priority on all BNB projects. A messy project does not reflect our training, our image nor does it deliver the right message to our customers or our community.
- 5.1.2. All work areas shall be maintained in a "broom swept" condition at all times to the greatest possible extent. This shall include packing materials, demolition debris, and scrap material, unused or unusable excavated material. If the Subcontractor fails to comply, the Project Manager or designee will remedy the non-conforming situation and deduct costs incurred from monies owed the Subcontractor.



- 5.1.3. Debris will not be allowed to accumulate. All trash shall be removed and cleaned up from the site or contained in suitable covered dumpsters, trash bins or similar containers.
- 5.1.4. Loose materials shall not be stored around the floor perimeter edge or perimeter of floor openings where they can be easily knocked off. All materials shall be maintained in neat stockpiles for ease of access. Keep aisles and walkways clear of loose materials and tools. Materials shall not be placed within six feet of any hoist way or floor openings or within ten feet of any exterior wall that does not extend above the material stored.
- 5.1.5. Clean up loose materials, waste, etc., immediately. This is especially important in aisles and in the vicinity of ladders, ramps, stairs, and machinery. Tools and loose materials should be removed immediately if a hazard is created. Protruding nails should be removed or bent over as the material is removed. Cleaned lumber should be stacked in orderly piles. Workmen performing this task should wear heavy gloves and puncture-proof insoles.
- 5.1.6. Empty bottles, containers and papers should not be allowed to accumulate where lunches are eaten on the jobsite. Trash disposal cans shall be provided. Glass bottles are not allowed on the construction site.
- 5.1.7. Any debris that is dropped more than 20 feet to any point outside the exterior walls of the structure shall be done with the use of a chute or slide. The chute or slide must be enclosed on all sides. Employees and general public shall be protected by flying debris by barricade or other protective means as necessary. A lockout/tagout program, fall protection or other requirements for the removal of clogged material may be required. Before removal of clogged material, a competent person shall review the operation and applicable JHA and PTP.
- 5.1.8. Tools and materials should not be left on site where they can create a hazard or be stolen. Tools and surplus materials should be returned to storage areas and stored in a safe manner.
- 5.1.9. Clean up spilled liquids immediately.
- 5.1.10. Sanitation will be in accordance with OSHA Subpart D 1926 (Sanitation). This references drinking water, toilet facilities, and hand washing stations.
- 5.1.11. During the course of construction scrap lumber with protruding nails, and all other debris shall be kept cleared from work areas, passageways, and stairs, in and around buildings or other structures. Nails shall be removed or bent over in lumber.
- 5.1.12. All stairways, passageways, gangways, and crossways must be kept free of material, supplies, and obstructions at all times.
- 5.1.13. Combustible scrap and debris shall be removed at regular intervals during the course of construction.
- 5.1.14. Containers shall be provided for the collection and separation of waste, trash, oily and used rags, and other refuse. Containers used for oily, flammable, or hazardous wastes, such as caustics, acids, harmful dusts, etc., shall be equipped with labels and covers.
- 5.1.15. All trash and debris will be removed from all work areas daily. Trash receptacles shall be emptied as needed. All trash/debris must be cleaned up and disposed in the appropriate dumpsters and covered nightly. This includes lunch/break trash. Work areas must be cleaned every day by trades that generate the debris and maintained in a safe working condition. Housekeeping is a condition of employment
- 5.1.16. Sweeping compound is a requirement of the Site-Specific Safety Plan.
- 5.1.17. Dust creating activities will take place only in accordance with the IAQ Management Plan. Any alterations in the finished areas will require either temporary dust protection or a vacuum with HEPA filter to collect dust generated.
- 5.1.18. Strict compliance with the project specific Construction Waste Management Plan is required. Recycled materials include but are not limited to wood, scrap metal, concrete, asphalt, cardboard, and drywall. Construction waste shall only be placed in the appropriately labeled dumpster.
- 5.1.19. Extension cords, hoses, welding leads, etc., must be run overhead when possible in stairways, aisles, and exit areas.
- 5.1.20. NO Tobacco or sunflower seeds are allowed on jobsites, (except in designated areas).
- 5.1.21. No eating in buildings (except BNB designated lunch areas identified by the site logistics plan).

- 5.1.22. The floor of every workroom shall be kept as dry as possible. Drainage shall be maintained where wet processes are used, and false floors, platforms, mats, or other dry standing places shall be provided, when possible.
- 5.1.23. To facilitate cleaning, every floor, working place, and passageway shall be kept free from protruding nails, splinters, loose boards, clutter, and unnecessary holes and openings.
- 5.1.24. Dry sweeping and the use of compressed air for the cleaning of floors and other surfaces shall be prohibited. If vacuuming is used, the exhaust air shall be HEPA filtered to prevent generation of airborne respirable dust. Gentle wash down of surfaces is preferred.
- 5.1.25. Work areas and means of access shall be maintained safe and orderly.
- 5.1.26. Sufficient personnel and equipment shall be provided to ensure compliance with all housekeeping requirements.
- 5.1.27. Work areas shall be inspected daily for adequate housekeeping and findings shall be recorded on daily inspection reports.
- 5.1.28. Work will not be allowed in those areas that do not comply with the requirements of this standard.
- 5.1.29. All stairways, passageways, gangways, and access ways shall be kept free of materials, supplies, and obstructions at all times.
- 5.1.30. Loose or light material shall not be stored or left on roofs or floors that are not closed in, unless it is safely secured.
- 5.1.31. Tools, materials, extension cords, hoses, or debris shall not cause tripping or other hazards.
- 5.1.32. Tools, materials, and equipment subject to displacement or falling shall be adequately secured.
- 5.1.33. Empty bags having contained lime, cement, and other dust-producing material shall be removed periodically.
- 5.1.34. Form and scrap lumber and debris shall be cleared from work areas and access ways in and around building storage yards and other structures.
- 5.1.35. Storage and construction sites shall be kept free from the accumulation of combustible materials.
- 5.1.36. Weeds and grass shall be kept down.
- 5.1.37. Rubbish, brush, long grass, or other combustible material shall be kept from areas where flammable and combustible liquids are stored, handled, or processed.
- 5.1.38. Accumulation of liquids, particularly flammable and combustible liquids, on floors, walls, etc., is prohibited. All spills of flammable and combustible liquids shall be cleaned up immediately.
- 5.1.39. The storage of materials shall not create a hazard. Bags, containers, bundles, construction materials and other equipment shall be stored in tiers, stacked, blocked or interlocked. They shall be limited in height so that they are stable and secure against falling, sliding, or collapse.
- 5.1.40. Only designated storage areas are allowed for the storage of material/equipment.
- 5.1.41. Keep exits, fire alarms boxes, fire extinguishing equipment, and any other emergency equipment visible, accessible, and clear of obstructions at all times (minimum clearance of 36" must be maintained around these items).
- 5.1.42. Construction sites shall be maintained in a manner that allows emergency vehicles and personnel suitable access to all areas.
- 5.1.43. The site shall comply with Storm Water Management and Discharge, to prevent any discharges into the storm drain conveyance system; ensure that all areas where water may accumulate are protected to contain water, including wash water, in secondary containment for proper disposal; protect all storm drains in the immediate vicinity to prevent any unauthorized discharges from occurring during the project.

## 6.0 References

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[FED / OSHA 29 CFR 1926.25 ; Housekeeping](#)

[CAL/OSHA Title 8 Subsection 1531 – Housekeeping](#)

[L&I WAC 296-800-220 – Housekeeping](#)

**7.0 Attachments**

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None

## Infection Control

### 1.0 Purpose

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- 1.1. Personnel and the public located within close proximity to construction activities may be potentially exposed to infections, infectious materials, and blood borne pathogens. This standard provides guidance on the protection of personnel and the public from potential exposures to infection.

### 2.0 Scope

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- 2.1. This standard applies to all BNB project and office locations. This policy will apply but is not limited to work conducted in medical facilities, active sewer systems, laboratories, schools, and other occupied facilities. For infection control pertaining to first responders, please reference the [First Aid / CPR Policy](#).

### 3.0 Responsibility

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#### 3.1 Project Management

- 3.1.1. BNB Project Management & Supervision must ensure that adequate preplanning is conducted to address infection control for work locations such as health care facilities that may have unique health exposures. The Owner’s personnel should be consulted by BNB Project Management & Supervision to address the issue of infection control.
- 3.1.2. BNB Project Management & Supervision will ensure that personnel who are potentially exposed to infectious materials are thoroughly protected and trained.

#### 3.2 Supervision

- 3.2.1. Supervisors of workers who are potentially exposed to infectious material must ensure that their personnel are adequately trained, protected, and in compliance with infection control procedures. Supervision must ensure that contaminated materials are properly disposed of in accordance with local ordinances such as the Department of Health Services.

#### 3.3 Workers

- 3.3.1. Workers must follow “Universal Precautions” when exposed to blood or bodily fluids. They must use soap and water to wash hands frequently, especially when in a medical facility or location where infectious substances are common. They must keep open cuts or wounds protected at all times. Workers must understand and follow infection control procedures when working in a medical facility. Also, workers must have up-to-date immunizations when working in healthcare facilities.

### 4.0 Definitions

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- 4.1. **Approved disinfectant** - a bleach/water solution in a ration of 1:10 or any commercially available disinfectant
- 4.2. **Blood** - human blood, human blood components and products made from human blood
- 4.3. **Blood borne Pathogens** - pathogenic microorganisms that are present in human blood and can cause disease in humans. These pathogens include but are not limited to Hepatitis B virus (HBV) and human immunodeficiency virus (HIV).
- 4.4. **Engineering Controls** - any controls that isolate or remove the blood borne pathogens hazard from the workplace.
- 4.5. **Exposure Incident** - a specific eye, mouth, or other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that result from the performance of an employee’s duties.
- 4.6. **First Responder** - any employee who has received accredited training in first aid and/or cardiopulmonary resuscitation (CPR) and has been designated as a person responsible for rendering immediate first aid assistance to persons who require emergency assistance while on a BNB project.
- 4.7. **Hand Washing Facility** - a facility providing an adequate supply of running potable water, soap, and single use towels or hot air-drying machines.
- 4.8. **ICRA** - Infection Control Risk Assessment
- 4.9. **MRSA** - Methicillin-resistant Staphylococcus Aureus

- 4.10. **Norovirus** - a group of related viruses that cause gastroenteritis, or an inflammation of the stomach and intestines
- 4.11. **PICRA** - Preconstruction Infection Control Risk Assessment
- 4.12. **Universal Precautions** - an approach to infection control. According to the concept of Universal Precautions, all human blood and certain human body fluids should be treated as if they were known to be infectious for HIV, HBV, and other blood borne pathogens. It does not matter whose blood or fluids they are; everyone will be treated the same, using "Universal Precautions."

## 5.0 Procedure

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### **ANY EXPOSURE TO HAZARDOUS SUBSTANCES / INFECTIOUS MATERIALS MUST BE DOCUMENTED AND INVESTIGATED AS AN INCIDENT.**

#### 5.1 Hazards

- 5.1.1. Hazards associated with infection control may consist of the following:
- 5.1.2. Infections due to exposure to infectious materials, blood borne pathogens, non-disinfected surfaces, contaminated pipes, containers, equipment, etc.
- 5.1.3. Exposing the public or immunocompromised patients to construction dust, chemicals, materials, waste, etc.

#### 5.2 Hazard Controls

##### **5.2.1 Engineering Controls**

- 5.2.1.1. Engineering or work practice controls that remove or isolate a source of contamination is to be the primary method of prevention. Workers must be trained to identify and follow those controls when they are in use.
- 5.2.1.2. Separate immunocompromised persons from potential exposure to work activities (i.e., Visqueen barriers and negative air pressure).
- 5.2.1.3. Sticky floor mats may be used to prevent track out from construction activities.
- 5.2.1.4. Hard or soft barriers will be erected as required in the ICRA planning process.
- 5.2.1.5. Piping systems in laboratories and healthcare facilities must be evaluated by qualified personnel prior to disassembly to prevent potential exposure to hazardous contaminants.

##### **5.2.2 Administrative Controls**

- 5.2.2.1. Soap and water or other cleaning agents must be available on each job site. Moreover, they are to be thoroughly used by all responding first aid providers after removal and proper disposition of protective equipment. The hands, along with any exposed body areas, must be cleansed.
- 5.2.2.2. Break areas must be established outside of work areas and workers must cleanse their hands prior to eating and returning to work.
- 5.2.2.3. Immunizations should be made available to those who may be potentially exposed.
- 5.2.2.4. Construction personnel should use separate entrances/exits/elevators/hallways/etc. for access and waste removal. Waste containers should be covered prior to leaving construction areas.
- 5.2.2.5. Work hours may be limited to nights or off-hour shifts to avoid potential exposures in occupied facilities.
- 5.2.2.6. Construction equipment should be inspected prior to being brought into facilities where possible contaminants such as leaking water could potentially expose building occupants.

##### **5.2.3 Personal Protective Equipment**

- 5.2.3.1. Any potentially exposed worker must be provided free personal protective equipment to be used when potentially exposed to infectious materials. Some examples of PPE for this purpose may be:
- 5.2.3.2. Impervious gloves
- 5.2.3.3. Protective coverings such as Tyvek suits and booties
- 5.2.3.4. N-95 face masks for areas with airborne hazards (i.e., contaminated air streams and chillers)

5.2.3.5. Face shields to protect from splashes

### 5.3 Training

- 5.3.1. All personnel who may be in contact with infectious materials should be provided with "infection control" training that includes information on Blood borne pathogens and MRSA at a minimum.
- 5.3.2. Those working in medical facilities should be trained on ICRA forms and procedures.

### 6.0 References

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[29 CFR 1910.1030 Bloodborne Pathogens](#)

[L&I WAC 296-800 – Core Safety](#)

[L&I WAC 246-337-060 – Infection Control](#)

[CALOSHA Title 8 Subchapter 7 Group 16 Article 109 – Hazardous Substances and Processes](#)

### 7.0 Attachments

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[Pre-Task Plan](#)

# Injury & Illness Prevention Program

## Policy Statement

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The health and safety of our employees and everyone else affected by our activities is fundamental to the success of our business. At BNBuilders, we believe that our long-term success as a business is dependent upon the ability to keep our workforce, our business partners, our suppliers, our subcontractors and members of the public safe. Our program is not intended to replace Cal- OSHA or Federal OSHA requirements but to help assist in creating "Freedom from Danger" on all of our projects.

Every employee in our company plays a critical role in achieving our purpose and vision. Our policy is to create an environment in which no one can get hurt. This is done by providing exemplary positive and inspirational leadership; pursuing every opportunity to eliminate risk by designing in safety; identifying hazards associated with our activities and removing the risk where reasonably practicable, including minimizing environmental impacts.

Each member of Management is responsible for the safety, well-being, and safe work conduct of all persons who report to or are assigned to him or her.

The employees of BNBuilders are considered to be our most valuable asset; their safety is of vital concern. Recognizing its need and responsibility for the safety of our employees, the company considers injury and illness prevention an important and integral part of every operation undertaken.

### To carry out the policy, BNBuilders will:

Maintain safe and healthful working conditions

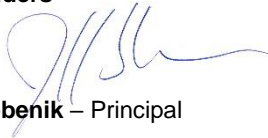
Furnish, within reason, the best available mechanical safeguards and personal protective equipment, where they are needed

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

Provide adequate medical and first-aid facilities for work-related injuries and illnesses Maintain a continuous educational program in safe operating procedures

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

### BNBuilders

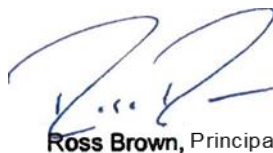


**Jeff Sebenik** – Principal

### Southern California Region



**James Awford**, Principal



**Ross Brown**, Principal

Dated: 02/08/2019

## 1.0 Responsibility

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- 1.1. The Injury and Illness Prevention Program (IIPP) administrator, Safety Director, has the authority and responsibility for implementing the provisions of this program for BNBuilders.
- 1.2. All BNB Staff are responsible for implementing and maintaining the IIPP in their work areas and for answering personnel questions about the IIPP. A copy of this IIPP is available at each BNBuilders Project and Office.

## 2.0 Compliance

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- 2.1. Management is responsible for ensuring that all safety and health policies and procedures are clearly communicated and understood by all employees. BNB Staff are expected to enforce the rules fairly and uniformly.
- 2.2. All employees are responsible for using safe work practices, for following all directives, policies and procedures, and for assisting in maintaining a safe work environment.
- 2.3. Our system of ensuring that all workers comply with the rules and maintain a safe work environment include:
  - 2.3.1. Informing workers of the provisions of our IIPP;
  - 2.3.2. Evaluating the safety performance of all workers;
  - 2.3.3. Recognizing employees who perform safe and healthful work practices;
  - 2.3.4. Providing training to workers whose safety performance is deficient; and
  - 2.3.5. Disciplining workers for failure to comply with safe and healthful work practices.

### 2.4 Disciplinary Action Procedure

- 2.4.1. BNB reserves the right to immediately take the appropriate action to eliminate inappropriate behavior or lack of satisfactory performance. Violation of **FREEDOM FROM DANGER** requirements and regulations may result in disciplinary action, up to and including termination of employment or removal from the project.
- 2.4.2. BNBuilders does not utilize a formal progressive disciplinary procedure and disciplinary action is not implemented in any particular order. Disciplinary action may include any one or more of the following:
- 2.4.3. Verbal Warning – *A specific and direct conversation to communicate that a person is not meeting expectations or needs to change behavior.* A BNBuilders' representative shall complete a FREEDOM FROM DANGER Disciplinary Action Form. A copy of the form will be kept on file in the project office.
- 2.4.4. Written Warning – *A formal written notice to document a person's inappropriate behavior or lack of satisfactory performance.* A BNBuilders' representative and the employee's Superintendent/Supervisor shall complete and issue a FREEDOM FROM DANGER Disciplinary Action Form. Please note that the issued written warning could also include probation, suspension, and/or termination. The written warning is to be routed to: BNB Staff, Workers, and Subcontractor's Office. A copy of the form will be kept on file in the project office.
- 2.4.5. Termination/Removal from the Project – Follow above procedure for "Written Warning."

## 3.0 Communication

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- 3.1. We recognize that open, two-way communication between management and staff on safety and health issues is essential to an injury-free, productive workplace. The following system of communication is designed to facilitate a continuous flow of safety and health information between management and staff in a form that is readily understandable and consists of one or more of the following checked items:
  - 3.1.1. New worker orientation including a discussion of safety and health policies and procedures.
  - 3.1.2. Review of our IIPP.
  - 3.1.3. Workplace safety and health training programs.
  - 3.1.4. Regularly scheduled safety meetings.



- 3.1.5. Effective communication of safety and health concerns between workers and Superintendent/Supervisors, including translation where appropriate.
- 3.1.6. Posted or distributed safety information.
- 3.1.7. A system for workers to anonymously inform management about workplace hazards.
- 3.1.8. Communication of safety and health information starts with the senior executive level and is then disseminated to project management teams.

### **3.2 Weekly Management Communication**

- 3.2.1. Items communicated to management weekly may consist of:
  - 3.2.1.1. Health, safety and environmental incidents
  - 3.2.1.2. Open workers compensation claims
  - 3.2.1.3. Regulatory Agency Inspections/Activity
  - 3.2.1.4. Weekly health, safety and environmental information update
  - 3.2.1.5. Health, safety and environmental Training
  - 3.2.1.6. FREEDOM FROM DANGER Best Practices
  - 3.2.1.7. Preconstruction Meetings
  - 3.2.1.8. Crane pre-pick planning
  - 3.2.1.9. Utility Strike Prevention Meetings
  - 3.2.1.10. High-risk activities

### **3.3 Monthly Regional FREEDOM FROM DANGER Training**

- 3.3.1. Regional monthly FREEDOM FROM DANGER training is to be conducted according to training needs. To help determine needs, the following should be looked at:
  - 3.3.1.1. Recent incident trends
  - 3.3.1.2. Lagging/Leading indicators
  - 3.3.1.3. Best practices
  - 3.3.1.4. Corporate training requirements
  - 3.3.1.5. Regulatory training requirements

### **3.4 Quarterly Regional Communication**

- 3.4.1. Quarterly Regional communication may include the following:
  - 3.4.1.1. Regional Incident Recaps with Lessons Learned
  - 3.4.1.2. Best Practices
  - 3.4.1.3. Accomplishments
  - 3.4.1.4. FREEDOM FROM DANGER Awards

- 3.4.1.5. Statistics and Injury Rates
- 3.4.1.6. Lagging Indicators
- 3.4.1.7. Special FREEDOM FROM DANGER topics
- 3.4.1.8. Completed/In-Progress/Upcoming training statistics

### **3.5 Monthly Regional Health, Safety and Environmental Committee Meetings**

- 3.5.1. Monthly FREEDOM FROM DANGER committee meetings help promote communication among all stake holders to ensure FREEDOM FROM DANGER issues are addressed at project and Regional levels. The purpose of safety committee meetings is to:
  - 3.5.1.1. Promote continuous improvement of BNB's FREEDOM FROM DANGER processes;
  - 3.5.1.2. Allow employees/workers to participate in the identification of FREEDOM FROM DANGER issues;
  - 3.5.1.3. Facilitate creative solutions to FREEDOM FROM DANGER concerns;
  - 3.5.1.4. Promote best practices within BNB; and
  - 3.5.1.5. Provide an opportunity for participation, involvement, feedback and promote safety awareness for all personal.
- 3.5.2. These meetings will be held once per month with meeting minutes kept. The meeting should discuss the following as well as include a job walk with operations/project management:
  - 3.5.2.1. Review business arising from previous meeting;
  - 3.5.2.2. Review Regional incident trends;
  - 3.5.2.3. Review Regional/project FREEDOM FROM DANGER issue;
  - 3.5.2.4. Discuss upcoming high hazard trade work;
  - 3.5.2.5. Discuss new business

### **3.6 Monthly Regional FREEDOM FROM DANGER Department Meetings**

- 3.6.1. Monthly Regional FREEDOM FROM DANGER department meetings help promote communication among the FREEDOM FROM DANGER department and operations staff. The purpose of these meetings is to:
  - 3.6.1.1. Review open claims;
  - 3.6.1.2. Review incidents from the past month;
  - 3.6.1.3. Address new regulatory standards;
  - 3.6.1.4. Discuss FREEDOM FROM DANGER assessment hot topics;
  - 3.6.1.5. Provide an open forum for operations staff and general Superintendent/Supervisors to talk about FREEDOM FROM DANGER topics

### 3.7 Project Communication

3.7.1. Project communication is where we provide the hourly workforce with the required FREEDOM FROM DANGER information to keep them involved in our FREEDOM FROM DANGER process through:

### 3.8 Job-Site Postings & Signage

3.8.1. Job-sites will make available and post in a conspicuous location federal, state, local, and BNB required postings and signage. The BNB job-site branding catalog will be used to acquire mandatory and optional signage.

### 3.9 Weekly All-Hands FREEDOM FROM DANGER Meetings

- 3.9.1. The purpose of the Weekly All-Hands FREEDOM FROM DANGER Meetings is to provide timely information on health, safety, and environment items that relate to project activities.
- 3.9.2. Weekly All-Hands Meetings shall be conducted by Superintendent/Supervisors and/or foreman and provide an important communication link to each employee. Project teams may request assistance from the Regional Safety Department for content or special presentations.
- 3.9.3. All project personnel are required to attend the Weekly All-Hands Meeting.
- 3.9.4. Each employee must print and sign their name on the sign in sheet. Anyone missing must be informed about important items from their direct Superintendent/Supervisor.
- 3.9.5. The Weekly All-Hands Meeting may consist of the following items:
- 3.9.6. Review minutes of the Regional FREEDOM FROM DANGER Committee Meeting
- 3.9.7. FREEDOM FROM DANGER Weekly Update via email;
- 3.9.8. At-risk behaviors, practices, or conditions that have been observed;
  - 3.9.8.1. Review of inspections, incidents, and Safety Data Sheets;
  - 3.9.8.2. Encourage employee suggestions and discussions and decide on corrective action(s);
  - 3.9.8.3. Brief the crew on new types of equipment and controlled products;
  - 3.9.8.4. Review first aid and emergency procedures, update current changes;
  - 3.9.8.5. Discuss any FREEDOM FROM DANGER risk(s) on the project; and/or
  - 3.9.8.6. Use the results of the safety inspections or audits as a source of discussion items.

### 3.10 SAFETY Stand Downs

- 3.10.1. Safety stand downs may be held when necessary and could be for the following:
  - 3.10.1.1. High risk safety issues
  - 3.10.1.2. Repeat issues
  - 3.10.1.3. Failure to control risk
  - 3.10.1.4. Failure to implement a Corrective Action Plan
  - 3.10.1.5. Occurrence of a significant incident
  - 3.10.1.6. Arrival of a regulatory inspector
  - 3.10.1.7. Recognition for safety achievement

### 3.11 Weekly Freedom from Danger Committee Meetings

- 3.11.1. These meetings are required to be held on a weekly basis for each project. Information gathered during these meetings is to be disseminated to each crew person. Items identified during these meetings that require corrective action must receive adequate follow up to ensure closure.
- 3.11.2. Topics/Activities that may be covered during these meetings may consist of:
  - 3.11.2.1. Meeting minute review from previous meeting
  - 3.11.2.2. Job safety, health and environmental walk
  - 3.11.2.3. Previous job safety, health and environmental walks
  - 3.11.2.4. Above and beyond safety, health and environmental practices or personnel
  - 3.11.2.5. Training activities
  - 3.11.2.6. High-hazard activities
  - 3.11.2.7. Upcoming work coordination

## 4.0 Hazard Assessment

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- 4.1. Periodic inspections are performed daily, weekly, monthly, and quarterly. Inspections are conducted
  - 4.1.1. When we initially established our IIP Program;
  - 4.1.2. When new substances, processes, procedures or equipment which present potential new hazards are introduced into our workplace;
  - 4.1.3. When new, previously unidentified hazards are recognized;
  - 4.1.4. When occupational injuries and illnesses occur;
  - 4.1.5. When we hire and/or reassign permanent or intermittent workers to processes, operations, or tasks for which a hazard evaluation has not been previously conducted; and
  - 4.1.6. Whenever workplace conditions warrant an inspection

### 4.2 All personnel must inspect their work areas and activities daily

- 4.2.1. Hazards identified must be corrected immediately and reported to BNB Staff. Inspections are to be documented and available upon request for review by BNB Staff.
- 4.2.2. Every person on a BNBuilders' project is expected to take responsibility for FREEDOM FROM DANGER. If a hazard is observed, it must be corrected and reported immediately.
- 4.2.3. Unsafe and/or unhealthy work conditions/practices identified will be evaluated and corrected in a timely manner. Under no circumstance will personnel be required or permitted to work under hazardous conditions. Hazards that cannot be corrected immediately will be followed up to ensure closure. Once corrected, notification shall be furnished to the BNB Staff.

### 4.3 BNB Project Team Procedures

- 4.3.1. Corrective action that is taken will be explained on inspection forms. Immediate correction shall be initiated for any unsafe acts or conditions. Results of inspections will be discussed in the weekly safety meeting. If applicable, any conditions or acts noted during the inspections which are the direct responsibility of a subcontractor maybe communicated in writing to that subcontractor on the *Disciplinary Action Program Form*. This documentation is to be filed at the project office and scanned to the jobsite file.

#### 4.4 Daily and Weekly Inspections

- 4.4.1. A daily job walk inspection will be conducted by the BNB Staff with the purpose of observing the conditions and work activities with respect to overall compliance with the FREEDOM FROM DANGER requirements. The jobsite inspection will be documented via Smart Device on BNB's Safety App.

#### 4.5 Weekly Safety Professional Inspection

- 4.5.1. A weekly job walk inspection and audit will be conducted by the BNB Safety Team with the purpose of observing the conditions and work activities with respect to overall compliance with the FREEDOM FROM DANGER requirements. The weekly inspection will be documented via the *Field Leading Indicator Report*. Observations will be communicated to BNB Staff Members upon completion of inspection.

#### 4.6 Quarterly Inspection

- 4.6.1. An Executive Management Freedom from Danger Walk will be conducted once per quarter.

### 5.0 Incident/Exposure Investigations

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- 5.1. Procedures for investigating workplace incidents and hazardous substance exposures include:
- 5.1.1. Visiting the accident scene as soon as possible;
  - 5.1.2. Interviewing injured workers and witnesses;
  - 5.1.3. Examining the workplace for factors associated with the incident/exposure;
  - 5.1.4. Determining the cause of the accident/exposure;
  - 5.1.5. Taking corrective action to prevent the incident/exposure from reoccurring; and
  - 5.1.6. Recording the findings and corrective actions taken.
- 5.2. Investigations are conducted by completing the Incident Report Form for all reported injuries/illnesses/utility strikes/first aid/near misses involving BNB employees and all contractor employees working under a BNB contract, i.e. subcontractors (all tiers), suppliers, vendors, visitors, owners' representatives and members of the public.
- 5.3. All personnel are required to report **all** on-the-job injuries, illnesses, utility strikes, first aid cases or near misses immediately to their Superintendent/Supervisor. All incidents, no matter how minor must be reported this is a condition of continued employment with BNBuilders.

### 6.0 Hazard Correction

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- 6.1. Unsafe or unhealthy work conditions, practices or procedures shall be corrected in a timely manner based on the severity of the hazards. Hazards shall be corrected according to the following procedures:
- 6.1.1. When observed or discovered;
  - 6.1.2. When an imminent hazard exists, which cannot be immediately abated without endangering employee(s) and/or property, we will remove all exposed workers from the area except those necessary to correct the existing condition. Workers necessary to correct the hazardous condition shall be provided with the necessary protection; and
  - 6.1.3. All such actions taken and dates they are completed shall be documented.

## 7.0 Training & Instruction

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- 7.1. All workers, including managers and Superintendent/Supervisors, shall have training and instruction on general and job-specific safety and health practices. Training and instruction shall be provided as follows:
  - 7.1.1. When the IIPP is revised;
  - 7.1.2. To all new employees;
  - 7.1.3. To all workers given new job assignments for which training has not previously provided;
  - 7.1.4. Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard;
  - 7.1.5. Whenever the employer is made aware of a new or previously unrecognized hazard;
  - 7.1.6. To Superintendent/Supervisors to familiarize them with the safety and health hazards to which workers under their immediate direction and control may be exposed; and
  - 7.1.7. To all workers with respect to hazards specific to each employee's job assignment.

### 7.2 BNB New Employee Orientations

- 7.2.1. Items covered during new employee training include, but are not limited to, the following:
  - 7.2.1.1. Explanation of the IIPP, emergency response plan and fire prevention plan, and measures for reporting any unsafe conditions, work practices, injuries and when additional instruction is needed.
  - 7.2.1.2. Use of appropriate clothing, including gloves, footwear, and personal protective equipment.
  - 7.2.1.3. Information about chemical hazards to which employees could be exposed and other hazard communication program information.
  - 7.2.1.4. Availability of toilet, hand-washing and drinking water facilities.
  - 7.2.1.5. Provisions for medical services and first aid including emergency procedures.
- 7.2.2. Each BNBuilders' employee will receive New Hire Orientation during the on-boarding process. New Employee Orientation is designed to introduce personnel to BNBuilders Health, Safety and Environmental requirements. The New Employee Orientation is intended to be a brief overview and does not take the place of task or program safety, health and environmental training.
- 7.2.3. We train our personnel on the following subjects:
  - 7.2.3.1. Our Code of Safe Work Practices
  - 7.2.3.2. The Regional FREEDOM FROM DANGER Manual
  - 7.2.3.3. The Regional BNB Website
  - 7.2.3.4. Field operations
  - 7.2.3.5. Site Logistics
  - 7.2.3.6. Site and Task-Specific Hazards (fall protection, confined spaces, etc. as needed)

### 7.3 Project Orientation

- 7.3.1. This will cover all project-specific health, safety and environmental related issues. The Project Orientation Checklist will be used as minimum guidelines for the project.
- 7.3.2. Prior to starting work on any BNB project, a Project Orientation is to be conducted. These orientations are to be conducted on an as-needed basis for new personnel onsite, including visitors, vendors and suppliers. Subcontractor Personnel must have gone through an orientation for their company before reporting to a project-specific health, safety and environmental orientation.
- 7.3.3. All attendees will be issued a hard hat sticker upon completion of the Project Orientation.

### 7.4 Subcontractor Weekly Toolbox Safety Meetings

- 7.4.1. Subcontractor employees shall be kept informed of the requirements of the subcontractor's Safety Programs and hazards on the job site through weekly toolbox safety meetings. The subcontractor's Superintendent/Supervisor or their designee will coordinate these meetings. All subcontractor workers are required to attend these meetings. Copies of the sign-in roster including the topics covered must be provided to the BNB Staff.

### 7.5 All-Hands Weekly Safety Meetings

- 7.5.1. Weekly All-Hands Meetings shall be conducted by Superintendent/Supervisors and/or foreman and provide an important communication link to each employee. Project teams may request assistance from the Regional Safety Department for content or special presentations. All project personnel are required to attend the Weekly All-Hands Meeting.

### 7.6 Task-Specific Safety Training

- 7.6.1. We provide specific instructions to all workers regarding hazards unique to their job assignment, to the extent that such information
- 7.6.2. was not already covered in other training. When needed, employees will be provided with additional training and information to maintain their knowledge according to federal, state, and local regulatory requirements.
- 7.6.3. This may include training and instruction in the following areas:
  - 7.6.3.1. General safety and health work practices.
  - 7.6.3.2. Specific instruction with respect to hazards unique to the job assignment.
  - 7.6.3.3. When a new program is first established.
  - 7.6.3.4. To all employees given a new job assignment for which training has not previously been received.
  - 7.6.3.5. Whenever new substances, processes, procedures or equipment are introduced to the workplace and represent a new hazard, and whenever supervision is made aware of new or previously unrecognized hazards.
- 7.6.4. If a worker's job description requires any special training, documentation must be provided at orientation. If it is not available, workers will not be allowed to perform work for which safety training documentation is required. Special training, as it applies, may involve, but are not limited to the following topics:
  - 7.6.4.1. Aerial or Boom Lift and Scissor Lift
  - 7.6.4.2. Arc Flash
  - 7.6.4.3. Asbestos and Lead Awareness

- 7.6.4.4. Blood borne Pathogens
- 7.6.4.5. Confined Space
- 7.6.4.6. Competent Person
- 7.6.4.7. Crane Operation
- 7.6.4.8. Defensive Driving Safety
- 7.6.4.9. Excavation/Trenching
- 7.6.4.10. Fall Protection
- 7.6.4.11. First Aid *f* CPR
- 7.6.4.12. Flagging
- 7.6.4.13. Forklift Operation
- 7.6.4.14. Hazard Communications (GHS update training)
- 7.6.4.15. Ladders
- 7.6.4.16. Lockout *f* Tag out
- 7.6.4.17. Respiratory Illnesses (COVID-19, Etc.)
- 7.6.4.18. Respiratory Protection
- 7.6.4.19. Rigging
- 7.6.4.20. Scaffolding
- 7.6.4.21. Tele-handler Training

#### **7.6.5. Competent/Qualified Persons**

- 7.6.5.1. Competent/Qualified persons will be identified in writing and documentation of their training must be submitted to BNB staff before they begin work. The assigned competent/qualified person is expected to be a part of all pre-task plan discussions as it pertains to the work being performed.

#### **7.6.6. Supervision**

- 7.6.6.1. It is expected that supervision will have documentation of specific training required by their employers. If they are required to supervise and discuss pre-task plans or evaluate safety, the training must be part of their job.
- 7.6.6.2. All Superintendent/Supervisors/foremen overseeing one or more personnel are required to have completed OSHA 30 Hour Training within 4 years to remain current in safety, health and environmental issues.

### **8.0 Recordkeeping**

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- 8.1. We have taken the following steps to implement and maintain our IIP Program:

- 8.1.2. Records of hazard assessment inspections, including the person(s) or persons conducting the inspection, the unsafe conditions and work practices that have been identified and the action**



taken to correct the identified unsafe conditions and work practices, are recorded and documented; and

**8.1.3. Documentation of safety and health training for each worker, including the worker's name or other identifier, training dates, type(s) of training, and training providers are recorded on a worker training and instruction form. We also include the records relating to worker training provided by a construction industry occupational safety and health program approved by Cal/OSHA.**

8.2. Inspection records will be maintained via the safety department for an indefinite period and training documentation will be maintained by the Human Resources department per BNB national standard operating procedures.

## **9.0 Code of Safe Work Practices**

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- 9.1. All personnel shall follow these safe practices and render every possible aid to safe operations.
- 9.2. Work shall be well planned and supervised to prevent injuries.
- 9.3. Never work at any height where there is a risk of injury from falling or in any situation six feet or more above a surface unless fall prevention measures are in place.
- 9.4. Never enter an agreed exclusion zone or restricted area unless directed to do so by the person in charge and the work activity has been halted and any suspended load has been lowered.
- 9.5. Never work in or around unsupported ground of any depth where there is a risk of injury from ground movement or in any situation four feet or more below the ground surface unless ground support measures are in place.
- 9.6. Never be closer than ten feet from moving mobile equipment or vehicles.
- 9.7. Never work on mechanical, electrical, or pressurized systems unless the energy source has been isolated, discharged, and verified through testing.
- 9.8. Never lift a load that exceeds the capacity of the equipment.
- 9.9. Never perform a hoisting operation when a person is in the drop/swing zone.
- 9.10. Never use a tool or a piece of equipment for anything other than its intended purpose.
- 9.11. Never work around water or open fluid facilities without wearing a personal flotation device and never work without a partner who is qualified and equipped to rescue.
- 9.12. Never use a phone or handheld radio while operating a vehicle or mobile equipment.
- 9.13. Never commence or continue a task without proper protective arrangements in place to protect others (shielding, exclusion zone, delineation, etc.)
- 9.14. Never work alone without effective arrangements in place to locate and rescue in the event of becoming incapacitated.
- 9.15. Personnel shall not enter manholes, underground vaults, chambers, tanks, silos, or other similar places with poor ventilation unless it has been determined that is safe to enter.
- 9.16. The project shall be kept clean and orderly.
- 9.17. No one under the influence or in possession of drugs or alcohol is allowed.

- 9.18. Smoking is not allowed on site.
- 9.19. Horseplay, scuffling, and other acts that tend to have an adverse influence on the safety or well-being of personnel shall be prohibited.
- 9.20. No one shall knowingly be permitted or required to work while their ability or alertness is so impaired by fatigue, illness, or other causes that it might unnecessarily expose them or others to injury.
- 9.21. No loose or frayed clothing or shorts are allowed.
- 9.22. Inappropriate footwear or shoes with thin or badly worn soles are not allowed.
- 9.23. Shirts with a minimum 4-inch-long sleeve shall be worn at all times.
- 9.24. Hard hats, eye protection, reflective vests/shirts, and cut-resistant gloves shall be worn at all times.
- 9.25. Task-specific personal protective equipment shall be worn at all times (respirators, face shields, goggles, foot guards, ear plugs, etc.)
- 9.26. All nails and protruding tie wire shall be bent over or removed.
- 9.27. Vertical and horizontal impalement hazards must be protected (stakes, rebar, etc.)
- 9.28. Replace guard rails or missing hole covers immediately.
- 9.29. Personnel shall not handle or tamper with any electrical equipment, machinery, or air or water lines in a manner not within the scope of their duties, unless they have received instructions from their Superintendent/Supervisor.
- 9.30. Ladders shall be properly inspected and used.
- 9.31. Always use proper lifting procedures-- avoid twisting while lifting.
- 9.32. Clean up all liquid spills immediately.
- 9.33. Materials, tools, or other objects shall not be thrown from buildings or structures until proper precautions are taken to protect others from the falling objects.
- 9.34. Know the location of fire extinguishers, emergency exits, first aid supplies, etc.
- 9.35. No one shall bring any type of music playing device, iPod, MP3 player, or DVD/Television device on to the job. The use of headphones is not allowed.
- 9.36. Immediately report any of the following to a Superintendent/Supervisor or member of the BNB Project Team. If possible, correct the condition first and then report it.
- 9.36.1. Injury
  - 9.36.2. Illness
  - 9.36.3. Near miss
  - 9.36.4. Utility strike incident
  - 9.36.5. Defective equipment
  - 9.36.6. Unsanitary conditions
  - 9.36.7. Unsafe conditions and/or behavior
  - 9.36.8. Damage to scaffolds, false work or other supporting structures

[Heat Illness Prevention Plan](#)

[COVID-19](#)

**10.0 NEW EMPLOYEE IIPP ACKNOWLEDGEMENT**

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All new employees of BNBuilders are required to read and understand this Injury & Illness Prevention Program. Additional training will be provided to personnel based on their job assignment and task-specific hazards that they may encounter.

This signed acknowledgement is to be maintained in each employee’s personnel file at the respective head office.

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BNBuilders is dedicated to providing a safe and healthful workplace for our employees. Your health and safety must always be the first priority in any situation. Should you encounter any situation that you feel is not safe, or that could be improved in regard to safety, let your Superintendent/Supervisor know immediately.

Please sign in the space provided below certifying that you have read and fully understand the contents of this document. Upon signing, this form will become a permanent part of your personnel file.

I have read, and I understand the contents of this Injury & Illness Prevention Program. Employee

\_\_\_\_\_  
Employee

\_\_\_\_\_  
Date

\_\_\_\_\_  
Superintendent/Supervisor

\_\_\_\_\_  
Date

# Job Hazard Analysis

## 1.0 Purpose

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- 1.1. To provide instruction on the creation and use of Job Hazard Analysis (JHA) to evaluate and recognize the hazards associated with work tasks and select proper controls to prevent unsafe acts and conditions.

## 2.0 Scope

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- 2.1. This policy applies to all JHA's created by BNBuilders or subcontractors.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. BNB Project Management is responsible for ensuring all self-performed work and subcontractor work is covered on an existing site-specific JHA. Management is also responsible for verifying all field employees working under a specific JHA have been trained and have signed the JHA.

### 3.2 Supervision

- 3.2.1. Superintendents / Foreman are responsible for helping field crews create and implement JHA's for all work task they encounter. Specifically, the JHA should outline every activity necessary to complete a scope of work, all safety hazards associated with that scope and steps to mitigate these hazards.

### 3.3 Safety

- 3.3.1. BNB Safety will be responsible for reviewing and assisting in the building out of JHA's for difficult or unique work tasks.

### 3.4 Workers

- 3.4.1. Field employees are responsible for reviewing and signing each JHA that they work under. If an employee does not feel the JHA adequately covers the work task, they should not sign the JHA.

## 4.0 Definitions

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- 4.1. **Job Hazard Analysis** – means an evaluation of your working conditions for a specific task to determine which hazards are present and how you will avoid these unsafe acts or conditions.

## 5.0 Procedure

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- 5.1. *See included JHA form below:*

## Job Hazard Analysis

|                      |                        |
|----------------------|------------------------|
| ACTIVITY:            | DATE:                  |
|                      | PROJECT:               |
| DESCRIPTION OF WORK: | SITE SUPERVISOR:       |
|                      | REVIEWED BY:           |
|                      | REVIEW FOR LATEST USE: |

| WORK ACTIVITY SEQUENCE | POTENTIAL HEALTH & SAFETY HAZARDS | HAZARD CONTROLS |
|------------------------|-----------------------------------|-----------------|
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |

## **6.0 References**

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[L&I WAC 296-800 – Core Safety](#)

[FEDOSHA 3071 – Job Hazard Analysis](#)

[CALOSHA – Subchapter 7 Group 2 Article 10 – Personal Safety Devices and Safeguards](#)

## **7.0 Attachments**

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[JHA Form](#)

[Pre-Task Plan](#)

# Ladders

## 1.0 Purpose

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- 1.1. The purpose of this standard is to ensure the safe use, inspection, maintenance, and proper construction of ladders on BNB projects.

## 2.0 Scope

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- 2.1. This procedure applies to occasions when BNB employees and / or Subcontractor employees use ladders.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. Ideally, management and supervision should aim to eliminate the use of ladders as much as feasible by supporting the use of alternate methods for reaching work areas at various heights-- for example, mechanical and mobile lifts such as elevated work platforms with guardrails. However, in various situations where ladders need to be used, Project Management & Supervision are responsible for ensuring that safe ladder practices are followed.

### 3.2 Workers

- 3.2.1. Workers are responsible for trying to use alternate methods in lieu of ladders for reaching their work areas at height. When ladders are used, workers must ensure they follow safe ladder practices.

## 4.0 Definitions

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- 4.1. **Access** – A means of reaching a workspace or a work area.
- 4.2. **Double Cleat Ladder** - A ladder that is similar to a single cleat ladder, but is wider, with an additional center rail which will allow for two-way traffic for workers in ascending and descending.
- 4.3. **Extension Ladder** - A ladder consisting of two or more sections, with guides or brackets so arranged that the ladder may be adjusted to different lengths by sliding and locking the movable section or sections.
- 4.4. **Hole** - Any opening in a floor or platform, which is smaller than an opening.
- 4.5. **Job-built ladder** - A ladder that is fabricated by employees, typically at the construction site, and is not commercially manufactured. (Job-built ladders must be constructed in accordance with ANSI Standard A14.4 1979).
- 4.6. **Ladder** - A device other than a ramp or stairway, designed for use in ascending or descending at an angle with the horizontal. A ladder is intended to be stationary while in service and consists of two side pieces called side rails, joined at short intervals by crosspieces called steps, rungs or cleats.
- 4.7. **Leading Edge** - The edge of a floor, roof, or formwork for a floor or other walking/working surface (such as the deck) which changes location as additional floor, roof, decking, or formwork sections are placed, formed, or constructed. A leading edge is considered to be an “unprotected side and edge” during periods when it is not actively and continuously under construction.
- 4.8. **Opening** - An opening in any floor or platform, 12 inches or more in the least horizontal dimension. It includes stairway floor openings, ladder way floor openings, hatchways and chute floor openings.
- 4.9. **Personal Fall Arrest System** - A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.
- 4.10. **Personal Fall Protection System** - A personal fall protection system includes personal fall arrest systems, positioning device systems, fall restraint systems, safety nets and guardrails.
- 4.11. **Single Cleat Ladder** - A ladder consisting of a pair of side rails connected together by cleats, rungs, or steps.
- 4.12. **Shall** – Mandatory.
- 4.13. **Stepladder** - A ladder having treads and so constructed as to be self-supporting.
- 4.14. **Trestle Ladder** - A ladder consisting of two special, single ladders hinged together at the top to form equal angles with the surface on which they stand.
- 4.15. **Wall opening** – a gap or void 30 inches or more high and 18 inches or more wide, in a wall or partition, through which employees can fall to a lower level.

## 5.0 Procedure

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### 5.1 Safe Ladder Practices – General

- 5.1.1. Only the following ladder types shall be used:
  - 5.1.1.1. Type 1 (250 lbs. maximum rated capacity),
  - 5.1.1.2. Type 1A (300 lbs. maximum rated capacity),
  - 5.1.1.3. Type 1AA (375 lbs. maximum rated capacity)
- 5.1.2. Ladders must not be loaded beyond the manufacturer's rated capacity
- 5.1.3. Ladders constructed primarily of metal shall not be used
- 5.1.4. Manufactured wood or trestle ladders shall not be used
- 5.1.5. Ladders shall be used according to their intended design
- 5.1.6. Specialty ladders shall only be used with BNB approval
- 5.1.7. Whenever possible, use work platforms in lieu of work ladders.
- 5.1.8. A fall protection system shall be used when a worker is exposed to other potential fall hazards such as leading edges, open floor/wall holes or window openings while working and/or ascending or descending from a ladder
- 5.1.9. Only ladder rungs, not the side rails, shall be used while ascending or descending ladders
- 5.1.10. Users shall keep their body in between the side rails of a ladder and not overreach
- 5.1.11. Do not carry equipment or materials while ascending or descending ladders
- 5.1.12. Users must face ladders and maintain 3 points of contact at all times while working and/or ascending or descending from a ladder
- 5.1.13. Ladders must be equipped with non-skid safety feet
- 5.1.14. Ladders shall be placed on a stable and level footing at all times
- 5.1.15. Ladders shall not be used on ice, snow or slippery surfaces
- 5.1.16. Do not place ladders in passageways, doorways, driveways, or any location where they may be displaced by other work activities, unless protected by barricades or someone dedicated to watch and warn both the user and others that might approach the work area
- 5.1.17. Ladders shall not be placed on boxes, barrels, or other unstable bases to obtain additional height
- 5.1.18. Ladder feet shall not be wrapped with plastic or carpeting
- 5.1.19. At the base of a ladder, the landing surface must be clear and smooth (for example, when ladders are used to access rebar mats in an excavation, a piece of secured plywood would be an adequate landing).
- 5.1.20. Avoid excessive pulling and pushing while on a ladder.
- 5.1.21. Job-built ladders should only be built by qualified carpenters and according to OSHA and ANSI standards.
- 5.1.22. Get help when moving large/heavy ladders.
- 5.1.23. Never store material or tools on the steps of a ladder.
- 5.1.24. Employees shall be trained on ladder use/safety as part of their employer's safety program.

#### **5.1.25 Inspection / Maintenance**

- 5.1.25.1. Visually inspect ladders prior to use. Never use ladders with broken, bent or missing rungs or steps, broken or split side rails, missing labels, or other faulty or defective construction. Ensure movable parts operate freely without binding or undue play.
- 5.1.25.2. Damaged ladders shall be tagged as defective and removed from service.
- 5.1.25.3. Ensure the side rails, cleats, and/or rungs of ladders are kept clear and free of lines, hoses, cables, wires, oil, mud, ice, grease, and debris.
- 5.1.25.4. Ensure areas around the top and bottom of ladders are kept clear of materials, tools, equipment and debris.

### 5.2 Safe Ladder Practices – Extension Ladders



- 5.2.1. Extension ladders shall be setup at a 1:4 base to height ratio
- 5.2.2. Side rails must extend at least 3 ft. above the upper landing
- 5.2.3. Tie, block, or otherwise secure ladders to prevent them from being displaced or moved
- 5.2.4. Extension ladders shall only be adjusted while standing at the base
- 5.2.5. Workers shall not stand on the top three rungs of an extension ladder
- 5.2.6. Extension ladders shall only be used with the rung locks engaged
- 5.2.7. Always be aware of overhead hazards when setting up an extension ladder
- 5.2.8. For heavier ladders, two people are required to erect and move the ladder
- 5.2.9. A step-through system should be used when possible at the top of ladder landings

### **5.3 Safe Ladder Practices -Stepladders**

- 5.3.1. Always fully open and lock side braces when using stepladders
- 5.3.2. Stepladders shall not be used for access and egress to elevated work areas
- 5.3.3. Step ladders shall not be used as a straight ladder or in the partially closed position
- 5.3.4. Do not place planks on the top or on any step of a stepladder
- 5.3.5. Never stand on the top two steps or top cap of a stepladder
- 5.3.6. Never climb on the rear side of a one-sided stepladder
- 5.3.7. Never straddle a stepladder
- 5.3.8. Place all four feet of the ladder on even and solid footing
- 5.3.9. Do not "walk" ladders.

### **5.4 Safe Ladder Practices – Job-Built Ladders**

- 5.4.1. Job-built ladders must be constructed in accordance with ANSI Standard A14.4 1979
- 5.4.2. Job-built ladders must be constructed for intended use and must safely support the intended load.
- 5.4.3. If a ladder is to provide the only means of access or exit from a working area for 25 or more employees, or simultaneous two-way traffic is expected, a double-cleated ladder shall be installed.
- 5.4.4. Double-cleated ladders must not exceed 24 ft. in length
- 5.4.5. Single-cleat ladders must not exceed 30 ft. in length
- 5.4.6. The width of single-cleat ladders shall be at least 15 inches, but not more than 20 inches, between rails at the top.
  - 5.4.6.1. Rail splicing is permitted only when there is no loss of strength to the rail
- 5.4.7. Rails must be made from select Douglas fir without knots
- 5.4.8. 2x4 inch lumber shall be used for side rails of single cleat ladders up to 16 feet long; 2x6 inch lumber shall be used for single-cleat ladders from 16 to 30 feet in length.
- 5.4.9. 2x4 inch lumber will be used for side and middle rails of double-cleat ladders up to 12 feet in length; 2x6 inch lumber for double-cleat ladders from 12 to 24 feet in length.
- 5.4.10. Inset cleats into the edges of the side rails ½ inch, or filler blocks shall be used on the rails between the cleats. Secure the cleats to each rail with three 10d common wire nails or other fasteners of equivalent strength. Uniformly space cleats at 12 inches top-to-top.

### **5.5 Hazards**

- 5.5.1. Falls are the most common cause of worker injury associated with ladder use. Falls are mostly caused by:
  - 5.5.1.1. Use of faulty ladders
  - 5.5.1.2. Improper set-up of ladders
  - 5.5.1.3. Incorrect use of ladders

### **5.6 Hazard Controls**

#### **5.6.1 Engineering Controls**

- 5.6.1.1. The use of permanent or temporary stair towers will eliminate the risk of falls from using ladders for access.
- 5.6.1.2. Measures should be taken to eliminate the use of ladders as much as feasible by supporting the use of alternate methods for reaching work areas at various heights-- for example, mechanical

and mobile lifts such as elevated work platforms with guardrails. Ladders should be considered as a last resort to gain access to work areas and/or work positions.

### **5.6.2 Administrative Controls**

5.6.2.1. Ladder inspections are to be completed daily before the ladder is used.

## **5.7 Training**

### **5.7.1 Ladder users shall be trained on the following:**

- 5.7.1.1. Safe ladder practices outlined in this standard
- 5.7.1.2. Importance of using ladders safely including injuries due to falls from ladders.
- 5.7.1.3. Selection of ladders, including types, proper length, maximum working loads, and electrical hazards.
- 5.7.1.4. Maintenance, inspection, and removal of damaged ladders from service.
- 5.7.1.5. Erecting ladders including footing support, top support, securing, and angle of inclination.
- 5.7.1.6. Climbing and working on ladders including user's position and points of contact with the ladder.
- 5.7.1.7. Causes of falls, including haste, sudden movement, lack of attention, footwear, and user's physical condition.
- 5.7.1.8. Prohibited uses including climbing on cross bracing, uses other than designed, exceeding maximum lengths, and not meeting minimum overlap requirements.
- 5.7.1.9. All manufacturer requirements and instructions

## **6.0 References**

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[FED / OSHA 29 CFR 1926 Subpart X – Stairways and Ladders](#)

[CAL / OSHA T8 Article 25 - Ladders](#)

[L&I WAC 296-876 – Ladders, Portable and Fixed](#)

[ANSI A.14.1 – 1990](#)

## **7.0 Attachments**

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[Pre-Task Plan](#)

# Lighting

## 1.0 Purpose

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- 1.1. Adequate lighting and illumination plays a big role in safe working environments and preventing incidents. Glare, diffusion, direction, uniformity, and brightness affect visibility and the ability to see easily, accurately, and quickly. Poor lighting is uncomfortable and possibly hazardous.

## 2.0 Scope

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- 2.1. This standard applies to all walking and working areas of every BNB project. The desirable quantity of light for any particular installation depends primarily upon the work that is being done. As the illumination of the task is increased, the ease, speed, and accuracy of accomplishing it are also increased. Work areas must have adequate lighting—headlamps alone are not an acceptable method for task lighting.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. Project Management and Supervision will ensure that each worker has adequate lighting for the tasks they are performing. Project Management and Supervision will ensure that adequate access and egress lighting is provided, however it is the responsibility of the contractors to provide task lighting.

### 3.2 Workers

- 3.2.1. BNB employees & subcontractors will ensure that lighting is not less than the minimum illumination intensities listed in Attachment 1 while any work is in progress. BNB crews & subcontractors shall provide temporary lighting where needed in order to maintain illumination levels in work areas, storage areas and walkways.

## 4.0 Definitions

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- 4.1. **Foot-candle** – A unit of illuminance or illumination, equivalent to the illumination produced by a source of one candle at a distance of one foot and equal to one lumen incident per square foot. Abbreviation: FC
- 4.2. **Illumination Level** – The quantity or amount of light falling on a surface (usually expressed in foot candles).
- 4.3. **Intensity (Luminous Intensity)** – The quantity of light a source gives off in a given direction (expressed in candelas--formerly “candle”)
- 4.4. **Lamp** - any man-made light source
- 4.5. **Lumen** – The flux falling on a surface of one square foot in area, every part of which is one foot from a point source having a luminous intensity of one candela (candlepower) in all directions
- 4.6. **Luminaire** – A complete lighting device consisting of lamps and parts to distribute the light
- 4.7. **Luminance (Photometric Brightness)** – The amount of light emitted and reflected from an area of a surface measured in foot lamberts. A surface emitting one lumen per square foot has a luminance of one-foot lambert
- 4.8. **Reflectance** – A measure of how much light is reflected from a surface. It is the ratio of luminance to illumination

## 5.0 Procedure

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### 5.1 Hazards

- 5.1.1. Inadequate lighting may lead to incidents and injuries such as slips, trips, falls, struck-byes, caught-in-betweens, contact with unguarded electrical, and more. Working during non-daylight hours may increase the hazard of poor lighting.
- 5.1.2. Temporary lighting cords must be routed and secured properly, so that they are out of walkways and not in contact with any conductive surfaces or objects. Temporary lights that emit hazardous heat must be properly protected and prevented from contacting personnel/materials/equipment that could burn. Temporary lights that have cages to protect the bulb must have the cages intact. Wobble lights must

be shut down at night and must not have equipment/tools plugged into them which exceed the light's amperage rating.

## **5.2 Hazard Controls**

### **5.2.1 Engineering Controls**

5.2.1.1. When adequate natural illumination or permanent artificial illumination cannot be made available to secure the safety of employees, suitable portable lights shall be provided.

5.2.1.2. Skylights, side windows, lamps, and other light accessories which provide necessary illumination shall be kept sufficiently clean, adjusted, and repaired so as not to impair the illumination required for the safety of workers.

### **5.2.2 Administrative Controls**

5.2.2.1. Areas with insufficient lighting should be barricaded to prevent being accessed.

### **5.2.3 Personal Protective Equipment**

5.2.3.1. Dark safety glasses should not be worn indoors. Only clean and clear safety glasses should be worn in doors.

| Foot-Candles | Area of Operation/Task  |
|--------------|---|
| <b>5</b>     | General construction area lighting  |
| <b>3</b>     | General construction areas, concrete placement, excavation and waste areas, access ways, active storage areas, loading platforms, refueling, and field maintenance areas  |
| <b>20</b>    | Indoors: warehouses, corridors, hallways, exit ways, elevators, active storage rooms, traffic areas in garages. Loading platforms. Materials-loading/trucking.  |
| <b>5</b>     | Tunnels, shafts, and general underground work areas: (Exception: minimum of 10 foot-candles is required at tunnel and shaft heading during drilling, mucking, and scaling. Bureau of Mines approved cap lights shall be acceptable for use in the tunnel heading) |
| <b>10</b>    | General construction plant and shops (e.g., batch plants, screening plants, mechanical and electrical equipment rooms, carpenter shops, rigging lofts and active storerooms, mess halls, and indoor toilets and workrooms.)                                       |
| <b>30</b>    | First aid stations, infirmaries, and offices. Assembly-rough, easy seeing. Woodworking-rough sawing   |
| <b>50</b>    | Inspection. Paint dipping/spraying. Sheet metal-presses, shears. Welding.   |
| <b>100</b>   | Assembly-medium, Electrical equipment/testing. Offices.   |
| <b>200</b>   | Drafting Rooms-detailed, difficult inspection   |

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## 6.0 References

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[FED / OSHA 29 CFR 1926.56 – Illumination](#)

[CAL / OSHA T8 CCR 1523 - Illumination](#)

[L&I WAC 296-56-60221 - Illumination](#)

[L&I WAC 296-800 – Core Safety](#)

## 7.0 Attachments

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[Pre-Task Plan](#)

## Lock Out Tag Out Policy

### 1. Purpose

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- 1.1. This establishes BNBuilders policy for protecting employees and/or subcontractors who must do service or maintenance on machines or equipment and who could be injured by an unexpected start-up or release of hazardous energy. Service or maintenance includes erecting, installing, constructing, repairing, adjusting, inspecting, unjamming, setting up, troubleshooting, testing, cleaning, and dismantling machines, equipment, or processes.
- 1.2. This policy will ensure that machinery or equipment is stopped, isolated from all hazardous energy sources, and properly locked or tagged out.

### 2. Scope

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- 2.1. This policy applies to all BNBuilders employees and subcontractors who may be exposed to hazardous energy during service or maintenance work.
- 2.2. Uncontrolled energy includes potential, kinetic, flammable, chemical, electrical, and thermal sources.

### 3. Responsibilities

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- 3.1. BNB Staff are responsible for implementing and enforcing this policy.
- 3.2. All employees, subcontractors and service providers must comply with this policy.
- 3.3. Supervisors must enforce the use of lockout and tagout devices when employees do service or maintenance work and may be exposed to hazardous energy.
- 3.4. Employees who do service and maintenance work must follow the lockout/tagout procedures described in this policy.
- 3.5. Employees who work in areas where lockout/tagout procedures are used must understand the purpose of the procedures and are prohibited from attempting to restart machines or equipment that are locked or tagged out.

### 4. Definitions

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- 4.1. **Affected employee** - A person who uses equipment that is being serviced under lockout or tagout procedures, or who works in an area where equipment is being serviced.
- 4.2. **Authorized employee** - A person who locks out or tags out equipment to do service or maintenance work. An affected employee becomes an authorized employee when that employee's duties include service or maintenance work on equipment.
- 4.3. **Capable of being locked out** - An energy-isolating device that is designed with a hasp or other means of attachment to which, or through which a lock can be affixed, or if it has a locking mechanism built into it. Other energy-isolating devices will also be considered to be capable of being locked out, if lock out can be achieved without the need to dismantle, rebuild, or replace the energy-isolating device or permanently alter its energy-control capability.
- 4.4. **Disconnect** - A switch that disconnects an electrical circuit or load (motor, transformer, or panel) from the conductors that supply power to it. An open circuit does not allow electrical current to flow. Under a lockout procedure, a disconnect must be capable of being locked in the open position.
- 4.5. **Energized** - Connected to an energy source or containing potential energy.
- 4.6. **Energy source** - Any source of energy. Examples: electrical, mechanical, hydraulic, pneumatic, chemical, and thermal.
- 4.7. **Energy-isolating device** - A mechanical device that physically prevents transmission or release of energy.
- 4.8. **Hazardous energy** - Any of the types of energy existing at a level or quantity that could be harmful to workers or cause injury through inadvertent release or start-up of equipment.
- 4.9. **Lockout device** - A device that locks an energy-isolating device in the safe position.
- 4.10. **Lockout** - Placing a lockout device on an energy-isolating device, under an established procedure, to ensure the energy-isolating device and the equipment it controls can't be operated until the lockout device is removed. (An energy-isolating device is capable of being locked out if it has a hasp that accepts a lock or if it has a locking mechanism built into it.)
- 4.11. **Procedure** - A series of steps taken to isolate energy and shut down equipment.

- 4.12. **Servicing or maintenance** - Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining machines or equipment. Also includes lubricating, cleaning, unjamming, and making adjustments or tool changes if a worker may be exposed to the unexpected startup of the equipment during such activities.
- 4.13. **Tagout device** - A prominent warning sign, such as a tag, that can be securely fastened to an energy-isolating device to indicate that the energy-isolating device and the equipment it controls can't be operated until the tagout device is removed.
- 4.14. **Tagout** - Placing a tagout device on an energy-isolating device, under an established procedure, to indicate that the energy-isolating device and the equipment it controls cannot be operated until the tagout device is removed.

## 5. Procedures

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### 5.1. Exposure Survey

- 5.1.1. The designated Component Person in charge of the activity will conduct a hazardous-energy survey to and develop a Method of Procedure to determine affected machines and equipment, types, and magnitude of energy, and necessary service and maintenance tasks. Each task will be evaluated to determine if it must be accomplished with lockout or tagout procedures and also determine if the current hazard is covered under the current Job/Activity Hazard Analysis.

### 5.2. Energy control procedures

- 5.2.1. Authorized employees who lockout or tagout equipment or do service and maintenance must follow specific written energy-control procedures. The procedures must include the following information:
  - 5.2.1.1. The intended use of the procedure
  - 5.2.1.2. Steps for shutting down, isolating, blocking, and securing equipment
  - 5.2.1.3. Steps for placing, removing, and transferring lockout devices
  - 5.2.1.4. Equipment-testing requirements to verify the effectiveness of the energy-control procedures
- 5.2.2. When re-energizing equipment is necessary — when power is needed to test or position the equipment, for example — temporary removal of lockout or tagout devices is allowed. This applies only for the time required to perform the task and the procedure must be documented.
- 5.2.3. Employees must do the following before they begin service or maintenance work:
  - 5.2.3.1. Inform all affected employees of equipment shutdown.
  - 5.2.3.2. Shut down equipment.
  - 5.2.3.3. Isolate or block hazardous energy.
  - 5.2.3.4. Remove any potential (stored) energy.
  - 5.2.3.5. Lockout or tagout the energy sources.
  - 5.2.3.6. Verify the equipment is isolated from hazardous energy and de-energized.
- 5.2.4. Employees must do the following if they remove lockout or tagout devices and re-energize equipment:
  - 5.2.4.1. Remove tools and replace machine or equipment components.
  - 5.2.4.2. Inform coworkers about energy-control device removal.
  - 5.2.4.3. Ensure all workers are clear of the work area.
  - 5.2.4.4. Verify machine or equipment power controls are off or in a neutral position.
  - 5.2.4.5. Remove the lockout or tagout device.
  - 5.2.4.6. Re-energize equipment.

### 5.3. Special lockout/tagout situations

#### 5.3.1. Energized testing

- 5.3.1.1. When an energy-isolating device is locked or tagged and it is necessary to test or position equipment, do the following:
  - 5.3.1.1.1. Remove unnecessary tools and materials.
  - 5.3.1.1.2. Ensure that all other employees are out of the area.
  - 5.3.1.1.3. Remove locks or tags from energy isolating devices.
  - 5.3.1.1.4. Proceed with test.
  - 5.3.1.1.5. Deenergize equipment and lockout or tagout energy-isolating devices.
  - 5.3.1.1.6. Operate equipment controls to verify that the equipment is de-energized.

#### 5.3.2. Contract service and maintenance



- 5.3.2.1. BNB Staff and subcontractors must be aware of their respective lockout/tagout procedures before the subcontractor does onsite work requiring Lockout/tagout. BNB Staff and employees must review and comply when applicable with the subcontractor's energy-control procedures if they are more stringent than our own

### 5.3.3. Group lockout

- 5.3.3.1. When authorized employees must service equipment that has several energy sources and several energy-isolating devices, the employees must follow group lockout procedures. Contact must be made with each responsible person in charge of the perspective isolated energy and written confirmation of lock out tag out must be obtained.

### 5.3.4. Shift changes and long-term shutdowns

- 5.3.4.1. Employees must follow BNB's and the responsible subcontractors' specific written procedures when it is necessary to continue lockout/tagout when work shifts change and during long-term shutdowns. BNB Superintended or the appropriate subcontractor's competent representative is responsible for monitoring lockout and tagout devices that control the energy to equipment during long-term shutdowns

## 5.4. Lockout and tagout devices

- 5.4.1. Lockout and tagout devices must meet the following criteria to ensure that they are effective and not removed inadvertently:
  - 5.4.1.1. Lockout devices must work under the environmental conditions in which they are used. Tagout device warnings must remain legible even when they are used in wet, damp, or corrosive conditions.
  - 5.4.1.2. Lockout and tagout devices must be designated by color, shape, or size. Tagout devices must have a standardized print and warning format.
  - 5.4.1.3. Lockout devices and tagout devices must be strong enough that they can't be removed inadvertently. Tagout devices must be attached with a single-use, self-locking material such as a nylon cable tie.
  - 5.4.1.4. Any employee who sees a lockout or tagout device must be able to recognize who attached it and its purpose.
  - 5.4.1.5. Each lock must have a unique key or combination
- 5.4.2. Energy-isolating devices are the primary means for protecting BNB's employees and subcontractors who service equipment or be exposed to hazardous energies utilizing equipment and must be designed to accept a lockout device. Energy isolating devices must clearly identify function.
- 5.4.3. **Electrical energy sources.** Lockout or tagout of electrical energy sources must occur at the circuit disconnect switch. Electrical control circuitry does not effectively isolate hazardous energy. See also, Alternative methods.

## 5.5. Alternative methods

- 5.5.1. When lockout or tagout is not used for tasks that are routine, repetitive, and integral to the production process, or prohibits the completion of those tasks, then an alternative method must be used to control hazardous energy.
- 5.5.2. Selection of an alternative control method must be based on a risk assessment of the machine, equipment, or process. The risk assessment must consider existing safeguards provided with the machine, equipment or process that may need to be removed or modified to perform a given task.
- 5.5.3. For example, when control circuits are used as part of the safeguarding system, the system must be designed to ensure protection as effective as a mechanical disconnect switch or master shutoff valve. A control-reliable dual channel hardwired circuit of industrially rated components that satisfies the design features as specified in ANSI B11.19, with a safety relay or safety PLC to ensure integrity and performance of the safeguarding system, must be used.
- 5.5.4. Under all circumstances, the individual must have exclusive personal control over the means to maintain the state of the control circuit in a protective mode.

## 5.6. Training

- 5.6.1. Employees who may be exposed to hazardous energy will receive training before assignment to ensure that they understand BNB's energy-control policy and have skills to apply, use, and remove energy controls. The training will include the requirements of 1926.417 and the following:
  - 5.6.1.1. Affected employees will be trained in the purpose and use of energy-control procedures. An affected employee uses equipment that is being serviced under lockout or tagout procedures or works in an area where equipment is being serviced.

- 5.6.1.2. Authorized employees will be trained to recognize hazardous energy sources, the type and magnitude of energy in the workplace, the methods and means necessary for isolating and controlling energy, and the means to verify that the energy is controlled. An authorized employee locks out or tags out equipment to do service work. An affected employee becomes an authorized employee when that employee's duties include service or maintenance work on equipment.
- 5.6.2. Employees whose jobs are in areas where energy-control procedures are used will be trained about the procedures and the prohibition against starting machines that are locked or tagged out.
- 5.6.3. Employees will be retrained annually to ensure they understand energy-control policy and procedures.
- 5.6.4. Authorized and affected employees will be retrained whenever their job assignments change, energy-control procedures change, equipment or work processes present new hazards, or when they don't follow energy-control procedures. Current training records will be maintained for each authorized and affected employee including the employee's name and the training date

## **6. References**

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[FEDOSHA – CFR 1926.417 Lockout and tagging of circuits](#)

[Cal/OSHA T8 CC Article 7. Miscellaneous Safe Practices](#)

[L&I WAC 296-803 Safety Standard for Lockout/Tagout](#)

## **7. Attachments**

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None

## Lone Work

### 1.0 Purpose

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- 1.1. Personnel working alone are at an increased risk due to their isolated location which may decrease the likelihood of rapid detection or prompt treatment of an injury. Lone-working personnel must have and follow a plan to stay in communication with a team member during mobilization and as the task is being accomplished.

### 2.0 Scope

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- 2.1. Whenever personnel work alone, such as in a confined space or an isolated location, the supervisor must account for each worker by sight or by verbal communication throughout each work-shift at regular intervals appropriate to the job assignment; and, at the end of the job assignment or at the end of the work-shift, whichever occurs first.
- 2.2. For general work in offices outside of typical working hours, BNB has a lone working policy. The member of staff and their supervisor have to positively agree and engage on the lone working initiative, deciding initially if the activity is actually necessary before permitting the work to be undertaken.

### 3.0 Responsibility

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#### 3.1 Project Management

- 3.1.1. BNB Management will ensure their personnel are accounted for throughout the course of the work shift. BNB Management must report all situations, incidents or near misses where being alone increased the severity of the situation. The Loss Prevention Department will analyze the information and make changes to company policy where necessary.

#### 3.2 Supervision

- 3.2.1. Supervisors must assess the hazards of the workplace; talk to the workers about their work and get their input on possible solutions; avoid having a lone worker whenever possible, especially for jobs with a recognized risk; take corrective action to prevent or minimize the potential risks of working alone; provide appropriate training and education; establish a check-in procedure; ensure regular contact is kept with all workers; establish ways to account for people (visually or verbally) while they are working; schedule high-risk tasks to be done during normal business hours, or when another worker is capable of helping when an emergency is present. Supervisors shall ensure rapid assistance to workers in the event of an emergency.

#### 3.3 Workers

- 3.3.1. Workers must not work alone without effective arrangements in place for locating and rescue should they become incapacitated.

### 4.0 Definitions

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- 4.1. **Alone** - A worker is alone at work when they are on their own; when they cannot be seen or heard by another person; and when they cannot expect a visit from another worker.
- 4.2. **Competent Person** - One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- 4.3. **Confined Space** - Is large enough and so configured that an employee can bodily enter and perform assigned work and has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry) and is not designed for continuous employee occupancy.
- 4.4. **Isolated Location** - Is an area where employees are working alone or with little assistance from others due to the type, time, or location of their work. Such locations can include remote locations or other work areas where employees are not in close proximity to others.

- 4.5. **High Risk Activities** - Working at heights, in confined spaces (such as tanks, grain bins or elevators, culverts, etc.), with electricity, with hazardous substances or materials, with hazardous equipment (such as chainsaws or chop/demo saws), with materials at great pressures, or with the public where there is a potential for violence.
- 4.6. **Qualified Person, Attendant or Operator** - A person designated by their employer who by reason of training, experience or instruction has demonstrated the ability to safely perform all assigned duties and, when required, is properly licensed in accordance with federal, state, or local laws and regulations.

## 5.0 Procedure

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### 5.1 Hazards

- 5.1.1. Personnel who become injured/ill while working alone could succumb to their injuries/illnesses prior to being discovered. Without direct supervision, lone workers could potentially take shortcuts which could expose them to risk(s) or reduce their quality of work.

### 5.2 Factors to Consider

#### 5.2.1. Length of time the worker will be alone:

- 5.2.1.1. What is a reasonable length of time for the worker to be alone?
- 5.2.1.2. Is it reasonable for the worker to be alone at all?
- 5.2.1.3. How long will the worker be alone to finish the job?
- 5.2.1.4. Is it legal for the worker to be alone while doing certain activities? (For example: some jurisdictions may restrict working alone in a confined space, or during lock-out / tag-out operations).
- 5.2.1.5. What time of the day will the worker be alone?

#### 5.2.2 Communication:

- 5.2.2.1. What forms of communication are available?
- 5.2.2.2. Is it necessary to "see" the worker, or is voice communication adequate?
- 5.2.2.3. Will emergency communication systems work properly in all situations?
- 5.2.2.4. If the communication systems are located in a vehicle, do you need alternative arrangements to cover the worker when they are away from the vehicle?

#### 5.2.3 Location of the work:

- 5.2.3.1. Is the work in a remote or isolated location? (Remember that a remote location does not have to be far away. Storage rooms that are rarely used can be considered remote or isolated.)
- 5.2.3.2. Is transportation necessary to get there? What kind of transportation is needed?
- 5.2.3.3. Is the vehicle equipped with emergency supplies such as food and drinking water, as well as a first aid kit?
- 5.2.3.4. Will the worker need to carry some or all of the emergency supplies with them when they leave the vehicle?
- 5.2.3.5. Does the worker need training to be able to use the first aid equipment?
- 5.2.3.6. What are the consequences if the vehicle breaks down?
- 5.2.3.7. Will the worker have to leave the vehicle for long periods of time?

#### 5.2.4 Type or nature of work:

- 5.2.4.1. Is there adequate training and education provided for the worker to be able to work alone safely?
- 5.2.4.2. Is there adequate personal protective equipment available? Is it in good working order?
- 5.2.4.3. What machinery, tools or equipment will be used?
- 5.2.4.4. Is there a high risk activity involved?
- 5.2.4.5. Is fatigue likely to be a factor?
- 5.2.4.6. Are there extremes of temperature?
- 5.2.4.7. Is there risk of an animal attack, insect bite (poisonous, or allergic reaction), etc.?
- 5.2.4.8. If the person is working inside a locked building, how will emergency services be able to get in? (For example: a night worker in a secure office building)
- 5.2.4.9. Does the work involve working with money or other valuables?

- 5.2.4.10. Does the work involve seizing property or goods (such as repossession, recovering stolen property, etc..)?

### **5.2.5 Characteristics of the individual who is working alone:**

- 5.2.5.1. Are there any pre-existing medical conditions that may increase the risk?  
 5.2.5.2. Does the person have adequate levels of experience and training? (For example: first aid, communication systems repair, vehicle breakdowns, relevant administrative procedures, and/or outdoor survival?)

## **5.3 Check-In Procedures**

- 5.3.1. It is important that a check-in procedure be in place. The supervisor will decide if a verbal check-in is adequate, or if the employee must be accounted for by a visual check. Supervisors must make sure the plan is appropriate for both regular business hours as well as after main office hours.
- 5.3.2. For most lone workers, a cellphone will be the main source of contact. If a cell phone is unreliable in the area, ensure alternative methods of communication are available (such as use of public telephones, site visits or satellite technology).
- 5.3.3. The lone worker’s supervisor or a family member who has the supervisor’s contact information should know the following details regarding their lone worker’s travel outside of their normal commute or typical business hours:
- 5.3.3.1. destination,
  - 5.3.3.2. estimated time of arrival,
  - 5.3.3.3. return time or date,
  - 5.3.3.4. contact information,
  - 5.3.3.5. mode of travel (public transit, car, plane, etc.) and,
  - 5.3.3.6. alternate plans in the event of bad weather, traffic problems, etc.

### **5.3.4 An example of a check-in procedure is:**

- 5.3.4.1. Prepare a daily work plan so it is known where the lone employee will be and when.
- 5.3.4.2. Identify one main person to be the contact at the office, plus a backup.
- 5.3.4.3. Define under what circumstances the lone worker will check in and how often.
- 5.3.4.4. Stick to the visual check or call-in schedule. You may wish to have a written log of contact.
- 5.3.4.5. Have the contact person call or visit the lone worker periodically to make sure he or she is okay.
- 5.3.4.6. Pick out a code word to be used to identify or confirm that help is needed.
- 5.3.4.7. Begin contacting designated emergency contacts if the lone employee does not check-in when he or she is supposed to.
- 5.3.4.8. Family members of the lone worker may notify the supervisor or emergency contacts if the lone worker fails to arrive at the expected time.

## **5.4 Means of Verification**

- 5.4.1. Supervision and/or designated representatives must account for personnel by visual or verbal communication. Acceptable means of visual communication may include video surveillance or in-person visual contact. Acceptable means of verbal communication may include the use of mobile phones, two-way radios (walkie-talkies), in-person talking, or intercom systems.

## **6.0 References**

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[NHS Lone Working Guidance Section 3.3](#)

[L&I WAC 296-800 – Core Safety](#)

[FEDOSHA 29 CFR 1915.84 – Lone Work](#)

## **7.0 Attachments**

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[Confined Space Entry Permit](#)

[Demolition Permit](#)

[Pre-Task Plan](#)

## Material Handling & Rigging

### 1.0 Purpose

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- 1.1. The purpose of this policy is to provide safe work practices for using equipment for material handling, moving, lifting, and rigging.

### 2.0 Scope

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- 2.1. This policy applies to material / load handling activities conducted with equipment when using slings, rigging hardware or below-the-hook lifting devices. For additional information, please reference [Forklifts](#) and [Cranes](#).

### 3.0 Responsibility

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#### 3.1. Project Management

- 3.1.1. BNB Project Management & Supervision will ensure that material handling and rigging operations are conducted in a safe manner via proper planning and execution of site logistics. The planning should address the separation of personnel from equipment.

#### 3.2. Workers

- 3.2.1. Workers are responsible for following proper material handling and rigging practices as required by this policy and their employer's safety program, job/activity hazard analysis, and pre-task plan. Workers are responsible for maintaining separation from equipment during material handling and rigging.

### 4.0 Definitions

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- 4.1. **Controlled Access Zone (CAZ)** – a delineated area established to restrict access and exposure to hazards such as overhead work, suspended loads, etc.
- 4.2. **Free Rigging** – the use of a powered industrial truck/forklift to hoist material by using a chain or rigging from the forks. Note: This procedure is prohibited by the manufacturer and is against BNB policy.
- 4.3. **Tele-handler** – Also called "Rough Terrain" or "Extended Reach" or "Type 7" because of the telescopic boom. These forklifts are similar to cranes in that they extend and elevate loads, often requiring outriggers. Additional discussion, evaluation, and training specific to their hazards and operation is required. Because they are used in rough terrain, and they can telescope the boom, tip overs are more of a concern.
- 4.4. **Unattended Forklift** – A forklift is unattended if it is left running and the operator is out of the seat. A forklift is also classified as unattended if the forklift is left with the forks suspended is turned off, but the operator is 25 feet or more away.
- 4.5. **Fall Zone**- Only employees essential to the operation are permitted in the fall zone (but not directly under the load). An employee is essential to the operation if the employee is conducting one of the following operations and the employer can demonstrate it is infeasible for the employee to perform that operation from outside the fall zone: (1) Physically guide the load; (2) closely monitor and give instructions regarding the load's movement; or (3) either detach it from or initially attach it to another component or structure (such as, but not limited to, making an initial connection or installing bracing).
- 4.6. **Master Link**- A key component of multi-legged wire rope bridle slings, stringers, alloy chain slings and web sling bridles. Maximum included angle of 120 degrees
- 4.7. **Qualified person**- a person who, by possession of a recognized degree or certificate of professional standing in an applicable field, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter and work
- 4.8. **Angle of loading**- the acute angle between the horizontal and the leg of the rigging, often referred to as the horizontal angle
- 4.9. **Below-the-hook lifting devices (BTHLD's)** – is a tool or mechanical device that attached to a crane or other apparatus and grabs and secures a load so that it can be moved safely from one location to another.



## 5.0 Procedure

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### 5.1. General

- 5.1.1. Rigging equipment shall be inspected prior to use on each shift and as necessary during its use to ensure that it is safe
- 5.1.2. Do not attempt to catch falling objects
- 5.1.3. Tag lines must be used if loads could possibly swing or need to be manipulated by hand unless their use causes a greater hazard, and must be of the non-conductive type
- 5.1.4. It is prohibited to use tie wire as a tag line.
- 5.1.5. Wire rope shall not be burned off with heat. Any wire rope with welding damage must be discarded
- 5.1.6. All loads must be made secure before moving or transporting
- 5.1.7. Mark special custom-design grabs, hooks, clamps, or other lifting accessories to indicate the safe working loads.
- 5.1.8. Lifting devices must be rated with limits, and equipment they are attached to (e.g., forklifts) must be designed and approved for those attachments
- 5.1.9. All rigging equipment will be designed, proof tested and certified with a 5:1 safety factor
- 5.1.10. Only domestic drop-forged rigging and lifting hardware or hardware that meets the ASME B30.26 standard shall be authorized for use on BNB projects
- 5.1.11. Rigging Hardware that does not have the certificate of test and examination available to BNB upon request shall not be allowed for use on BNB projects
- 5.1.12. Wire rope clips are prohibited for the use of rigging on overhead loads
- 5.1.13. Malleable cast iron wire clips are prohibited on BNB projects
- 5.1.14. Job-made/custom-fabricated lifting hardware and attachments are prohibited unless designed by a Registered Professional Engineer and BNB is provided with documentation.
- 5.1.15. Palletized loads should be used with a crane pallet attachment and shall be done in accordance with the manufacturer's recommendations
- 5.1.16. When workers could be exposed to injury from rigging failures, a pick plan must be developed with a rigging diagram that illustrates capacities of all components the capacities of rigging hardware must be marked on the device, and not exceeded
- 5.1.17. Rigging hardware must be designed for the application and environment in which it will be used
- 5.1.18. Rigging equipment, when not in use, shall be removed from the immediate work area to prevent hazards to employees
- 5.1.19. Never block an aisle or walkway with materials or equipment
- 5.1.20. Where available, hoisting routes that minimize the exposure of employees to hoisted loads must be used, to the extent consistent with public safety
- 5.1.21. Equipment removed from service must be tagged with an “Out of Service” tag
- 5.1.22. Load-line fittings are not allowed to contact the rigging block sheave
- 5.1.23. Wind speed – Wind must not exceed the speed recommended by the manufacture or, where the manufacture does not specify this information, the speed shall be determined by a qualified person

#### 5.1.24. Slings

- 5.1.24.1. When slings are applied to sharp-edged loads, the sharp edges must be protected with softeners sized appropriately to prevent damage to the slings.
- 5.1.24.2. All slings must have legible tags. If the tags are no longer legible, slings must be discarded so they cannot be used again.
- 5.1.24.3. Double wrap choker hitch must be used at a horizontal sling angle less than 45 degrees
- 5.1.24.4. Double leg basket hitch must not be used at a sling angle less than 60 degrees
- 5.1.24.5. Sling angles of less than 30 degrees are prohibited

#### 5.1.25. Hooks & Rigging Hardware

- 5.1.25.1. All hooks shall have functioning safety latches. Hooks and other rigging components shall be attached in a secure manner. Hooks and other lifting attachments on the buckets of front-end loaders, and backhoes are prohibited from use unless used in accordance with the manufacturer's specifications designed and certified by a professional engineer.
- 5.1.25.2. All hooks must be loaded in the base of the hook. Tip loading, side loading or back loading hoist hooks is prohibited
- 5.1.25.3. Slings and rigging hardware shall not exceed a maximum included angle of 90 degrees in hooks



5.1.25.4. Hooks shall be visually inspected prior to use to verify safe working condition. Hooks shall be removed in accordance with the hook manufacturer’s specifications, some criteria for removal from service are:

- 5.1.25.4.1. Evidence of cracks, sharp nicks, or gouges
- 5.1.25.4.2. Wear exceeding 10 percent in the bowl or five percent on the back of the hook of original dimension
- 5.1.25.4.3. Any visible apparent bend or twist from the plane of the unbent hook
- 5.1.25.4.4. Increase in throat opening exceeding 5 percent not exceeding ¼ inch from the manufactures original dimension. See manufactures recommendations
- 5.1.25.4.5. Missing or improperly functioning safety latch
- 5.1.25.4.6. Any modification, i.e., grinding or welding.

5.1.25.4.7. The manufacturer’s recommendations shall be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks.

5.1.25.4.8. All hooks for which no applicable manufacturer’s recommendations are available shall not be allowed on BNB job sites for use. The subcontractor shall maintain and keep readily available a certification record which includes the date of such tests, the signature of the person who performed the test and an identifier for the hook which was tested.

5.1.25.4.9. Sub-contractors must ensure that shackles have permanently affixed, and legible identification markings as prescribed by the manufacturer indicating the recommended safe working load for the shackles

5.1.25.4.10. Sub-contractors must provide the manufactures recommendations of all rigging hardware if requested by BNB management.

**5.1.26. Chains**

5.1.26.1. Only steel alloy chains Grade 8 (80) or 10 (100) shall be used for overhead hoisting procedures

5.1.26.2. Alloy steel chain slings shall have permanently affixed, and legible markings as prescribed by the manufacturer that indicate the recommended safe working load for the type(s) of hitch(es) used, the angle upon which it is based, and the number of legs if more than one

5.1.26.3. A chain sling shall be removed from service if missing or illegible sling identification

5.1.26.4. Makeshift links or fasteners formed from bolts or rods, or other such attachments, shall not be used

**5.1.27. Come-Along and Chain falls**

5.1.27.1. Come-along and chain falls shall be used as per manufacturer’s specifications and legislative jurisdictional requirements. When chain falls are used as a rigging component with a mobile crane, the lifts shall be deemed as a critical lift.

**5.1.27.2. Come-along and chain falls shall:**

- 5.1.27.2.1. Follow ASME B30.16 and ASME B30.21 standards
- 5.1.27.2.2. Be inspected for internal/external wear and be proof tested prior to use and every 12 months thereafter.
- 5.1.27.2.3. Have the capacity identified, manufacturer name and manufacture’s model or serial number
- 5.1.27.2.4. Ensure that a straight line is maintained “hook to hook
- 5.1.27.2.5. Ensure that hooks are not engaged into the edge of a steel plate or beam flange which results in tip loading
- 5.1.27.2.6. Have all components, including the hook, rated in consideration of the required safety factors, of a sufficient capacity for the hoist.
- 5.1.27.2.7. Not have the chain or wire cable wrapped around the load for hoisting or routed around corners and:
- 5.1.27.2.8. Have load limiters, if so equipped, set at or below the safe working load

**5.1.27.3. Come-along and chain falls shall be removed from service if there is:**

- 5.1.27.3.1. Any evidence of slipping or failure.
- 5.1.27.3.2. Any evidence of cracks, damage or other defects on the body or handles.
- 5.1.27.3.3. Excessive wear, stretch or deformity in the chain, or wire cable
- 5.1.27.3.4. A direction or recall from the manufacturer.
- 5.1.27.3.5. Missing or illegible tag

**5.1.28. Inspection and Testing of Rigging Components**

- 5.1.28.1. Rigging components shall have a documented inspection prior to initial use on the project and defective rigging shall be tagged and removed from service.
  - 5.1.28.2. Proof test all below-the-hook rigging devices prior to initial use to 125 percent of their rated load.
  - 5.1.28.3. Daily inspections must be performed on all rigging and material handling equipment by a qualified person. See attached Daily Rigging Inspection Checklist.
  - 5.1.28.4. Inspections of alloy steel chains slings shall be performed by a qualified person by the employer, and shall include a thorough inspection for wear, defective welds, deformation and increase in the link length
- 5.1.29. Multiple Load Lifts & Hoisting Procedures**
- 5.1.29.1. A multiple lift is only to be performed if the following criteria are met:**
- 5.1.29.1.1. All rigging components attached to the main hook shall not exceed the 45-degree markings on the main hook or shall follow manufactures recommendations
  - 5.1.29.1.2. Master Links must meet or exceed all requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements.
  - 5.1.29.1.3. Master Links – Maximum included angle of 120 degrees
  - 5.1.29.1.4. Multiple load lifts will only be conducted on like or similar items
  - 5.1.29.1.5. The multiple lift rigging device has a capacity based on the manufacturer's specifications with a five to one safety factor for all components.
  - 5.1.29.1.6. A site-specific multiple load lift hoisting plan shall be developed by a qualified person, approved by the Superintendent of the sub-contractor performing the lift and reviewed by BNB Management, prior to hoisting procedures.
  - 5.1.29.1.7. The site-specific multiple load lift hoisting plan must ensure that all crew members involved have been trained and signed off by the competent person (foreman)
  - 5.1.29.1.8. The site-specific multiple load lift hoisting plan shall be designed to ensure that all requirements of the local state and federal are met to include more specifically FED-OSHA 1926 Subpart CC and WAC 296-155, or CAL-OSHA Article 15
  - 5.1.29.1.9. Only hooks with self-closing safety latches or the equivalent shall be used for multiple load lift hoisting.
  - 5.1.29.1.10. Multiple load lifts shall be rigged reasonably level and shall prevent hazardous contact between the loads
  - 5.1.29.1.11. Hoisting devices (BTHLD's) are prohibited unless used in accordance with the manufacture's specifications to include being designed and certified by a professional engineer.
  - 5.1.29.1.12. BTHLD's must meet the requirements of the ASME B30.20 / ASME BTH-1 regulations and standards.

## **5.2. Hazard Controls**

### **5.2.1. Engineering Controls**

#### **5.2.1.1. Cargo protection nets:**

- 5.2.1.1.1. Help protect from falling materials
- 5.2.1.1.2. Fast, simple installation
- 5.2.1.1.3. Durable net withstands harsh work environments
- 5.2.1.1.4. Lightweight build maximizes lift capacity
- 5.2.1.1.5. Crane pallet attachment:
- 5.2.1.1.6. Automatically levels load
- 5.2.1.1.7. Telescopic vertical riser and adjustable sliding forks
- 5.2.1.1.8. Light weight frame maximizes lift capacity

#### **5.2.2. Administrative Controls**

- 5.2.2.1. Material handling must not be conducted overhead of personnel or the public. A Controlled Access Zone (CAZ) must be established to restrict access.
- 5.2.2.2. Occupied buildings must be vacated if there is a potential for suspended loads to be dropped.
- 5.2.2.3. Horns, whistles, or other audible warnings should be sounded to warn personnel when loads are to be moved overhead.
- 5.2.2.4. Rigging – Crane Pick Plans:
  - 5.2.2.4.1. Rigging components to be used must be addressed in all Crane Pick Plans and must include a diagram of the rigging design along with a description of the rigging components including sizes, capacities, angles, and load weights. See [Cranes](#).

#### **5.2.3. Personal Protective Equipment**

5.2.3.1. High-visibility vests and hard hats are required when working around moving equipment. Additional personal protective equipment may be safety glasses, protective gloves, work boots, fall protection equipment, etc.

**5.3. Training**

5.3.1. Personnel engaged in rigging loads must be certified and trained accordingly. Personnel who perform multiple-lift rigging must be provided training on the specific hazards of multiple lifts, the procedures, and equipment. Equipment operators must be trained on the specific piece of equipment, its limitations, and appropriate attachments.

**5.4. Load Weights Calculation Assistance Chart**

**Load Weights - Calculating**

| Materials and Liquids - Pounds / cu. ft. |     | Pounds / sq. ft. |     | Pounds / gal.  |      |
|--|-----|------------------|-----|----------------|------|
| Aluminum                                 | 165 | Iron Casting     | 450 | Steel plate    |      |
| Asbestos                                 | 153 | Lead             | 708 | • 1/8"         | 5    |
| Asphalt                                  | 81  | Lumber - Fir     | 32  | • 1/4"         | 10   |
| Brass                                    | 524 | Lumber - Oak     | 62  | • 1/2"         | 20   |
| Brick                                    | 120 | Lumber - RR Ties | 50  | • 1"           | 40   |
| Bronze                                   | 534 | Oil, Motor       | 58  | Aluminum plate |      |
| Coal                                     | 56  | Paper            | 58  | • 1/8"         | 1.75 |
| Concrete, Reinf.                         | 150 | Portland Cement  | 94  | • 1/4"         | 3.50 |
| Crushed Rock                             | 95  | River Sand       | 120 | Lumber         |      |
| Diesel                                   | 52  | Rubber           | 94  | • 3/4" Fir     | 2    |
| Dry Earth, Loose                         | 75  | Steel            | 480 | • 3/4" Oak     | 4    |
| Gasoline                                 | 45  | Water            | 63  |                |      |
| Glass                                    | 162 | Zinc             | 437 |                |      |

| Formulas and Information  |  |
|---|--|
| <ul style="list-style-type: none"> <li>• H = Height • W = Width • L = Length • d = diameter • r = 1/2 diameter • <math>\pi = 3.2</math> (approx.)</li> <li>• Area of square or rectangle = LW • Vol. of cube = HWL • Area of circle = <math>\pi r^2</math> • Circumference = <math>\pi d</math></li> <li>• The area of a circle is approx. 80% of its diameter squared (diameter x diameter)</li> <li>• Load Weight (to estimate) _____ Volume in cu. ft. x 500 lbs. x density factor .02, .05, .10, .20, .30 etc.</li> </ul> |  |

⑥

**6.0 References**

- [FED / OSHA 29 CFR 1926.251 – Material Handling & Rigging](#)
- [FED/ OSHA 29 CFR 1926.1400 Subpart CC – Cranes and Derricks](#)
- [CALOSHA Ergonomic Guidelines for Manual Material Handling](#)
- [L&I WAC 296-800 – Core Safety](#)
- [L&I WAC 296-24-21501 to 296-24-29431 – Material Handling and Storage](#)

- ASME B30.9-Slings
- ASME B30.10-Hooks
- ASME 30.26-Rigging Hardware

**7.0 Attachments**

- [Rigging Inspection Checklist](#)

# Mission Critical Protocol

## Projects Working Under COVID-19 Pandemic Conditions

### 1.0 Purpose

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The Mission Critical Protocol is the BNBuilders policy to meet regulatory requirements related to protecting the safety and health of personnel on projects and in offices during the COVID-19 pandemic.

### 2.0 Questions

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Questions regarding this protocol should be directed to the following:

Safety Director Leary Jones [Leary.Jones@bnbuilders.com](mailto:Leary.Jones@bnbuilders.com)  
Human Resource Director Prema Krishnan [Prema.Krishnan@bnbuilders.com](mailto:Prema.Krishnan@bnbuilders.com)  
Health and Industrial Hygiene Manager TJ Roggy [tj.roggy@bnbuilders.com](mailto:tj.roggy@bnbuilders.com)

### 3.0 Responsibility

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#### 3.1 Management

BNB Management will ensure that adequate pre-planning is conducted to address COVID-19 regulatory requirements and hazard control for all project sites. Owners, consultants, and subcontract partners will be notified by BNB Management in the event of exposure in accordance with federal, state, and local regulations. Management shall ensure that all staff and visitors are aware of this policy.

#### 3.2 Supervision

1. BNB project and office supervision shall be responsible for maintaining and enacting the steps and procedures outlined herein.
2. Control checks shall be done once per shift or in greater frequency as determined by the Supervisor and Safety team. Supervision shall implement safety plans by following current BNB safety procedures.
3. Project COVID-19 Leadership Team - Identify a team to address COVID-19 related items that may affect the implementation of this plan. This team will meet as needed to discuss the following:
  1. Most recent COVID related updates
  2. Plan implementation
    - a. Mission Critical Protocol
    - b. Site Logistics
    - c. Emergency Response

#### 3.3 Personnel & Workers

Personnel and workers are required to follow the rules and procedures as indicated within this plan. All personnel and workers shall also maintain vigilance and care while onsite to limit exposure opportunities. Personnel and workers shall be provided with adequate time to wash their hands prior to beginning work breaks and lunches. Workers shall also monitor and report any potential COVID-19 and or flu like symptoms, if this occurs, they are to report to their supervisor and not arrive on site or in the office until they are provided further direction.

Symptoms for COVID – 19 may include:

- Cough
- Fever
- Shortness of Breath
- Fatigue
- Muscle or body aches
- Headache
- New loss of taste or smell
- Sore throat
- Congestion or runny nose
- Nausea or vomiting
- Diarrhea

See complete list of symptoms here <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>

### 3.4 Subcontractors

Subcontractors shall follow the guidelines in accordance with CDC, State, and local regulatory agencies, to include but, not limited to BNB pandemic protocol. Prior to the start of work in the states of California and Washington, subcontractors shall submit their Injury and Illness Prevention Program (IIPP) or Accident Prevention Program (APP), respectively, that includes a written COVID-19 policy to BNB for review. In regions that do not require a written COVID-19 policy, such as Colorado, each subcontractor shall comply with BNB's protocol. Subcontractor employees shall not enter the BNB project site or offices with COVID-19 related symptoms.

### 3.5 Visitors

Visitors are subject to BNBuilders Mission Critical Protocol requirements which will be reviewed during the project orientation.

## 4.0 Site Management

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### 4.1 Site Signage and Facilities

1. Handwashing facilities are required on projects in California and Washington.
2. Signage to encourage self-checking for symptoms and not attending work if symptomatic for COVID-19 should be posted.

### 4.2 Employer-provided transportation (CA Only).

#### Assignment of transportation

To the extent feasible, we reduce exposure to COVID-19 hazards by assigning employees sharing vehicles to distinct groups and ensuring that each group remains separate from other such groups during transportation, during work activities, and in employer-provided housing. We prioritize shared transportation assignments in the following order:

- Employees residing in the same housing unit are transported in the same vehicle.

- Employees working in the same crew or workplace are transported in the same vehicle.
- Employees who do not share the same household, work crew or workplace are transported in the same vehicle only when no other transportation alternatives are feasible.

### Face coverings and respirators

BNBuilders will review local health department recommendations and mandates regarding face coverings and implement face covering policies that effectively minimize transmission in vehicles. Face coverings and N95 respirators will be provided for voluntary use.

### Ventilation

We ensure that vehicle windows are kept open, and the ventilation system is set to maximize outdoor air and not set to recirculate air. Windows do not have to be kept open if one or more of the following conditions exist:

- The vehicle has functioning air conditioning in use and excessive outdoor heat would create a hazard to employees.
- The vehicle has functioning heating in use and excessive outdoor cold would create a hazard to employees.
- Protection is needed from weather conditions, such as rain or snow.
- The vehicle has a cabin air filter in use and the U.S. EPA Air Quality Index for any pollutant is greater than 100.

### Hand hygiene

We provide hand sanitizer in each vehicle and ensure that all drivers and riders sanitize their hands before entering and exiting the vehicle. Hand sanitizers with methyl alcohol are prohibited.

## 5.0 Prevention and Testing

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### 5.1 In order to prevent and limit the potential exposure all staff shall adhere to the following;

1. Regular health checks should be performed at home to monitor temperature and overall wellness each day. BNBuilders may elect to perform health checks on arrival each day for anyone entering the work area. Individuals who test positive for COVID-19 or who have COVID-like symptoms and choose not to test must follow local public health guidelines for isolation.
2. Employees, contractors, and visitors in California must notify BNBuilders of close contact (as defined by the appropriate local public health department) with a positive case and must follow the most current quarantine requirements as outlined by the appropriate local public health department.
3. COVID-19 tests are available at no cost, during paid time, to all our employees who were a close contact in the workplace in California. Exceptions are returned cases as defined in CCR, Title 8, section 3205(b)(11).

### Close Contact Definitions by Region

#### California

- For indoor spaces of 400,000 or fewer cubic feet per floor, a close contact is defined as sharing the same indoor airspace as a COVID-19 case for a cumulative total of 15 minutes or more over a 24-hour period

during the COVID-19 case's infectious period, as defined in the regulations, regardless of the use of face coverings.

- For indoor spaces of greater than 400,000 cubic feet per floor, a close contact is defined as being within six feet of the COVID-19 case for a cumulative total of 15 minutes or more over a 24-hour period during the COVID-19 case's infectious period, as defined in the regulations, regardless of the use of face coverings.
- Offices, suites, rooms, waiting areas, break or eating areas, bathrooms, or other spaces that are separated by floor-to-ceiling walls shall be considered distinct indoor spaces.

#### **Washington & Colorado**

- Someone who is less than 6 feet away from an infected person for 15 minutes or more over a 24-hour period.

### **5.2 Outbreaks – California Only**

#### **California**

This section applies if three or more employee COVID-19 cases within an exposed group visited the workplace during their infectious period at any time during a 14-day period, unless a CDPH regulation or order defines outbreak using a different number of COVID-19 cases and/or a different time. Reference CCR, Title 8 section 3205.1 for details.

This section will stay in effect until there are one or fewer new COVID-19 cases detected in the exposed group for a 14-day period.

Upon identification that a project has reached the Cal/OSHA outbreak status, each employer must provide immediate COVID-19 testing available at no cost to our employees within the exposed group, regardless of vaccination status, during employees' paid time, except for returned cases and employees who were not present at the workplace during the relevant 14-day period(s).

Additional testing must be made available on a weekly basis to all employees in the exposed group who remain at the workplace.

Subcontractors will be responsible for providing testing for their own employees unless otherwise agreed upon by BNBuilders.

Employees who had close contacts will have a negative COVID-19 test taken within three to five days after the close contact or will be excluded and follow our return-to-work requirements starting from the date of the last known close contact.

Employees in the exposed group, regardless of vaccination status, will wear face coverings when indoors, or when outdoors and less than six feet from another person, unless one of the exceptions provided by Cal/OSHA applies. Employees and subcontractors will be notified of their right to request and receive a respirator for voluntary use. Employees who choose to wear a respirator will follow the BNBuilders voluntary use respirator requirements.

During an outbreak, BNBuilders will perform a review of potentially relevant COVID-19 policies, procedures, and controls, and implement changes as needed to prevent further spread of COVID-19 when this addendum initially applies and periodically thereafter. The investigation, review, and changes will be documented and include:



- Investigation of new or unabated COVID-19 hazards.
- Our leave policies and practices and whether employees are discouraged from remaining home when sick.
- Our COVID-19 testing policies.
- Insufficient supply of outdoor air to indoor workplaces.
- Insufficient air filtration.
- Insufficient physical distancing.
- Review updated every 30 days that CCR, Title 8 section 3205.1 continues to apply:
  - In response to new information or to new or previously unrecognized COVID-19 hazards.
  - When otherwise necessary.
- Any changes implemented to reduce the transmission of COVID-19 based on the investigation and review, which may include:
  - Moving indoor tasks outdoors or having them performed remotely.
  - Increasing the outdoor air supply when work is done indoors.
  - Improving air filtration.
  - Increasing physical distancing to the extent feasible.
  - Requiring respiratory protection in compliance with CCR, Title 8 section 5144.
  - Other applicable controls.

BNBuilders will report information about COVID-19 cases and outbreaks at the workplace to the local health department whenever required by law and shall provide any related information requested by the local health department. The employer shall report all information to the local health department as required by Labor Code section 6409.6.

### 5.3 Major Outbreaks – California Only

The following will be done while CCR, Title 8 section 3205.1 applies if 20 or more employee COVID-19 cases in an exposed group visited the worksite during their infectious period within a 30-day period:

- The COVID-19 testing will be required of all employees in the exposed group, regardless of vaccination status, twice a week or more frequently if recommended by the local health department. Employees in the exposed group will be tested or excluded and follow our CPP return to work requirements. The twice a week testing requirement ends when there are fewer than three new COVID-19 cases in the exposed group for a 14-day period. We will then follow weekly testing requirement until there are one or fewer new COVID-19 cases in the exposed group for a 14-day period.
- The BNBuilders Safety Department will report the outbreak to Cal/OSHA.
- Provide respirators for voluntary use to employees in the exposed group, encourage their use, and train employees according to CCR, Title 8 section 5144(c)(2) requirements.
- Any employees in the exposed group who are not wearing respirators as required will be separated from other persons by at least six feet, except where it can be demonstrated that at least six feet of separation is not feasible, and except for momentary exposure while persons are in movement. Methods of physical distancing include:
  - Telework or other remote work arrangements.
  - Reducing the number of persons in an area at one time, including visitors.
  - Visual cues such as signs and floor markings to indicate where employees and others should be located or their direction and path of travel
  - Staggered arrival, departure, work, and break times.
  - Adjusted work processes or procedures, such as reducing production speed, to allow greater distance between employees.
  - When it is not feasible to maintain a distance of at least six feet, individuals will be as far apart as feasible.



## 5.4 Return to Work

Each region will follow return to work procedures as outlined by Cal/OSHA, The Washington Department of Labor and Industries, OSHA, or the appropriate local public health department.

## 6.0 Notification Procedures

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### 6.1 Investigation

In the event a site worker reports testing positive for or coming into close contact with a person having COVID-19, the following protocol shall be followed:

1. Employees shall immediately notify their supervisor, project leadership team and assigned safety professional.
2. The Safety Professional assigned to the project will initiate the COVID-19 investigation:
  - a. Confirm who the worker is and which company they work for
  - b. Date of notification
  - c. Identify who was within close contact of affected worker, for example:
    - i. Who did they eat lunch with?
    - ii. Which crew did they work with?
    - iii. Identify carpool companions?
3. The assigned safety professional and the project team shall contact the Regional Safety Manager, TJ Roggy, and Suzanne Tidwell.
4. The project team or office will adhere to local public health department guidance on testing and quarantine and/or isolation durations.

### 6.2 COVID-19 Reporting Protocol

#### 6.2.1 Project Exposure Reporting

Upon completion of the COVID-19 investigation, notification to the site safety manager, regional safety manager, TJ Roggy and Suzanne Tidwell must be sent out immediately highlighting the specifics of the case. The team will confirm direction on the handling of each case to ensure the exposure is properly documented and MCP procedures are followed. If there are multiple cases on a project, notification will be escalated to the CMT for review.

#### 6.2.2 Crisis Management Team Members:

Leary Jones, Jason Limp, Prema Krishnan, Casey Blake, TJ Roggy

#### 6.2.3 Notification Process

**Notification Required for the following:**

- Potential exposure at job site due to reported COVID test.
- Potential exposure to job site due to reported symptoms.
- Reported close contact with a COVID positive case.
- Job site team member reported being tested for COVID with results pending.

#### 6.2.5 Written Notification to Employees – California Only

Cal/OSHA requires written notification be provided to employees, visitors, and subcontractors who in Washington are at the same work site as a positive case of COVID-19 or meet the definition of "exposed group" on a project with a confirmed positive case of COVID-19. Written notification must be provided within one business day of the time the employer knew or should have known of a COVID-19 case. The notification shall not disclose the identity of the persons identified.

Written notice may include, but is not limited to, personal service, email, or text message if it can reasonably be anticipated to be received by the employee within one business day of sending. The notice will include the cleaning and disinfection plan following guidelines provided by the CDC and local regulatory authorities. Information of benefits and compensation the employee may be entitled to will also be provided.

Written notice must be provided as follows.

1. All employees identified as the "exposed group". If the employer should reasonably know that an employee has not received the notice or has limited literacy in the language used in the notice, the employer shall provide verbal notice, as soon as practicable, in a language understandable by the employee.
2. Independent contractors and other employers at the worksite during the high-risk exposure period.

\*\*\*Exposed Group means all employees at a work location, working area, or a common area at work, where an employee COVID-19 case was present at any time during the infectious period. A common area at work includes bathrooms, walkways, hallways, aisles, break or eating areas, and waiting areas. This does not include the exceptions outlined by Cal/OSHA.

#### **6.2.6 Subcontractor Reporting Requirements**

Subcontractors are required to have an internal process for contact tracing and notifying their employees of COVID-19 exposures on BNBuilders projects. Subcontractors must notify BNBuilders project leadership within 24 hours of positive cases on a BNBuilders project or office.

Notification must include the number of affected employees, close contact procedures or quarantine durations, and the location of the employee within the BNBuilders project during the 48-hour contact tracing period to allow BNBuilders to notify other contractors or BNB employees of potential exposure. Subcontractors may keep their employee names confidential.

Subcontractors are responsible for reporting to appropriate regional regulatory agencies or public health agencies when they solely have a group of employees that meets their local notification threshold requirement. When multiple subcontractors have a combined number of employees that meets reporting requirements, BNBuilders may facilitate notification to regulatory authorities or public health agencies.

## **7.0 Personnel Protective Equipment (PPE) & Controls**

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### **7.1 PPE usage shall be as follows:**

1. Local state and federal guidelines in concert with BNBuilders Freedom from Danger shall be utilized to address PPE.

### **7.2 Respirator and facial covering usage for ALL BNB employees and Trade Partners shall be as follows:**

1. Federal OSHA PPE standards (29 CFR 1926.28), WISHA PPE standards (WAC 296-155-200) or CAL/OSHA PPE Title 8 Sub Ch 7 Grp. 2 Art. 10 shall be utilized where applicable. In addition to the framework provided in section WAC 296-823 (bloodborne pathogen) or Cal/OSHA Blood Borne Pathogens Title 8 Sub. Chap. 7 Grp. 16 Art.109 (bloodborne pathogen). BNB site management will ensure an adequate amount of PPE is procured and supplied for BNB employees and visitors. Subcontractor employers are responsible for providing PPE to their employees.
2. WAC 296-155-200 and CAL/OSHA PPE Title 8 Sub. Chap. 7 Grp. 2 Art.10 (PPE) direct the use of gloves, eye, and face protection, including respiratory protection per their jurisdiction.
3. Face Covering Use
  - BNBuilders will comply with the face covering requirements of local public health orders and local regulatory authorities such as Cal/OSHA, Federal OSHA, and the Washington Department of Labor and Industries. These are subject to change.
  - Subcontractors, visitors, inspectors, etc. must comply with the face covering policy for the project.
  - If an owner has a stricter policy on face covering use, then the BNB project or office must adhere to the stricter policy.

**\*\*\*Any person on a BNB site or office regardless of vaccination status may continue to choose to wear a face covering and social distance without discrimination or action taken by their employer. BNBuilders will maintain a supply of face coverings on site for all BNB employees who choose to wear one.**

### 7.3 Engineered Controls

1. Whenever possible the project shall either install and or address the following engineered controls in their risk mitigation plan:
  - a. Increasing ventilation rates to introduce outdoor air to the work environment.
  - b. Utilizing negative pressure ventilation machines with HEPA filters in confined settings to reduce suspended respirable droplets.
  - c. Installing high efficiency air filters

### 7.4 Administrative Controls

1. The following administrative controls shall be addressed by the project site:
  - a. Site safety notices posted addressing the potential of COVID-19.
  - b. The following reminders are to be addressed regularly:
    - i. Reminders to personnel about protocols in place.
    - ii. Remind personnel weekly to remain at home if any symptoms occur.
    - iii. Provide personnel with regular reminders, and any updated training, on COVID-19 risk factors and protective barriers.
  - c. Provide training during orientation for site specific requirements and hazards related to COVID-19.

## 8.0 Site Cleaning

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Project leadership is responsible for determining the resources necessary to implement the cleaning protocols outlined below. BNB employees will be trained on cleaning protocols that includes a list of high-touch areas, PPE and directions for proper application of the project’s chosen cleaning agents.

### 8.1 Cleaning and disinfect of high touched surface areas

1. Review chemical Safety Data Sheets (SDS) and follow manufacturer recommendations in accordance with WAC 296-901 or CAL/OSHA Title 8, Sub Ch 7, Gp. 16, Art. 109 Hazard Communications
2. Laborers associated with cleanup of materials, work areas, and shared areas shall adhere to WAC 296-155-200 (PPE) or CAL/OSHA Title 8, Sub Ch 7, Gp. 16, Art. 109 Hazard Communications during their work activity.
3. Hand wash stations shall be placed in a reasonable frequency to encourage their use. This may require multiple stations per floor, work zone, or site area. They should be set up in areas where personnel are encouraged to use them frequently.
4. In Washington, cleaning of high touch areas will be performed on a regular basis.

### **8.2 Cleaning and disinfecting of shared areas – Washington Only**

1. Clean and wipe down high-touch and eating surfaces at regular intervals.
2. Bathrooms and areas for handwashing shall be inspected each shift and appropriately stocked.
3. Subcontractors will be required to disinfect their own break areas, trailers, etc. in accordance with these procedures.

Cleanings agents shall meet EPA guidelines.

## **9.0 Signage and Posting**

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**9.1 Signage shall be installed throughout the project work area and offices. The following is a minimum, each project should review and provide signage as required. Signage shall be in multiple languages as required by crew make-up.**

1. Hand washing signage at all bathrooms and handwash stations

## **10.0 Training**

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Each project in California and Washington must provide training to BNB employees to recognize and respond to workplace hazards, including COVID-19. Minimum training requirements include:

1. The requirements listed within the BNBuilders Mission Critical Protocol were created to protect employees from COVID-19 hazards and how to participate in the identification and evaluation of COVID-19 hazards.
2. Information regarding COVID-19-related benefits to which the employee may be entitled under applicable federal, state, or local laws. This includes any benefits available under legally mandated sick and vaccination leave, if applicable, workers' compensation law, local government requirements, the employer's own leave policies, leave guaranteed by contract.
3. The fact that COVID-19 is an infectious disease that can be spread through the air when an infectious person talks or vocalizes, sneezes, coughs, or exhales; that COVID19 may be transmitted when a person touches a contaminated object and then touches their eyes, nose, or mouth, although that is less common; and that an infectious person may have no symptoms.
4. BNB's policies for providing voluntary use respirators. This includes how to properly wear the respirator and perform a seal check per the manufacturer's instructions.
5. The importance of frequent hand washing with soap and water for at least 20 seconds and using hand sanitizer when employees do not have immediate access to a sink or hand washing facility, and that hand sanitizer does not work if the hands are soiled.
6. Proper use of face coverings and the fact that face coverings are not respiratory protective equipment. COVID-19 is an airborne disease. N95s and more protective respirators protect the users from airborne disease while face coverings primarily protect people around the user.
7. COVID-19 symptoms, and the importance of not coming to work and obtaining a COVID-19 test if the employee has COVID-19 symptoms.

8. Information on the employer's COVID-19 policies; how to access COVID-19 testing and vaccination; and the fact that vaccination is effective at preventing COVID-19, protecting against both transmission and serious illness or death.
9. Employees can request face coverings from the employer at no cost to the employee and can wear them at work, regardless of vaccination status, without fear of retaliation.

## **11.0 Disciplinary procedures**

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Workers who fail to follow BNB pandemic protocols will be removed from the project and/or terminated from employment (BNB Personnel). Subcontractors may be placed on notice and/or subjected to back charges when violating BNB Pandemic Protocols.

## **12.0 References**

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The plan and procedures noted above are done in partnership with the referenced information identified below.

[CDC COVID-19 Guidance](#)

[Unites States Deptment of Labor OSHA COVID-19](#)

[Washington State Department of Health](#)

[Washington State Department of Labor and Industries Requirements and Guidance for Preventing COVID-19](#)

[King County Public Health Guidelines](#)

[Cal/OSHA COVID-19 Prevention Non-Emergency Regulations](#)

[California Department of Public Health Guidelines](#)

[Colorado Department of Public Health & Environment](#)

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## Mobile Elevating Work Platform

### 1.0 Purpose

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- 1.1. The purpose of this procedure is to provide a system that minimizes the risks associated with BNBuilders (BNB) employees and / or Subcontractor employees using Aerial Work Platforms (AWPs) to carry out tasks on BNB projects.
- 1.2. **For the purposes of this procedure, AWPs as used in this document includes:**
  - 1.2.1. Scissor Lifts
  - 1.2.2. Knuckle Boom Lifts
  - 1.2.3. Boom Lifts
  - 1.2.4. Mast-Climbing Work Platforms
  - 1.2.5. Vertical Lifts

### 2.0 Scope

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- 2.1. This procedure applies to all occasions where BNB employees and / or Subcontractors employees use AWPs.

### 3.0 Responsibility

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#### 3.1 Project Management

- 3.1.1. It is the Project Manager's overall responsibility to ensure that this procedure is complied with on the project. The following responsibilities are to be assigned and monitored by the Project Manager and corrective action taken where the assigned responsibilities are not being carried out.

#### 3.2 Project Supervision

- 3.2.1. The Site Superintendent(s) must understand this standard. They are to ensure that the BNB employees and/or Subcontractor employees carry out their assigned responsibilities regarding Aerial Work Platforms, as detailed below.
- 3.2.2. Site Supervisors are to make themselves familiar with and ensure the affected workers are trained in the contents of this procedure as well as trained per manufacturer requirements. They are to ensure that this procedure is complied with within their area of responsibility.
- 3.2.3. The Safety Manager/ Project Safety Coordinator/ Project Safety Representative is to provide competent assistance in developing and training the relevant BNB employees and/or Subcontractor employees in this procedure as required. They must also audit BNB employees and/or Subcontractor employees to ensure they are familiar with and understand the controls contained in this procedure.

#### 3.3 Workers

- 3.3.1. Workers are to make themselves familiar with and understand the controls contained in this procedure to take short cuts or deviate from this procedure unless the new manner in which they carry out the tasks reduces the risks involved. They must be trained to operate specific AWPs and must carry training certifications on their person. BNB is required to get a copy of the workers certification before operation of any AWP.

### 4.0 Definitions

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- 4.1. **Aerial Work Platform (AWP)** - A mechanical device used to provide temporary access for people or equipment to inaccessible areas, usually at height. Devices consist of both straight and articulating booms.
- 4.2. **Capacity** - The maximum amount that something can contain.
- 4.3. **Insulated** - Separated from other conducting surfaces by a dielectric (including air space) offering a high resistance to the passage of current.
- 4.4. **Minimum Safe Approach Distance (MSAD)** – The minimum distance that must be maintained, based on the voltage involved, by unprotected employees when exposed to energized parts.

- 4.5. **Personal Fall Arrest System** - A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, a body belt or body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.
- 4.6. **Personal Fall Protection System** - A personal fall protection system includes personal fall arrest systems, positioning device systems, fall restraint systems, safety nets and guardrails.
- 4.7. **Platform** - Any personnel-carrying device (bucket, basket, cage, stand, tub, or equivalent).
- 4.8. **Safe Working Load** - Is the load that a piece of lifting equipment, lifting device or accessory can safely lift, suspend, or lower without fear of breaking.
- 4.9. **Scissor Lift** - A motorized vehicle that has a raised platform which can be raised straight up in order gain access and perform work on areas that are difficult to reach.
- 4.10. **Shall** – Mandatory.

## 5.0 Procedure

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### 5.1 Precautions

- 5.1.1. Only authorized and qualified persons shall operate an AWP.
- 5.1.2. Operators must be familiar with emergency controls and operation.
- 5.1.3. The Manufacturer's Operation and Safety Manual shall be located in a weather resistant compartment on the unit.
- 5.1.4. Operators must read, understand and comply with the Manufacturer's Operation and Safety Manual and applicable Federal, State and Local regulations.
- 5.1.5. Operators must use the AWP according to manufacturer's instructions.
- 5.1.6. Inspections shall be conducted according to manufacturer's instructions at the beginning of each shift. If any malfunctioning devices/controls, warning devices, safety devices, damaged equipment, missing or illegible decals and placards are discovered during this inspection, the unit must be taken out of service until repairs are completed.
- 5.1.7. Daily inspections must be documented. See attached AWP Daily Inspection Checklist. A checklist will be attached to each AWP.
- 5.1.8. Immediately before operation, the path of travel and work area must be checked for overhead obstructions, holes, slopes, excavations, bumps, ground conditions, floor obstructions, debris, power lines, and other potential hazards. All hazards discovered must be eliminated or protected prior to operation.
- 5.1.9. Unstable objects such as tools, materials and debris shall not be allowed to accumulate on the platform's floor.
- 5.1.10. At least one fire extinguisher must be located within 5' of the control panel.
- 5.1.11. When operating aerial work platforms near or over water, lift occupants are not required to tie off because in the event that an error occurred that resulted in the employees being in the water, being tied-off would exacerbate the drowning hazard. Fed OSHA Subpart CC 1926.1431 (K)(10)(i). Letter of interpretation amended June 18 2014. Letter # 20090601-9068.

### 5.2 Operating Instructions

- 5.2.1. AWP's shall only be used for positioning personnel, their tools, and equipment.
- 5.2.2. Operators shall use wheel chocks when using or parking an AWP on an incline.
- 5.2.3. Operators shall bring the AWP to a complete stop before using cell phones or two-way radios.
- 5.2.4. Traveling with the platform elevated should be minimized unless a spotter is used. Ensure that traveling speed is at the manufacturer's "creep" speed or not more than 0.5mph where manufacturer's speed is not known.
- 5.2.5. A spotter is mandatory when view is obstructed by load and during travel of aerial work platforms. Scissor lifts require spotters during movement in congested and/or hazardous areas.
- 5.2.6. Ensure that the AWP travels on gradients within the manufacturer's recommendations. In the absence of such recommendations, ensure the gradient is not over 3 degrees.

- 5.2.7. Aerial baskets shall not be supported by any structure or object at any time.
- 5.2.8. Operators shall not “slam” a control switch or lever through neutral to an opposite direction. Switch and levers shall always be returned to neutral and stop before moving the switch or lever to the next function.
- 5.2.9. Outriggers on an AWP must be retracted before movement.
- 5.2.10. Do not use the rails of an AWP to transport materials unless approved by the manufacturer.
- 5.2.11. AWP’s shall never be used in vehicular travel paths without hard barricades or BNB approved administrative controls in place to protect the unit from inadvertent contact.
- 5.2.12. Ground personnel shall not use ground controls with personnel in the platform except for emergencies.
- 5.2.13. Operator’s must lower the platform and shut off all power before leaving an AWP.
- 5.2.14. When lifts are used inside buildings, consideration must be given to carbon monoxide emissions.
- 5.2.15. Lifts must not be operated while batteries are being charged.

**5.3 Hazards**

**5.3.1 Falls**

- 5.3.1.1. Prior to operation, ensure all gates and rails are fastened and secured in their proper position
- 5.3.1.2. Enter and exit platforms through the gate
- 5.3.1.3. Operators shall face the AWP and maintain three points of contact when entering/exiting platform
- 5.3.1.4. Use extreme caution when entering or leaving the platform
- 5.3.1.5. Operators may only exit an elevated platform if it is an emergency or approved by BNB and the manufacturer. When exiting an elevated platform, 100% fall protection is required.
- 5.3.1.6. Never climb an AWP arm or boom
- 5.3.1.7. Fall Protection Equipment shall be used according to manufacturer’s recommendations
- 5.3.1.8. Use manufacturer’s approved fall protection anchorage points when attaching a lanyard
- 5.3.1.9. If aerial lifts are not equipped with anchorage points, the lift must be replaced with one that is equipped with manufacturer-installed anchorage points.
- 5.3.1.10. Keep oil, mud, and slippery substances cleaned from footwear
- 5.3.1.11. Ensure that the platform is fully lowered when exiting the platform
- 5.3.1.12. Operators shall always stand firmly on the floor of the basket and never sit or climb on the edge of the basket, or use planks, ladders or other devices to obtain additional height

**5.3.2 Electrocution**

- 5.3.2.1. Operators shall maintain distance from electrical lines, apparatus, or any energized (exposed or insulated) parts according to the following. Electrical line sway, tools, and equipment must also be taken into consideration when determining the Minimum Safe Approach Distance.

| <b>Voltage Range (phase to phase)</b> | <b>Minimum Safe Approach Distance</b> |
|---------------------------------------|---------------------------------------|
| 0 to 50KV                             | 10'                                   |
| Over 50KV to 200KV                    | 15'                                   |
| Over 200KV to 350KV                   | 20'                                   |
| Over 350KV to 500KV                   | 25'                                   |
| Over 500KV to 750KV                   | 35'                                   |
| Over 750KV to 1000KV                  | 45'                                   |

***Electrical lines >50,000 volts require one-foot additional clearance for every additional 30,000 volts***



### **5.3.3 Tipping**

- 5.3.3.1. AWP's shall not be operated in high winds as defined by the manufacturer in the Operation and Safety Manual
- 5.3.3.2. Operators shall ensure that the ground conditions are adequate to support the maximum tire load indicated on the tire load decals located on the chassis adjacent to each wheel
- 5.3.3.3. Tire pressure shall be checked prior to every shift
- 5.3.3.4. Operators shall not operate a raised AWP on a slope, uneven, or soft surface
- 5.3.3.5. Material and equipment must be kept within the confines of the platform at all times
- 5.3.3.6. Rigging shall not be used from an AWP to pick up and move material
- 5.3.3.7. Operators shall not secure an AWP to an adjacent structure
- 5.3.3.8. Safe working load limits and platform capacities shall not be exceeded
- 5.3.3.9. Extreme caution must be exercised when traveling down a slope

### **5.3.4 Crushing and Collision Hazards**

- 5.3.4.1. All telescoping/articulating aerial work platforms (telescoping boom lifts) shall be equipped with secondary guarding that provides crush/entrapment protection (see photo below).
- 5.3.4.2. Hardhats must be worn at all times
- 5.3.4.3. Operators shall keep their body and extremities inside the platform and off the railing during operation
- 5.3.4.4. AWP's must not be operated when the operator's vision is obstructed
- 5.3.4.5. Operators shall always face in the direction of travel
- 5.3.4.6. Operators shall always check clearances above, on sides, and bottom of the platform before raising and lowering the platform
- 5.3.4.7. Operators must take appropriate measures to protect workers and pedestrians below overhead work by establishing a controlled access zone/restricted area/exclusion zone.

## **5.4 Hazard Controls**

### **5.4.1 Engineering Controls**

- 5.4.1.1. All measures shall be taken to eliminate the need to work at height. If it is not feasible, AWP's may be used to elevate a worker to a work position.

### **5.4.2 Administrative Controls**

- 5.4.2.1. All measures shall be taken to separate workers and AWP operations such as, hard barricades, controlled access zones, spotters, flaggers and scheduling operations to eliminate and mitigate exposure to workers and members of the public.

### **5.4.3 Personal Protective Equipment**

- 5.4.2.1. Workers using AWP's should wear personal fall protection equipment in the form of a full body harness and lanyard attached to the manufacturer's prescribed anchorage point. The lanyard should be configured to prevent excess slack and must not be attached to an adjacent pole, structure, etc.
- 5.4.2.2. Body belts are allowed for body restraint, not for fall arrest systems.

5.4.2.3. Operators shall use personal fall protection equipment according to manufacturer's recommendations.

## 5.5 Training

5.5.1. Contractors whose personnel operate AWP's must provide adequate documentation of training.

### **5.5.2. Operator training must cover at a minimum:**

5.5.2.1. Use and limitations of the controls in the platform and at the ground, emergency controls and safety features

5.5.2.2. Control labels, instructions and warnings on the machine

5.5.2.3. Rules of their employer and governmental regulations

5.5.2.4. The care and safe use of approved fall protection

5.5.2.5. Enough knowledge of the mechanical operation of the AWP to recognize a malfunction or potential malfunction

5.5.2.6. The safest means to operate the machine where overhead obstructions, other moving equipment and obstacles depressions, holes and drop-offs exist

5.5.2.7. Means to avoid the hazards of unprotected electrical conductors

5.5.2.8. Specific job requirements or machine application (hands-on training with specific model of AWP)

5.5.2.9. Reading and understanding the Operation and Safety Manual

5.5.2.10. The nature of hazards associated with the equipment such as trip and falls, electrocution, tipping, and crushing and collision

## 6.0 References

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[L&I WAC 296-869 – Elevating Work Platforms](#)

[Cal/OSHA T8 CCR 3636 Article 24 – Elevating Work Platforms and Aerial Devices](#)

[Fed/OSHA 29CFR1926.453 - Aerial Lifts](#)

[Fed/OSHA 29CFR1926.556 – Aerial Lifts](#)

## 7.0 Attachments

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[Aerial Work Platform Inspection Checklist](#)

## Occupational Health

### 1.0 Purpose

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- 1.1. The purpose of this standard is to identify and control risks arising from physical, chemical, and other workplace hazards in order to establish and maintain a safe and healthy working environment. Workplace hazards may include chemical agents and solvents, heavy metals such as lead and mercury, and physical agents such as loud noise or vibration.

### 2.0 Scope

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- 2.1. This standard applies to all tasks conducted on BNBuilders projects.

### 3.0 Responsibility

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#### 3.1 Project Management

- 3.1.1. BNB Project Management & Supervision are responsible for completing a Preconstruction Risk Assessment for the project in order to identify occupational health hazards that personnel may be exposed to as well as controls for the hazards. BNB Project Management & Supervision must ensure the identified hazards and controls are planned for accordingly via preconstruction meetings with affected personnel and documented on JHAs, PTPs, etc.

#### 3.2 Workers

- 3.2.1. Workers who will engage in tasks with occupational health exposures are responsible for following their employer's procedures, the JHA, and the PTP.

### 4.0 Definitions

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- 4.1. **Pandemic** - an epidemic of infectious disease that has spread through human populations across continents. (Examples would be smallpox, tuberculosis, H1N1 flu, NOT seasonal flu)
- 4.2. **Ergonomics** - the applied science of designing and arranging things people use, so that people and things interact efficiently and safely.
- 4.3. **Occupational Health** - refers to the identification and control of the risks arising from physical, chemical, and other workplace hazards in order to establish and maintain a safe and healthy working environment. These hazards may include chemical agents and solvents, heavy metals such as lead and mercury, and physical agents such as loud noise or vibration.

### 5.0 Procedure

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#### 5.1 Asbestos

- 5.1.1. It is the policy of BNB to not have our employees work with or disturb asbestos. Once asbestos has been identified, an approved removal company will be called in to remove and clean the area. Workers are not allowed to resume activities in that area until clearance sampling has approved the area as safe.
- 5.1.2. Asbestos will not be removed unless there is a documented test from an approved laboratory.
- 5.1.3. Workers will understand many areas are not always surveyed for different reasons and they need to be vigilant for possible asbestos containing materials that may not have been accessible or a part of the good faith survey.

**5.1.4 Asbestos Discovery - If asbestos-containing material is found, the following procedures shall be followed:**

- 5.1.4.1. Stop work.
- 5.1.4.2. Secure the scene.
- 5.1.4.3. Contain the asbestos.
- 5.1.4.4. Notify the superintendent immediately.

- 5.1.4.5. Contact the applicable Loss Prevention team member.
- 5.1.4.6. An abatement contractor shall be contacted to abate the area. It is the policy of BB for employees to not directly perform asbestos abatement work.

## **5.1.2 Asbestos Training:**

- 5.1.2.1. Personnel whom have the possibility of exposure to asbestos containing materials will be required at a minimum to attend an annual two-hour training class on asbestos awareness. Anyone that could possibly be exposed either through sales calls, pre job visits or performance of normal work duties will be required to go through training.
- 5.1.2.2. Anyone using air monitoring equipment will be trained on the proper use of the device.
- 5.1.2.3. Training must include all elements listed in Federal or local requirements.

## **5.2 Lead**

- 5.2.1. Workers may be exposed to lead in a number of situations such as during work in older buildings and while working with sound proofing, air handling units, pipe joints, air vents, drywall, flooring, etc.
- 5.2.2. If air monitoring is available, 50 micro grams per cubic meter of air is the action level. If air monitoring shows results above the action level, monitoring will be conducted every 6 months until two consecutive results are below the action level. Workers will be notified in writing of air monitoring results and corrective actions taken. Those air monitoring results, and corrective actions will be posted on the bulletin board.
- 5.2.3. If a job will have lead exposures, a site-specific plan will be set up to minimize the exposures. This compliance program will be created in concert with consultants.
- 5.2.4. To provide complete protection for workers possibly exposed to lead, respirators will be worn in emergencies, and until other engineering or work practice controls can be implemented and deemed enough. All PPE needed will be provided at no cost to the employee.
- 5.2.5. Areas where workers are being exposed above the lead PEL will be posted with signs warning of the lead hazard.

### **5.2.1 A Competent Person or third party should be appointed who will be responsible for:**

- 5.2.1.1. Performing regular inspections of the job site materials and equipment during the job.
- 5.2.1.2. Notifying the BNB Safety manager whenever there is a change in the lead job that has not been addressed by the Lead Compliance Plan.
- 5.2.1.3. Requiring that Engineering Controls are on site and installed correctly before work begins.
- 5.2.1.4. Implementing the engineering controls specified in the Lead Compliance Plan for the site.
- 5.2.1.5. Making sure the following hygiene facilities are provided which include:
  - 5.2.1.5.1. A clean change room equipped with separate Lockers for the storage of street clothes and work clothes.
  - 5.2.1.5.2. A shower and hand washing facilities.
  - 5.2.1.5.3. A lunch area free from lead contamination.
- 5.2.1.6. Establishing rules that will maintain proper housekeeping in the lead abatement area, specifically:
  - 5.2.1.6.1. Prohibit contaminated clothing and equipment outside of lead work area.
  - 5.2.1.6.2. Require lead workers to shower at the end of the shift and wash up before eating and drinking outside the lead area.
- 5.2.1.7. Labeling lead hazardous areas and equipment.
- 5.2.1.8. Marking lead hazardous areas with boundary tape and signs stating: WARNING, LEAD WORK AREA, POISON, NO SMOKING OR EATING
- 5.2.1.9. Marking lead contaminated equipment and debris with labels warning of the lead hazard.
- 5.2.1.10. Maintaining requirements of the Lead Compliance Plan throughout the job.

### **5.2.2 Negative Initial Determination:**

#### **5.2.2.1. Exposures to lead below an 8-hour time-weighted average of 30µg/m<sup>3</sup> requires a written record which includes:**

- 5.2.2.1.1. Date of determination.
- 5.2.2.1.2. Location within the worksite.
- 5.2.2.1.3. Name of each employee monitored.

- 5.2.2.1.4. Monitoring results.
- 5.2.2.1.5. Type of activity conducting during monitoring.
- 5.2.2.1.6. No further action regarding lead is required. Any levels above 30µg/m<sup>3</sup> requires enrollment in a medical surveillance program, possibly including a Lead Compliance Plan, and will not be done by BB employees. If exposures exceed 30µg/m<sup>3</sup> a qualified subcontractor will be hired.

**5.2.2.2. It is recommended a third party be used to evaluate any abatement contractors to make sure procedures are followed.**

**5.2.2.3. These records must be on file on the jobsite:**

- 5.2.2.8.1. Pre-Job Lead Hazard Initial Assessment.
- 5.2.2.8.2. Air monitoring results.
- 5.2.2.8.3. Clean letter
- 5.2.2.8.4. Lead Compliance Plan for the job (as necessary)

**5.2.3 Interim Protection Measures:**

***Until the initial exposure assessment can be conducted, the following protective measures must be implemented:***

- 5.2.3.1. Provide coveralls or other similar full body covering
- 5.2.3.2. Provide gloves, hats, shoes or disposable shoe coverings
- 5.2.3.3. Provide face shields, goggles or other appropriate protective equipment
- 5.2.3.4. Provide change areas and hand washing facilities

**5.2.3.5. Provide half face respirators with HEPA cartridges where lead coatings or paint is present and any of the following activities will occur:**

- 5.2.3.5.1. Manual demolition of structures
- 5.2.3.5.2. Manual scraping
- 5.2.3.5.3. Manual sanding
- 5.2.3.5.4. Heat gun applications
- 5.2.3.5.5. Power tool cleaning with dust collection applications
- 5.2.3.5.6. Spray painting with lead paint

**5.2.3.6. Provide loose fitting hood or helmet powered air purifying respirator with high efficiency filters, or hood or helmet supplied air respirator operated in a continuous-flow mode when performing tasks involving:**

- 5.2.3.6.1. Lead containing mortar
- 5.2.3.6.2. Lead burning
- 5.2.3.6.3. Rivet busting
- 5.2.3.6.4. Power tool cleaning without dust collection systems
- 5.2.3.6.5. Cleanup activities where dry expendable abrasives are used
- 5.2.3.6.6. Abrasive blasting enclosure, movement and removal

**5.2.3.7. Provide full-face piece supplied air respirator operated in pressure demand or other positive pressure when performing tasks involving:**

- 5.2.3.7.1. Abrasive blasting
- 5.2.3.7.2. Welding
- 5.2.3.7.3. Cutting
- 5.2.3.7.4. Torch burning

**5.2.4 Lead Training:**

***BNB should ensure that personnel potentially exposed to lead are trained in the following:***

- 5.2.4.1. The content of lead in construction-standard
- 5.2.4.2. The specific nature of the operations that could result in exposure to lead above the action level.
- 5.2.4.3. The purpose, proper selection, fitting, use, and limitations of respirators.

- 5.2.4.4. The purpose and description of the medical surveillance program and the medical removal protection program including information concerning the adverse health effects associated with excessive exposure to lead.
- 5.2.4.5. The engineering controls and work practices associated with the employee's job assignment including training of employees to follow relevant good work practices.
- 5.2.4.6. The content of any lead compliance plan and the location of regulated areas in effect.
- 5.2.4.7. Instructions to employees that chelating agents should not be routinely used.
- 5.2.4.8. The employee's right of access to records.

## 5.3 Hexavalent Chromium

- 5.3.1. Activities involving the welding, cutting, grinding, and polishing of stainless steel may potentially expose personnel to hexavalent chromium. When these activities are to be conducted, adequate control measures must be in place unless employers can otherwise prove that they are not exposing their personnel to levels greater than the Permissible Exposure Limit. [The employer shall ensure that no employee is exposed to an airborne concentration of chromium (VI) in excess of 5 micrograms per cubic meter of air ( $5 \mu\text{g}/\text{m}^3$ ), calculated as an 8-hour time-weighted average (TWA)].

## 5.4 Benzene

- 5.4.1. Workers may be exposed to Benzene (Gasoline, Diesel) when working on a fuel tank, in a refinery or pipeline location. When beginning work in one of these areas, a J/AHA and PTP shall be filled out discussing all possible hazards and precautions needed.
- 5.4.2. Besides flammable characteristics, Benzene has health hazards that include effects on the central nervous system, nausea, confusion, loss of coordination and dizziness. Some workers will feel "giddy" or excited before the onset of other symptoms. Nose and throat irritation along with headaches, loss of sleep and loss of memory are also common. The vapor can be irritating to the eyes but will not cause permanent injury.
- 5.4.3. Benzene is colorless, has an aromatic odor, is not soluble in water, and is both toxic and flammable. Because it is flammable, smoking or the use of heat or sparking sources is not allowed unless a hot work permit is approved for specific use. Fire extinguishers must be readily available.
- 5.4.4. Emergency procedures must always be available, discussed, included in the J/AHA and PTP. Those procedures must also include mop up procedures and location of PPE and emergency equipment in case of a spill.
- 5.4.5. PPE is required as with many exposures to protect the skin, eyes, and face.

## 5.5 PCB's

- 5.5.1. Light ballasts and other PCB containing material will be handled with appropriate PPE, stored in an appropriate spill containment storage device and an approved contractor will pick them up, provide a receipt, and properly recycle the remainder.
- 5.5.2. Any light ballasts that are leaking must be containerized and prioritized for recycling within 90 days. The container must be dated with the hazard (PCB BALLAST for recycling) and kept sealed and stored in a spill containment or accumulation area.

## 5.6 Silica

### 5.6.1. Respirable Crystalline Silica (RCS):

- 5.6.1.1. Each contractor engaged in a task that releases dust containing silica at the Action Level  $25 \mu\text{g}/\text{m}^3$  must submit a Written Silica Exposure Control Plan to the BNBuilders project team, in order to avoid worker exposure for their own workers and other personnel. For assistants creating a plan reference [www.silica-safe.org](http://www.silica-safe.org).
- 5.6.1.2. **The plan will meet criteria set forth by CFR 1926.1153(g) and also include:**
  - 5.6.1.2.1. Specific tasks that could release silica (Exposure assessment).
  - 5.6.1.2.2. Anticipated location start / end dates for each task.
  - 5.6.1.2.3. Competent Person designation with (Mandatory) 3-hour Silica Training Certification

- 5.6.1.2.4. Specific Exposure Control Methods to reduce or eliminate silica release per [CFR 1926.1153\(c\)\(1\) Table 1](#) (e.g. wet sawing or drilling, misting of dust, use of local exhausted power tools).
- 5.6.1.2.5. These plans will be shared with all contractors involved on the project who will review and incorporate them to avoid potentially significant exposures. Sometimes this may involve temporarily suspending operations in a specific area during a silica activity or scheduling the work activity for off hours.

**5.6.2 Procedures:**

- 5.6.2.1. All workers exposed to silica dust must wash their face and hands prior to smoking, drinking, eating and at the end of the shift.
- 5.6.2.2. Eating, drinking, smoking, use of chewing gum or tobacco is prohibited in all areas contaminated with silica dust.
- 5.6.2.3. Dry sweeping or dry brushing is not permitted along with the use of tools such as air compressors, leaf blowers, etc. to clean clothing or work surfaces that could contribute to the exposure of RCS on BNBuilders’ job sites.
- 5.6.2.4. To the extent feasible, all worker vehicles should be parked away from an anticipated silica dust generating operations.
- 5.6.2.5. Workers with anticipated exposures at or above the OSHA Action level of 25 micrograms per cubic meter of air must wear protective clothing (i.e. disposable Tyvek suit or washable work clothing) that stays on site. In some situations, thoroughly vacuuming worker clothing with a HEPA filtered vacuum may be sufficient.
- 5.6.2.6. Air monitoring should be conducted to determine an Exposure Assessment at job sites where there is a potential for silica exposure at or above the action level. The purpose of the monitoring is to ensure that the appropriate level of respiratory protection and control method are chosen.

**5.6.2.7. A reassessment of exposures will be conducted when a contractor has any reason to believe that new or additional exposures at or above the action level have occurred for the following:**

- 5.6.2.7.1. change in the production
- 5.6.2.7.2. change in process
- 5.6.2.7.3. change of control equipment
- 5.6.2.7.4. change of personnel or work practices.

**5.6.3 Engineering control methods may involve the following:**

- 5.6.3.1. Wet sawing
- 5.6.3.2. Wet drilling
- 5.6.3.3. Water mist or fog to control dust clouds
- 5.6.3.4. HEPA filtered local exhaust power tools
- 5.6.3.5. Enclosed, filtered, air-conditioned equipment cabs
- 5.6.3.6. Non-silica containing abrasives for use in abrasive blasting
- 5.6.3.7. Housekeeping to minimize accumulation of silica-containing waste (spent abrasive, drilling/grinding dust)
- 5.6.3.8. Clean up and containerize waste as soon as feasible after generation (HEPA vacuum, or wet sweeping only)

**5.6.4 Administrative controls**

- 5.6.4.1. Administrative controls can be used in conjunction with engineering controls to further reduce the likelihood of worker exposure or to minimize the number of workers who are over exposed.

**5.6.4.2. These administrative controls may include:**

- 5.6.4.2.1. Contractors who anticipate doing silica dust creating work should notify other contractors as far in advance as possible as to the location, date, start time and duration.
- 5.6.4.2.2. Contractors will to the extent feasible, limit silica generating work to off hours, or coordinate times when other contractors can vacate the immediate work area.



- 5.6.4.2.3. Contractors will leave the immediate work area while other contractors are conducting silica-generating operations above the 25 µg/m<sup>3</sup> Action Level
- 5.6.4.2.4. All areas with silica-generating activities will have silica warning signs posted at all access points and the area flagged off if necessary, to prevent unauthorized workers from entering during silica generating operations. For example:
- 5.6.4.3. Rotating workers from high silica exposure jobs to low exposure jobs during the day. All workers must be trained to a Hazard Communication level awareness of silica.

**5.6.4.4. This training should cover the following topics:**

- 5.6.4.4.1. Adverse health effects of silica.
- 5.6.4.4.2. Tasks, locations, jobs that may generate silica dust.
- 5.6.4.4.3. Methods, equipment, procedures to be used to minimize dust generation and importance of following procedures.
- 5.6.4.4.4. Methods used to determine worker exposure.
- 5.6.4.4.5. Need to avoid silica-generating activities and to vacate the area if feasible when a silica generating task is started.
- 5.6.4.4.6. Availability of any medical records that may be generated.
- 5.6.4.4.7. Availability of any air monitoring records that may be generated.

## 5.7 Pandemic Disease

**5.7.1. In the event of Pandemic disease, the following will serve as guidelines:**

- 5.7.1.1. Hand washing facilities will be provided and kept clean at every project. The use of hand sanitizers will be encouraged. No-touch trash cans, hand soap and disposable towels may be provided by management depending on the project's scope/location. Trash cans shall be provided near doors exiting rest room facilities. Routine cleaning and disinfection of lunch tables, countertops, door handles, keyboards, faucets and handrails will be a main priority.
- 5.7.1.2. Training will be done as needed to educate employees about health issues, prevention, and symptoms of disease. Protecting others at work will be emphasized, and when it is safe to come back to work. Supervisors will make every attempt to aid in allowing workers to tele-commute. Disease containment plans may be provided to employees through weekly emails, flyers and safety bulletin boards.
- 5.7.1.3. Workers will be allowed to tele-commute if they are staying at home to help care for family members. Supervision must work together with employees to minimize the worker bringing disease to work. Discussion of symptoms must be commonplace when talking about returning to work.
- 5.7.1.4. A discussion between the BNB Safety Director, Company President and Director of Human Resources will decide if and how work will continue due to excessive absenteeism from disease.
- 5.7.1.5. Immunizations will be provided when possible at all work locations to reduce absenteeism. A list of all preventative immunizations will be provided on safety bulletin boards and employees will be strongly encouraged to stay updated on all immunizations.
- 5.7.1.6. The BNB Safety Manager will work together with the marketing director, President and Director of Human Resources in communicating to customers and suppliers about our reduction in services and contact because of absenteeism. Those same contacts will receive communication when we resume normal services.
- 5.7.1.7. Large or crowded gatherings will be reduced or eliminated when an outbreak or increased level of a disease is in progress. All large or crowded gatherings and participation in such will be discussed with the BB Division Loss Prevention Manager before scheduling when an outbreak or increased level of a disease is in progress.
- 5.7.1.8. The BNB Crisis Management Team will meet regularly during a pandemic to evaluate and discuss current and new regulations, control measures, project performance, reporting, and steps needed to improve project and office safety.
- 5.7.1.9. The BNB Crisis Management Team will meet after a pandemic to review lessons learned and make improvements to the pandemic policy.

## 5.8 Ergonomics



5.8.1. Musculoskeletal disorders (MSDs) result when there is a mismatch between the physical capacity of workers and the physical demands of their jobs. All workers should be trained on proper lifting techniques, participate in daily stretch and flex, and refrain from kneeling on hard surfaces.

## **5.8.2 Repetitive motions**

### **5.8.2.1. Risk Factors:**

- 5.8.2.1.1. Constant lifting and placing of material (pipe, conduit, rebar)
- 5.8.2.1.2. Hammering
- 5.8.2.1.3. Squeezing snips, drill triggers, etc.
- 5.8.2.1.4. Repeating the same task
- 5.8.2.1.5. Turning wrenches

### **5.8.2.2. Preventive Controls:**

- 5.8.2.1.1. Use mechanical lifting devices
- 5.8.2.1.2. Use spring-loaded hand tools with protective grips
- 5.8.2.1.3. Use tools with multi-finger triggers and contact switches
- 5.8.2.1.4. Rearrange tasks

## **5.8.3 Sustained (awkward) postures**

### **5.8.3.1. Risk Factors:**

- 5.8.3.1.1. Twisting, reaching, and bending
- 5.8.3.1.2. Remaining in the same position for long periods at a time

### **5.8.3.2. Preventive Controls:**

- 5.8.3.2.1. Reposition your body to a more neutral posture
- 5.8.3.2.2. Select tools that reduce awkward postures
- 5.8.3.2.3. Use an adjustable work surface
- 5.8.3.2.4. Move closer to your work
- 5.8.3.2.5. Use energy absorbing floor mats

## **5.8.4 Forceful exertions**

### **5.8.4.1. Risk Factors:**

- 5.8.4.1.1. Material handling (lifting over 50 lbs. repetitively)
- 5.8.4.1.2. Gripping hand tools

### **5.8.4.2. Preventive Controls:**

- 5.8.4.2.1. Use mechanical devices (genie Lift, stair climber, gantry crane, roustabout, lift gates)
- 5.8.4.2.2. Use two workers to lift equipment and materials (do not twist)
- 5.8.4.2.3. Use spring-loaded tools
- 5.8.4.2.4. Use extended handles to reduce bending and reaching
- 5.8.4.2.5. Use casters/swivels or wheels

## **5.8.5 Vibration exposure**

### **5.8.5.1. Risk Factors:**

- 5.8.5.1.1. Working with vibrating power tools (Jackhammer, Roto hammer)
- 5.8.5.1.2. Operating a forklift (body vibration)

### **5.8.5.2. Preventive Controls:**

- 5.8.5.2.1. Add dampening devices to tools, machines, and motorized vehicles
- 5.8.5.2.2. Rotate crews
- 5.8.5.2.3. Wear protective gloves
- 5.8.5.2.4. Use anti-vibration power tools
- 5.8.5.2.5. Use handle covers to decrease vibration
- 5.8.5.2.6. Suspend/support tools to reduce vibration
- 5.8.5.2.7. Use energy absorbing floor mats

**5.8.6 Extreme temperatures****5.8.6.1. Risk Factors:**

- 5.8.6.1.1. Working in hot/cold environments
- 5.8.6.1.2. Working with tools/equipment/mechanical devices that are hot/cold

**5.8.6.2. Preventive Controls:**

- 5.8.6.2.1. Increase/decrease air temperature
- 5.8.6.2.2. Wear appropriate clothing
- 5.8.6.2.3. Wear protective gloves
- 5.8.6.2.4. Drink plenty of fluids
- 5.8.6.2.5. Control exposure through crew rotations

**5.8.7 Improper tool use/design****5.8.7.1. Risk Factors:**

- 5.8.7.1.1. Using improperly designed tools (hand tool without proper design, overuse)
- 5.8.7.1.2. Using tool for inappropriate purpose
- 5.8.7.1.3. Broken tools or equipment

**5.8.7.2. Preventive Controls:**

- 5.8.7.2.1. Use tools that decrease wrist deviation
- 5.8.7.2.2. Use tools for intended task
- 5.8.7.2.3. Inspect tools/equipment prior to use
- 5.8.7.2.4. Use two handle grips
- 5.8.7.2.5. Use trigger less tools, and tools with contact switches and multi-finger triggers

**5.9 Hepatitis B**

- 5.9.1. Subcontractors who will be working on preexisting sewage pipes must have their personnel; vaccinated from Hepatitis B or have signed waivers; trained on the applicable hazards including potential hepatitis B exposure; and must properly equip their personnel with protective equipment.

**5.10 Other Dusts, Fumes, Mists, Vapors, and Gases**

- 5.10.1. Whenever an oxygen deficient atmosphere or harmful dusts, fumes, mists, vapors, or gases exist or are produced in the course of employment in quantities giving rise to harmful exposure of employees, such hazards shall be controlled by removing the employees from exposure to the hazard, by limiting the daily exposure of employees to the hazard, or by application of engineering controls. Whenever such controls are not practicable or fail to achieve full compliance, respiratory protective equipment shall be provided in accordance with applicable federal, state, or local requirements.

**6.0 References**

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[CDC guidelines](#)

[CALOSHA Title 8 Subchapter 7 - Occupational Health Requirements](#)

[L&I WAC 296-800 – Core Safety](#)

[L&I WAC 296-155-100 – Occupational Health](#)

[FEDOSHA Occupational Health Requirements](#)

**7.0 Attachments**

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[Pre-Task Plan](#)

[Hazard Communication Program](#)



## Personal Protective Equipment

### 1.0 Purpose

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- 1.1. Hazards may exist on construction projects in many different forms: sharp edges, falling objects, flying sparks, chemicals, noise, and a myriad of other potentially dangerous situations. When engineering, work practice, and administrative controls are not feasible or do not provide enough protection, personnel must be provided with Personal Protective Equipment (PPE) that will minimize exposure. Examples of PPE are gloves, foot and eye protection, protective hearing device (earplugs, earmuffs), hard hats, respirators, and full-body suits.

### 2.0 Scope

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- 2.1. The policy outlines the various types of PPE requirements on BNB projects.

### 3.0 Responsibility

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#### 3.1 Project Management

- 3.1.1. BNB Project Management and Supervision will review submittals to ensure that each subcontractor has an adequate PPE program for the work they are performing.
- 3.1.2. During work activities, BNB Project Management and Supervision will ensure that PPE is adequate, applicable, and properly worn for the hazards to which personnel are exposed.
- 3.1.3. BNB Project Management and Supervision must ensure that attempts have been made to control hazards with engineering, work practice and administrative controls before having personnel don PPE.

#### 3.2 Workers

- 3.2.1. Workers who are required to wear PPE must follow the requirements of their employer and BNB.
- 3.2.2. Workers must properly wear PPE, attend training sessions on PPE, care for, clean and maintain PPE.
- 3.2.3. Inform Supervision of the need to repair or replace PPE.

### 4.0 Definitions

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- 4.2. **PPE** – Personal Protective Equipment
- 4.3. **ANSI** – American National Standards Institute

### 5.0 Procedure

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- 5.1. PPE should be of safe design and construction and should be maintained in a clean and reliable fashion. It should fit well and be comfortable to wear, therefore encouraging its use. If PPE does not fit properly, it can make the difference between being safely covered or dangerously exposed. Many categories of PPE are required to meet or be equivalent to standards developed by the American National Standards Institute (ANSI).

#### 5.2 Hazard Controls

##### 5.2.1 Engineering Controls

- 5.2.1.1. Engineering controls such as the elimination or substitution of a hazard must first be attempted prior to prescribing PPE for a task.

##### 5.2.1 Administrative Controls

###### 5.2.1.1. Employers with personnel who are required to wear PPE must train each worker on the following in regards of PPE:

- 5.2.1.1.1. When it is necessary
- 5.2.1.1.2. What kind of PPE is necessary?
- 5.2.1.1.3. How to properly don, adjust, wear and take off PPE
- 5.2.1.1.4. The limitations of the equipment

5.2.1.1.5. Proper care, storage, maintenance, useful life, and disposal of the PPE

## **5.2.2 Personal Protective Equipment**

### **5.2.2.1. Head Protection**

5.2.2.1.1. ANSI Z89 Head Protection is required 100% of the time.

5.2.2.1.2. Employees shall wear hard hats that are in good condition and meet legislative jurisdictional requirements. Bump hats, metal hard hats, and cowboy-style hard hats are not permitted.

5.2.2.1.3. Welding hoods must be worn with a hard hat. Cutting goggles must be worn with oxyacetylene cutting activities.

5.2.2.1.4. Alteration / painting of hard hats is prohibited. Hard hats shall be worn in the manner prescribed by the manufacturer. Only head apparel designed to be worn under a hard hat are allowed.

### **5.2.2.2. Hearing Protection**

5.2.2.2.1. Hearing protection devices shall be used when noise level is at 85 dBA or above. Typical rule of thumb is employees should be using hearing protection if they are unable to hear a normal conversation within three feet.

5.2.2.2.2. See [Hearing Conservation Policy](#) for additional information.

### **5.2.2.3. Eye and Face Protection**

5.2.2.3.1. ANSI Z87.1 Protection is required 100% of the time.

5.2.2.3.2. All components of prescription glasses used for eye protection including side shields must meet ANSI Z87.1 Standard.

5.2.2.3.3. Over-the-glass safety glasses or goggles are required for prescription glasses that do not meet ANSI Z87.1 Standard.

5.2.2.3.4. Workers must wear properly fitting eye and face protection. Only clear or indoor/outdoor safety glasses are allowed during interior work. Face and eye protection shall be kept clean and in good condition. Face protection must be worn during the following:

5.2.2.3.4.1. Grinding;

5.2.2.3.4.2. Chipping;

5.2.2.3.4.3. Cutting;

5.2.2.3.4.4. Splashing;

5.2.2.3.4.5. Or any other work that causes a projectile hazard.

5.2.2.3.5. During gas welding and cutting operations, tinted safety glasses are inadequate – appropriate eye protection for welding operations are required.

5.2.2.3.6. When using lasers, appropriately rated laser-safety goggles must be worn for the wavelengths of laser used.

### **5.2.2.4. Hand and Arm Protection**

5.2.2.4.1. Cut-resistant gloves shall be worn at all times by all persons on-site except when advised against by a tool manufacturer for reason that gloves may increase the hazard potential (i.e., entanglement in moving parts, belts, or shafts).

5.2.2.4.2. All gloves shall have a minimum cut level of A3 (ANSI Cut Level 3at 1,000-1,499 grams to cut).

5.2.2.4.3. Each task shall be analyzed to determine the appropriate type of glove needed since specialty gloves may be required for exposure to sharp materials, chemicals, hot work, electricity, etc.

5.2.2.4.4. All gloves must be in good condition and fully intact – the fingers of the gloves may not be cut off. When arms may be exposed to sharp objects, adequate protective sleeves must be worn (i.e., drywall track, sheet metal, metal framing, demo work, etc.)

**5.2.2.5. Body Protection**

- 5.2.2.5.1. Personnel are required to wear high visibility clothing. Workers performing flagging operations must wear the proper class high visibility clothing based on the traffic conditions.
- 5.2.2.5.2. Employees shall come properly dressed to perform work activities with long pants and shirts with at least four-inch sleeves. Shorts and sleeveless shirts are prohibited at all times.
- 5.2.2.5.3. Additional body protection may be required depending on the task and potential hazards. For example, a protective apron is required by the operator during mortar mixing operations.

**5.2.2.6. Foot and Leg Protection**

- 5.2.2.6.1. All personnel must wear sturdy boots with ankle protection and hard soles. No running shoes of any kind are permitted on work sites. No safety toe tennis shoes allowed.
- 5.2.2.6.2. Personnel exposed to struck-by or crushing hazards that may potentially injure their feet must wear metatarsal protection (i.e., the use of a whacker or jackhammer requires shoe covers).
- 5.2.2.6.3. Personnel exposed to chemical hazards that may potentially injure their feet must wear impervious shoe-protection.
- 5.2.2.6.4. Full-length protective chaps are required to be worn when using chainsaws, demo/chop/cut-off/gas-powered saws.

**5.2.2.7. Respiratory Protection**

- 5.2.2.7.1. Due to the complexity of respiratory protection requirements, please reference the [Respiratory Protection Policy](#).

**6.0 References**

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[ANSI Z87.1 – Eye and Face Protection](#)

[OSHA Safety & Health Topics – Personal Protective Equipment](#)

[L&I WAC 296-800-160 – Personal Protective Equipment](#)

[CALOSHA Title 8 Subchapter 7 Group 2 Article 10 – Personal Protective Devices](#)

**7.0 Attachments**

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[Pre-Task Plan](#)

# Pre-Task Planning

## 1.0 Purpose

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- 1.1. The purpose of this policy is to establish the requirements for conducting daily Pre-Task plans of construction work activities on BNB projects.

## 2.0 Scope

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- 2.1. The scope of this policy applies to both BNB field crews and Subcontractor field crews. For a broader task analysis, see the [Job Hazard Analysis Policy](#).

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. Project Management and Supervision are responsible for ensuring each crew is completing their Pre-Task Plans daily. Foreman are responsible for training the crews on each Pre-Task Plan, and ensuring they understand each work task listed.

### 3.2 Workers

- 3.2.1. Workers are responsible for reading, understanding, and signing the Pre-Task Plan each day before work begins. In some cases, employees may be asked to create the Pre-Task Plan for a given task to help them develop skills needed to become foreman.

## 4.0 Definitions

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- 4.1. **Hazard** – A danger or risk.
- 4.2. **Controls** – determine the behavior or supervise the running of;

## 5.0 Procedure

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### 5.1 General Requirements

#### **5.1.1. The following items are requirements for the Pre-Task Plan:**

- 5.1.1.1. Each Pre-Task Plan must be completed and signed **BEFORE WORK BEGINS**.
- 5.1.1.2. Each foreman responsible for their own crew must complete a Pre-Task Plan specific to that divisions work.
- 5.1.1.3. Pre-Task Plans must be submitted to BNB via email or a physical copy before work begins.
- 5.1.1.4. If deviation from the Pre-Task Plan, the Pre-Task Plan must be amended to reflect the changes in work process.
- 5.1.1.5. If, due to sudden changes in condition, your Pre-Task Plan no longer reflects the scope of work to be performed, a new Pre-Task Plan must be completed prior to the work beginning.
- 5.1.1.6. Subcontractors can utilize BNBuilders Pre-Task Plan form or their own form
- 5.1.1.7. Pre-Task Plans involving occupied spaces must include potential risks for tenants / occupants.
- 5.1.1.8. Pre-Task Plan training will be provided via Site-Specific Orientation

**5.1.2. See Pre-Task Plan Template below for reference:**

| Hazards                           |                       | Exist?  |    | Hazards                         |  | Exist? |    |
|-----------------------------------|-----------------------|---|----|---------------------------------|--|--------|----|
|                                   |                       | Yes   | No |                                 |  | Yes    | No |
| <b>Falls</b>                      |                       |   |    | <b>Noise</b>                    |  |        |    |
| From Height                       |                       |   |    | <b>Vibration</b>                |  |        |    |
| On to hazard                      |                       |   |    | <b>Fire</b>                     |  |        |    |
| Of objects                        |                       |   |    | Flammables / Combustibles       |  |        |    |
| (Other)                           |                       |   |    | Ignition Sources                |  |        |    |
| <b>Electric Shock</b>             |                       |   |    | (Other)                         |  |        |    |
| Overhead, Buried, Hidden Lines    |                       |   |    | <b>Chemicals</b>                |  |        |    |
| Cords / Leads                     |                       |   |    | Dust                            |  |        |    |
| Power Sources                     |                       |   |    | Fumes / Gases / Vapors          |  |        |    |
| (Other)                           |                       |   |    | Toxic / Allergenic              |  |        |    |
| <b>Caught Between</b>             |                       |   |    | Acid / Caustic                  |  |        |    |
| Swinging / Rotating Equipment     |                       |   |    | Explosive / Reactive            |  |        |    |
| Pinch Points                      |                       |   |    | (Other)                         |  |        |    |
| Materials                         |                       |   |    | <b>Buildings / Systems</b>      |  |        |    |
| Cave in                           |                       |   |    | Charged systems                 |  |        |    |
| (Other)                           |                       |   |    | Hazardous Energy                |  |        |    |
| <b>Struck by</b>                  |                       |   |    | Stored Energy                   |  |        |    |
| Dropped Objects / Loads           |                       |   |    | Hazardous Materials / Chemicals |  |        |    |
| Flying Material / Debris          |                       |   |    | Confined Spaces                 |  |        |    |
| Equipment / Traffic               |                       |   |    | Structural                      |  |        |    |
| Unstable Materials                |                       |   |    | (Other)                         |  |        |    |
| (Other)                           |                       |   |    | <b>Location</b>                 |  |        |    |
| <b>Walking / Working Surfaces</b> |                       |   |    | Occupied Space                  |  |        |    |
| Slips / Trips                     |                       |   |    | Public at Risk                  |  |        |    |
| Holes / Uneven Surfaces           |                       |   |    | Asbestos / Lead                 |  |        |    |
| Access / Egress                   |                       |   |    | Mold                            |  |        |    |
| (Other)                           |                       |   |    | Hazardous Waste                 |  |        |    |
| <b>Material Handling</b>          |                       |   |    | Medical Waste                   |  |        |    |
| Overexertion / Strains            |                       |   |    | (Other)                         |  |        |    |
| Cuts / Punctures                  |                       |   |    | <b>Weather / Environment</b>    |  |        |    |
| Storage / Stacking                |                       |   |    | Heat / Cold                     |  |        |    |
| Mechanical Equipment              |                       |   |    | Lightning                       |  |        |    |
| Hoisting                          |                       |   |    | Wind                            |  |        |    |
| Hauling / Road Transport          |                       |   |    | Visibility                      |  |        |    |
| Floor Loading                     |                       |   |    | (Other)                         |  |        |    |
| (Other)                           |                       |   |    |                                 |  |        |    |
| <b>PPE</b>                        | <b>Basic Required</b> | <b>Additional (Circle)</b>  |    |                                 |  |        |    |
| <b>Head</b>                       | Hard Hat (Type I, G)  | Type II Hat (side impact) / Class E (electrical)                      |    |                                 |  |        |    |
| <b>Eyes</b>                       | Glasses (ANSI Z87)    | Chemical Goggles / Foam lined (dust) / Welding / Laser                |    |                                 |  |        |    |
| <b>Body / Arms</b>                | Shirt w/ 4" sleeve    | Fall Harness / High Viz / Fire / Chemical / Arc Flash / Cut resistant |    |                                 |  |        |    |
| <b>Knees / Legs</b>               | Long Pants            | Knee Pads / Chaps / chemicals   |    |                                 |  |        |    |
| <b>Hands</b>                      | Light Duty Gloves     | Heavy Duty Gloves / Cut Resistant / Chemical / Welding / Thermal      |    |                                 |  |        |    |
| <b>Feet</b>                       | Sturdy Work Boots     | Rubber Boot / Steel Toe / Metatarsal / Electrical / Booties           |    |                                 |  |        |    |
| <b>Face</b>                       |                       | Plastic Face Shield / Mesh Face Shield / Welding Mask                 |    |                                 |  |        |    |
| <b>Ear</b>                        |                       | Plugs / Muffs / Double  |    |                                 |  |        |    |
| <b>Breathing</b>                  |                       | Dust Mask / Filtering Respirator / Supplied Air                       |    |                                 |  |        |    |
| <b>Other</b>                      |                       |   |    |                                 |  |        |    |



|                               |  |
|-------------------------------|--|
| <b>Job / Task Description</b> |  |
|-------------------------------|--|

| <b>Basic Job Steps</b>  | <b>Hazards</b>  | <b>Controls / Work Practices</b>   |
|---|---|--|
| Describe major tasks in order.<br>What will you be doing?<br>What equipment and tools are needed? | Identify the hazards of each step.<br>What could go wrong?<br>What could cause an accident? | Decide what controls are needed.<br>What safe work practices must be used for each hazard?<br>What training is required? |
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|   |   |  |
| <b>Prepared by:</b>   |   | <b>Date / Time:</b>  |
| <b>Crew Member Signatures</b>   |   |  |
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## **6.0 References**

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[L&I WAC 296-800 – Core Safety](#)

[CALOSHA Subchapter 4 – Accident Prevention Program Ideas](#)

[FEDOSHA 29 CFR 1926.952 – Job Briefing](#)

## **7.0 Attachments**

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[Pre-Task Plan Form](#)

# Pressurized Lines

## 1.0 Purpose

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- 1.1. Prior to initial operation of piping systems, testing must be conducted to check for leaks. Typically, the types of testing are pneumatic or hydrostatic. Regardless of the testing method used, the testing process is considered dangerous and must be performed with caution. To ensure the safety of personnel and the public, safety precautions must be enacted prior to conducting a test.

## 2.0 Scope

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- 2.1. This procedure outlines the necessary actions and safe practices for **pressure testing lines** on BNB projects. This standard applies to the pressure testing of standard metal piping systems. Piping systems that are not covered by this standard are cast iron, fiberglass, plastic, PVC, and CPVC.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. BNB Project Management & Supervision are responsible for ensuring that pressure testing of lines is in accordance with this standard.

### 3.2 Workers

- 3.2.1. Workers engaged in pressure testing of lines are responsible for following their employer's safety program and procedures. Also, they must submit a detailed plan to BNBuilders prior to any pressurization of piping systems and/or the use of pneumatic plugs.
- 3.2.2. The American Society of Mechanical Engineers (ASME) provides thorough direction on piping systems and should be followed by personnel engaged in testing.

## 4.0 Definitions

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- 4.1. **ASME** – American Society of Mechanical Engineers
- 4.2. **Absolute Pressure (psi)** - The sum of the atmospheric pressure and gauge pressure (psig).
- 4.3. **Ambient Pressure** - Encompassing pressure surrounding all sides.
- 4.4. **Anhydrous Ammonia** - a colorless, highly irritating gas with a sharp, suffocating odor. <http://www.dir.ca.gov/title8/507.html>
- 4.5. **Atmospheric Pressure** - The pressure of air at sea level, usually 14.7 psi (one atmosphere), or 0 Psig.
- 4.6. **Final / Service Pressure Test** – A pressure test conducted in accordance with the contract documents, e.g. specifications.
- 4.7. **Gauge Pressure (psig)** - Pressure measured by a gauge and indicating the pressure exceeding atmospheric.
- 4.8. **Low Pressure Pneumatic Testing of Brittle Piping Systems** - A test using a gaseous test medium, e.g. air, **at or less than 7 psi**, used to (leak and/or structural) test piping made of materials prone to brittle failure, including, but not limited to concrete, CPVC, and cast iron in lieu of a typical 10' of a liquid, head-pressure test.
- 4.9. **High Pressure Pneumatic Leak Test** – A test using a gaseous test medium, e.g. air, at 7 psi - 10 psi to check for leaks in a system and to verify that all joints and fittings are installed properly. May or may not be done in conjunction with a High-Pressure Structural Test or Final Test. The test duration should be limited to the time necessary to bring the system slowly to test pressure, check joints and fittings for leaks and the return of the system to a zero-energy state.
- 4.10. **High Pressure Pneumatic Structural Test** – A test using a gaseous test medium, e.g. air, under pressure greater than 7 psi but not more than the lesser of 150 psi or 1.25x operational design pressure for the purpose of verifying the structural integrity of a piping system including the piping, joints, fittings and other components. A High Pressure Pneumatic Structural Test must start with a High-Pressure Pneumatic Leak Test at 7 psi - 10 psi for at least 10 minutes. The pressure should then be increased in stages not exceeding the lesser of 25 psi or 25% of test pressure and held for not less than 5 minutes at each stage until the test pressure is achieved. The test duration must not exceed the maximum duration specified in the BNB authorized plan / procedure, after which the piping system must be slowly returned to a zero-energy state.

- 4.11. **Hydrostatic test** - a way in which pressure vessels such as pipelines, plumbing, gas cylinders, boilers and fuel tanks can be tested for strength and leaks. Hydrostatic testing is the most common method employed for testing pipes and pressure vessels. The test involves filling the vessel or pipe system with a liquid, usually water, which may be dyed to aid in visual leak detection, and pressurization of the vessel to the specified test pressure. Pressure tightness can be tested by shutting off the supply valve and observing whether there is a pressure loss. The location of a leak can be visually identified more easily if the water contains a colorant. Strength is usually tested by measuring permanent deformation of the container.
- 4.12. **Pneumatic Pressure Leak/Damage Detection/Monitoring** – The practice of leaving pneumatic pressure on a piping system for an extended period (longer than the time necessary for Leak or Structural Testing) to help identify leaks caused by damage or other causes.
- 4.13. **Pressure** - A force acting on a unit area. Usually shown as pounds per square inch (psi).

## 5.0 Procedure

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### 5.1 General Pressure Testing Requirements

5.1.1. Prior to initial startup, piping systems shall be tested for leakage. Typical leak testing methods consist of hydrostatic, pneumatic, or service. Hydrostatic testing shall be the first choice because it generates considerably less stored energy and thus involves less risk to workers.

**5.1.2. Pneumatic testing is more dangerous for workers and should be performed only when hydrostatic testing isn't acceptable such as when one of the following conditions are present:**

- 5.1.2.1. The piping system does not contain cast iron pipe or plastic pipe subject to brittle failure.
- 5.1.2.2. The system does not contain soldered or solvent cement joints.
- 5.1.2.3. The test pressure does not exceed 150 psig.
- 5.1.2.4. The system will be used in gas service, or for other reasons cannot be filled with water.
- 5.1.2.5. Traces of a test liquid would be detrimental to the intended use the piping.
- 5.1.2.6. The facility will not allow for hydrostatic testing.

**5.1.3. Whichever method of testing is used, these guidelines must be followed prior to testing:**

- 5.1.3.1. Notify personnel of area to be avoided due to risks during pressure testing.
- 5.1.3.2. Create an exclusion/controlled access zone for the work area.
- 5.1.3.3. Ensure that personnel conducting the test stand behind a barrier or away from the line-of-fire during pressurization.
- 5.1.3.4. Ensure that pedestrians are rerouted out of the area. Spotters may be needed to re-route pedestrians, if applicable.
- 5.1.3.5. Identify the maximum test pressure to be used (typically provided by an engineer or specifications).
- 5.1.3.6. Identify the pipe to be tested. Ensure that the system has been completed according to the drawings and that no ends of the piping system are left open.
- 5.1.3.7. Identify any adjacent equipment that could be affected by a failure and isolate or otherwise protect the equipment.
- 5.1.3.8. Examine all connections within the testing section prior to the test to ensure proper tightness. All joints including welds shall be left uninsulated and exposed for examination during the test.
- 5.1.3.9. Determine the pressure rating for all connected fittings and devices to ensure they are rated for the maximum test pressure.
- 5.1.3.10. Piping designed for vapor or gas may be provided with temporary supports if necessary, to support the weight of the test liquid.
- 5.1.3.11. Expansion joints which cannot sustain the reactions due to test pressure shall be provided with temporary restraint or isolated from testing.
- 5.1.3.12. Equipment that is not to be subjected to the test pressure shall be isolated from the piping. If a valve is used to isolate the equipment, its closure shall be capable of sealing against the

test pressure without damage to the valve. Flanged joints at which blinds are inserted to isolate equipment need not be tested.

- 5.1.3.13. If the test pressure is to be maintained for a period of time during which the test fluid is subject to thermal expansion or any other source of over pressurizing during the test, precautions such as the installation of a relief device shall be taken to avoid excessive pressure.
- 5.1.3.14. Ensure that all necessary lock out tag out procedures have been completed.
- 5.1.3.15. Verify that all non-essential personnel are clear from the area.
- 5.1.3.16. Inform all affected personnel that the test is about to start.

**5.1.4. Post Test Requirements:**

- 5.1.4.1. Release pressure before attempting to repair any leaks. Never attempt to repair leaks while the system is under pressure.
- 5.1.4.2. Drain the system. Carefully follow the procedures to safely and gradually release the pressure from the system and collect the waste liquid test medium when required. Caution must be taken to avoid escaping air stream, debris, and high noise levels.
- 5.1.4.3. Repair any leaks that were found. Lock out tag out procedures must be followed during leak repair.
- 5.1.4.4. Retest the system if necessary.
- 5.1.4.5. Complete any appropriate forms/logs to document test completion/pass.

**5.1.5. Hydrostatic Testing Specifics:**

- 5.1.5.1. Pressurization Plans should follow Owner's/manufacture's/engineer's specification and procedures and be planned and written in compliance with ASME B31.9 – Building Services Piping, NFPA 24.2.2.1, and other applicable standards.
- 5.1.5.2. Temporary End Closure plate size and weld details must use one of the three weld types specified in ASME B31.9.
- 5.1.5.3. Ambient-temperature water shall be used as the test medium except where there is a risk of damage due to freezing. Another liquid may be used if it is safe for personnel and compatible with the piping.
- 5.1.5.4. Vents shall be provided at high points in the system to release trapped air while filling the system. Drains shall be provided at low points for complete removal of the test liquid.
- 5.1.5.5. The system shall be examined to see that all equipment and parts that cannot withstand the test pressure are properly isolated. Test equipment shall be examined to ensure that it is tight and that low-pressure filling lines are disconnected.
- 5.1.5.6. The test pressure shall not exceed the maximum test pressure for any vessel, pump, valve, or other component in the system under test. A check shall be made to verify that the stress due to pressure at the bottom of vertical runs does not exceed either of the following:
  - 5.1.5.6.1. 90% of specified minimum yield strength;
  - 5.1.5.6.2. 1.7 times the SE value in Appendix A of ASME's b31.9-1996 (for brittle materials)
- 5.1.5.7. Following the application of hydrostatic test pressure for at least 10 minutes, examination shall be made for leakage of the piping at all joints and connections. If leaks are found, they shall be eliminated by tightening, repair, or replacement, as appropriate, and the hydrostatic test repeated until no leakage is found.

**5.1.6. Pneumatic Testing Specifics:**

- 5.1.6.1. Pneumatic Pressurization Plans should follow Owner's/manufacture's/engineer's specification and procedures and be planned and written in compliance with ASME B31.9 – Building Services Piping, NFPA 24.2.2.1, and other applicable standards.

- 5.1.6.2. Owner's contract documents and/or certain manufacturers may prohibit or restrict pneumatic pressurization of piping systems.
- 5.1.6.3. Pneumatic testing generates potentially dangerous stored energy because the air or gases are easily compressed when used in the systems without liquid. 500 feet of six-inch pipe at 150 psi is equal to five pounds of TNT (MCAA Guide to Pressure Testing Safety).
- 5.1.6.4. Pneumatic Pressurization of **PVC** piping systems is **prohibited** by BNB.
- 5.1.6.5. Compressed gas poses the risk of sudden release of stored energy.
- 5.1.6.6. The gas used for pneumatic testing shall be nonflammable and nontoxic.
- 5.1.6.7. Prior to any application of full pneumatic test pressure, a preliminary test of not more than 10 psig shall be applied to reveal possible major leaks.
- 5.1.6.8. The test pressure shall not exceed the maximum allowable pneumatic test pressure for any vessel, pump, valve, or other component in the system under test.
- 5.1.6.9. The test pressure shall not exceed 1.25 times the design pressure. Pressure shall be applied in several stages, allowing time for the system to reach equilibrium at each stage.
- 5.1.6.10. After the preliminary test, pressure shall be raised in stages of not more than 25% up to full pneumatic test pressure, allowing time for equalization of strains and detection of major leaks at each stage. Following the application of test pressure for at least ten minutes, the pressure may be reduced to design pressure and examination shall be made for leakage of the piping. Leaks may be detected by soap bubble, halogen gas, scented gas, test gage monitoring, ultrasonic, or other suitable means. **If leaks are found, pressure shall be vented in accordance with Lock Out Tag Out Procedures**, appropriate repair or replacement shall be made, and the pneumatic test repeated until no leakage is found.

**5.1.7. Service Testing Specifics:**

- 5.1.7.1. For gases, steam, and condensate services not over 15 psi, and for nontoxic, noncombustible, nonflammable liquids at pressures not over 100 psig and temperatures not over 200 F, it is permissible to conduct the system testing with the service fluid. This method is called Service Testing in which a preliminary test with air at low pressure may be used. The piping system is brought up to operating pressure gradually with visual examination at a pressure between one-half and two-thirds of design pressure. A final examination shall be made at operating pressure. If the piping system is free of leaks, it will have met the requirements for testing.

**5.1.8. Pneumatic/Expansion/Serrated Plugs:**

<http://www.dir.ca.gov/title8/560.html>

- 5.1.8.1. Pneumatic plugs can cause serious injury if they burst or are ejected from a pipe. Employer confirmation (letter) must be submitted to BNB assuring safe pneumatic plug use training has been completed by workers before they begin activities that may include pneumatic plugs. Pneumatic plugs may not be used for high pressure testing.
- 5.1.8.2. The use of expansion plugs or serrated plugs without through stays is limited to 6" nominal pipe size and/or 150 psi; for use of such devices above these limits specific written test procedures must be developed by the employer to protect against injury in the event the plug blows out.

**5.1.8.3. Such instructions may include applicable data and recommendations furnished by the plug manufacturer and must include the following as a minimum:**

- 5.1.8.3.1. Identification by function of the personnel responsible for the various procedures.
- 5.1.8.3.2. The test plugs must be well maintained and inspected by the designated employee before use.
- 5.1.8.3.3. Any opening to be plugged shall satisfy any limitation on straightness, roundness and diameter and shall be cleaned of dirt, mill scale or oil.
- 5.1.8.3.4. The plug must be of the correct size and pressure rating, including any limitations on the test fluid or test temperature. It must be inserted for full length of engagement, in accordance with the plug manufacturer's instructions.

- 5.1.8.3.5. The test piece must be so oriented to minimize probability of the plug striking personnel or equipment if the plug is ejected. All air must be vented from objects to be hydrostatically tested. Test plugs shall be barricaded or equipped with arresting devices when pneumatic pressure is used for testing.
- 5.1.8.3.6. Provision shall be provided for safe egress. No one shall be allowed to stand in front of the test plug or in line of probable trajectory during test.
- 5.1.8.3.7. No one shall be allowed to stand on top of the object being tested, or on a ladder to the test section until the test object is brought up to full test pressure, held at test pressure for at least ten minutes, and pressure is reduced to a predetermined safe level.
- 5.1.8.3.8. Pressurization shall be stopped at intervals to check pressure gage(s) and position of test plug(s).
- 5.1.8.3.9. The test pressure shall be reduced to zero before the plugs are loosened for removal.
- 5.1.8.3.10. Damaged or expanded closure ends must be cut off.
- 5.1.8.3.11. All repairs to test plugs shall follow the plug manufacturer's instructions.

**5.1.9. Protection Against Overpressure:**

- 5.1.9.1. Pressure during test must be controlled within 5% above the required test procedure. Protection against overpressure must be provided at 110% of the test pressure. A relief valve setting of 133% of the test pressure may be used, for elastic materials only, where calculations show that 133% of the test pressure will not exceed 90% of the specified minimum yield strength of the material. The discharge from the safety relief valve or rupture disc must be led full size to a safe place.
- 5.1.9.2. The requirement for a relief valve may be waived by a Qualified Pressure Vessel Safety Engineer or Certified Pressure Vessel Inspector if the only source of test pressure is a hand pump.

**5.2 Hazards**

- 5.2.1. The pressurization of piping systems and/or the use of pneumatic plugs creates the potential for the sudden release of stored energy which can result in catastrophic damage and/or injury. The risk from a failing joint, connection, gauge, valve, fitting or another component increases during the testing process, especially during pneumatic testing.

**5.2.2. Potential hazards associated with pressure testing lines may be:**

- 5.2.2.1. Fatalities and injuries caused by struck-by equipment/material, whipping hoses, flying material/equipment/objects/shrapnel (i.e., lacerations, contusions, bone fractures/breaks, puncture wounds, concussions, internal injuries, etc.)
- 5.2.2.2. Air injection into the body which could cause an air embolism and obstruct blood flow to the heart. This condition could be fatal in extreme cases.
- 5.2.2.3. Foreign objects in the eye
- 5.2.2.4. Hearing loss from sustained high-noise levels
- 5.2.2.5. Oxygen displacement and/or asphyxiation from an inert gas used for testing
- 5.2.2.6. Flooding in areas where energized electrical sources are present leading to electrocution
- 5.2.2.7. Freezing of pipes
- 5.2.2.8. Environmental hazards (from fuel testing)

**5.2.3. Hydraulic systems must store fluid under high pressure. Three kinds of hazards exist:**

- 5.2.3.1. burns from the hot, high pressure spray of fluid;
- 5.2.3.2. bruises, cuts or abrasions from flailing hydraulic lines; and
- 5.2.3.3. injection of fluid into the skin.

**5.2.4. Common causes of pressure testing failures may consist of:**

- 5.2.4.1. over pressurizing a system
- 5.2.4.2. inadequate/improper pressure testing equipment
- 5.2.4.3. poor system/component design
- 5.2.4.4. operator error
- 5.2.4.5. inadequate repairs/modifications to a system
- 5.2.4.6. failure to properly isolate parts being tested from other parts of a system
- 5.2.4.7. failure to properly isolate equipment from the piping system being tested

## **5.3 Hazard Controls**

### **5.3.1 Engineering Controls**

- 5.3.1.1. When feasible and allowed, hydrostatic testing shall be chosen over pneumatic.

### **5.3.2 Administrative Controls**

- 5.3.2.1. Personnel that review pressure testing plans, procedures, checklists, and permits must have the ability to identify deficiencies.
- 5.3.2.2. Procedures and plans must have in-depth details necessary to safely perform pressure testing.
- 5.3.2.3. Pipe/equipment manufacturer's specifications for installation and testing must be clearly and specifically addressed in procedures.
- 5.3.2.4. Lock Out Tag Out Programs must have procedural detail necessary to safely control stored energy during pressure testing.
- 5.3.2.5. Zero-energy verification must occur prior to attempting end-cap removal or leak correction.
- 5.3.2.6. A pre-test safety meeting should be held with all personnel involved with a pressure test to review the pre-test safety plan, procedures, JHA, PTP, checklists, permits, etc. created for the specific pressure testing application.
- 5.3.2.7. Signage should be posted, and barricades installed prior to testing.
- 5.3.2.8. Personnel engaged in testing should be physically located out of the line-of-fire during testing.

### **5.3.3 Personal Protective Equipment**

- 5.3.3.1. All personnel within test areas shall be required to wear eye protection, hard hats, hand protection, and hearing protection.
- 5.3.3.2. Eye protection should always be worn because there is a risk that particles or debris can be blown into the eye. Face shields should be worn when applicable. Hearing protection is also used if there is a consistent hissing or whistling of air leaks.
- 5.3.3.3. If possible, protective barriers should be in place during testing.

## **5.4 Training**

### **5.4.1. Personnel engaged in pressure testing must be trained on:**

- 5.4.1.1. the test process that they will be using for the specific application,
- 5.4.1.2. applicable procedures,
- 5.4.1.3. the Job/Activity Hazard Analysis and Pre-Task Plan,
- 5.4.1.4. safety and personal protective equipment
- 5.4.1.5. communication methods during testing (i.e., radios, cell phones, signage, etc.)
- 5.4.1.6. emergency procedures
  - 5.4.1.6.1. emergency shutdown procedures
  - 5.4.1.6.2. emergency contact information and phone numbers



## **6.0 References**

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[ASME Standard Number: ASME B31.9-1996 Title: Building Services Piping](#)

[CAL / OSHA CCR T8 560 Subchapter 1 – Unfired Pressure Vessels – Safe Practices](#)

[L&I WAC – Boiler Law Book – Boiler and Unfired Pressure Vessel Laws](#)

## **7.0 Attachments**

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[MCAA Guide to Pressure Testing Safety](#)

[Pre-Task Plan](#)

[JHA Form](#)

[Confined Space Entry Permit](#)

[Demolition Permit](#)

## Process Safety Management

### 1. Purpose

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- 1.1. The primary objective of process safety management of highly hazardous chemicals is to prevent unwanted releases of hazardous chemicals especially into locations which could expose employees and others to catastrophic releases of toxic, reactive, flammable, or explosive chemicals in various industries such as refineries, manufacturing, and laboratory facilities.
- 1.2. An effective process safety management policy requires a systematic approach to evaluating the whole process. Using this approach, the process design, process technology, operational and maintenance activities and procedures, non-routine activities and procedures, emergency preparedness plans and procedures, training policies, and other elements which impact the process are all considered in the evaluation. The various lines of defense that have been incorporated into the design and operation of the process to prevent or mitigate the release of hazardous chemicals need to be evaluated and strengthened to assure their effectiveness at each level. Process safety management is the proactive identification, evaluation and mitigation or prevention of chemical releases that could occur as a result of failures in process, procedures or equipment.

### 2. Scope

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- 2.1. BNBuilders will work at times in facilities where processes which contain quantities of toxic or reactive High Hazardous Chemicals “HHC”. The contract employer shall advise the employer of any unique hazards presented by the contract employer’s work, or of any hazards found by the contract employer’s work. A List of Highly Hazardous Chemicals, Toxics and Reactive can be found in OSHA 1910.119 App A.
- 2.2. Exceptions**
- 2.3. This policy does not apply to retail facilities, normally unoccupied remote facilities and oil or gas well drilling or servicing activities. Hydrocarbon fuels used solely for workplace consumption as a fuel are not covered, if such fuels are not part of a process containing another HHC covered by the standard.

### 3. Responsibility

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- 3.1. Contractors**
- 3.2. Identifies responsibilities of work site employer and contract employers with respect to contract employees involved in maintenance, repair, turnaround, major renovation or specialty work, on or near covered processes. Contract employers are required to train their employees to safely perform their jobs, and document that employees received and understood training, and assure that contract employees know about potential fire, explosion or toxic release hazards related to his/her job and the work site employer’s emergency action plan, assure that employees follow safety rules of the facility, and advise the work site employer of hazards contract work itself poses or hazards identified by contract employees.

### 4. Procedure

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- 4.1. **Process Safety Information** - Requires compilation of written Process Safety Information (PSI) including hazard information on HHC’s, technology information and equipment information on covered processes.
- 4.2. **Employee Involvement** - Requires developing a written plan of action regarding employee participation; consulting with employees and their representatives on the conduct and development of process hazard analyses and on the development of other elements of process safety management required under the rule; providing to employees and their representatives access to process hazard analyses and to all other information required to be developed under

the rule. BNBuilders will assure that each contract employee is trained in the work practices necessary to perform his/her job.

- 4.3. **Process Hazard Analysis** - Process Hazard Analyses (PHA's) must be conducted as soon as possible for each covered process using compiled PSI in an order based on a set of required considerations. Similar to the BNBuilders JHA policy a PHA should describe the area to be worked in, the hazardous chemical processes that are of concern and the potential hazards of completing the work. The PHA should be completed by identifying/listing, in detail, preventative measures for each identified hazard.
- 4.4. **Operating Procedures** - Must be in writing and provide clear instructions for safely conducting activities involving covered process consistent with PSI; must include steps for each operating phase, operating limits, safety and health considerations and safety systems and their functions; be readily accessible to employees who work on or maintain a covered process, and be reviewed as often as necessary to assure they reflect current operating practice; and must implement safe work practices to provide for special circumstances such as lock-out/tag-out, confined space entry, opening process equipment or piping and controls over entrance to facility.
- 4.5. **Training** - Employees operating a covered process must be trained in the overview of the process and in the operating procedures addressed previously. This training must emphasize specific safety and health hazards, emergency operations and safe work practices. Initial training must occur before assignment or employers may certify that employees involved in the process have required knowledge, skills and abilities. Documented refresher training is required at least every three years.
- 4.6. **Pre-startup Safety Review** - Mandates a safety review for new facilities and significantly modified work sites to confirm that the construction and equipment of a process are in accordance with design specifications; to assure that adequate safety, operating, maintenance and emergency procedures are in place; and to assure process operator training has been completed. Also, for new facilities, the PHA must be performed and recommendations resolved and implemented before start up. Modified facilities must meet management of change requirement.
- 4.7. **Mechanical Integrity** - Requires the on-site employer to establish and implement written procedures for the ongoing integrity of process equipment particularly those components which contain and control a covered process.
- 4.8. **Hot Work** - Hot work permits must be issued for hot work operations conducted on or near a covered process. Facility or BNBuilders Hotwork Permits are required for all 'spark-producing' equipment. Work is not permitted until the Hotwork Permit is in place.
- 4.9. **Management of Change** - The work site employer must establish and implement written procedures to manage changes except "replacements in kind" to facilities that affect a covered process. The standard requires the work site employer and contract employers to inform and train their affected employees on the changes prior to start-up. Process Safety Information and Operating Procedures must be updated as necessary.
- 4.10. **Incident Investigation** - Requires employers to investigate as soon as possible (but no later than 48 hours after) incidents which did result or could reasonably have resulted in catastrophic releases of covered chemicals. The standard calls for an investigation team, including at least one person knowledgeable in the process involved, (a contract employee when the incident involved contract work) and others with knowledge and experience to investigate and

analyze the incident, and to develop a written report on the incident. Reports must be retained for five years.

- 4.11. **Emergency Planning and Response** - requires employers to develop and implement an emergency action plan. The emergency action plan must include procedures for handling small releases.
- 4.12. **Compliance Audits** - Employers are to certify that they have evaluated compliance with process safety requirements at least every three years. Prompt response to audit findings and documentation that deficiencies are corrected is required. Employers must retain the two most recent audit reports.
- 4.13. **Trade Secrets** - Requirements similar to trade secret provisions of the 1910.1200 Hazard Communication Standard, also apply to the PSM Standard. Employees (and employee representatives) as well as contract employers, must respect the confidentiality of trade secret information when the Process Safety Information is released to them.

## 5. References:

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- 5.1. [OSHA Regulations \(Standards - 29 CFR\) - 1910.119 - Process Safety Management of Highly Hazardous Chemicals.](#)
- 5.2. OSHA Regulations (Standards - 29 CFR) - 1910.119 App A - List of Highly Hazardous Chemicals, Toxics and Reactive (Mandatory).

## Respiratory Protection

### 1.0 Purpose

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- 1.1. To control harmful airborne substances (i.e., harmful dusts, fogs, fumes, mists, gases, smokes, sprays, particles, spores, vapors, etc.), the primary objective shall be to prevent atmospheric contamination. This shall be accomplished as far as feasible by accepted engineering or administrative control measures. When effective controls are not feasible, or while they are being instituted, appropriate respirators shall be used pursuant to requirements set forth by Safety Data Sheets, employer policies, etc.

### 2.0 Scope

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- 2.1. Respirator use is required in atmospheres containing harmful airborne substances. Tradesmen working in hazardous environments are required to be trained, fully aware of proper respirator application, use, procedures, limitations, OSHA safety standards, SDS, PPE requirements, GHS requirements, and manufacturer recommendations.

### 3.0 Responsibility

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#### 3.1 Project Management

- 3.1.1. BNB Project Management & Supervision are responsible for conducting a Preconstruction Risk Assessment to identify respiratory hazards and respective control measures. For tasks that require personnel to wear respiratory protection, BNB Project Management & Supervision will ensure that safety policies, procedures, and work practices are adequate and compliant.

#### 3.2 Workers

- 3.2.1. Workers who wear respiratory protection are responsible for following the safety policies, procedures, and work practices of their employer.

### 4.0 Definitions

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- 4.1. **Air-purifying respirator** - a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
- 4.2. **Assigned protection factor (APF)** - the workplace level of respiratory protection that a respirator or class of respirators is expected to provide to employees when the employer implements a continuing, effective respiratory protection program as specified by this section.
- 4.3. **Atmosphere-supplying respirator** - a respirator that supplies the respirator user with breathing air from a source independent of the ambient atmosphere and includes supplied-air respirators (SARs) and self-contained breathing apparatus (SCBA) units.
- 4.4. **Canister or cartridge** - a container with a filter, sorbent, or catalyst, or combination of these items, which removes specific contaminants from the air passed through the container.
- 4.5. **Competent Person** - One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- 4.6. **Demand respirator** - an atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.
- 4.7. **Emergency situation** - any occurrence such as, but not limited to, equipment failure, rupture of containers, or failure of control equipment that may or does result in an uncontrolled significant release of an airborne contaminant.
- 4.8. **Employee exposure** - exposure to a concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.
- 4.9. **End-of-service-life indicator (ESLI)** - a system that warns the respirator user of the approach of the end of adequate respiratory protection, for example, that the sorbent is approaching saturation or is no longer effective.
- 4.10. **Escape-only respirator** - a respirator intended to be used only for emergency exit.

- 4.11. **Filter or air purifying element** - a component used in respirators to remove solid or liquid aerosols from the inspired air.
- 4.12. **Filtering facepiece (dust mask)** - a negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
- 4.13. **Fit factor** - a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.
- 4.14. **Fit test** - the use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also Qualitative fit test QLFT and Quantitative fit test QNFT.)
- 4.15. **Harmful Exposure** - An exposure to oxygen-deficient atmosphere, or to dusts, fumes, mists, vapors, chemicals or gases of such concentration and duration as to cause injury.
- 4.16. **High efficiency particulate air (HEPA) filter** - a filter that is at least 99.97% efficient in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.
- 4.17. **Hood** - a respiratory inlet covering that completely covers the head and neck and may also cover portions of the shoulders and torso.
- 4.18. **Immediately dangerous to life or health (IDLH)** - an atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.
- 4.19. **Loose-fitting facepiece** - a respiratory inlet covering that is designed to form a partial seal with the face.
- 4.20. **Maximum use concentration (MUC)** - the maximum atmospheric concentration of a hazardous substance from which an employee can be expected to be protected when wearing a respirator, and is determined by the assigned protection factor of the respirator or class of respirators and the exposure limit of the hazardous substance. The MUC can be determined mathematically by multiplying the assigned protection factor specified for a respirator by the required OSHA permissible exposure limit, short-term exposure limit, or ceiling limit. When no OSHA exposure limit is available for a hazardous substance, an employer must determine an MUC on the basis of relevant available information and informed professional judgment.
- 4.21. **Negative pressure respirator (tight fitting)** - a respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.
- 4.22. **Oxygen deficient atmosphere** - an atmosphere with an oxygen content below 19.5% by volume.
- 4.23. **Physician or other licensed health care professional (PLHCP)** - an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by paragraph (e) of this section.
- 4.24. **Positive pressure respirator** - a respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
- 4.25. **Powered air-purifying respirator (PAPR)** - an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
- 4.26. **Pressure demand respirator** - a positive pressure atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.
- 4.27. **Qualitative fit test (QLFT)** - a pass/fail fit test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
- 4.28. **Quantitative fit test (QNFT)** - an assessment of the adequacy of respirator fit by numerically measuring the amount of leakage into the respirator.
- 4.29. **Qualified Person** - A person designated by the employer who by reason of training, experience or instruction has demonstrated the ability to safely perform all assigned duties and, when required, is properly licensed in accordance with federal, state, or local laws and regulations.
- 4.30. **Respiratory inlet covering** - that portion of a respirator that forms the protective barrier between the user's respiratory tract and an air-purifying device or breathing air source, or both. It may be a facepiece, helmet, hood, suit, or a mouthpiece respirator with nose clamp.
- 4.31. **Respiratory protection program** - This subsection requires the employer to develop and implement a written respiratory protection program with required worksite-specific procedures and elements for required respirator use. The program must be administered by a suitably trained program administrator. In addition, certain program elements may be required for voluntary use to prevent potential hazards associated with the use of the respirator.
- 4.32. **Self-contained breathing apparatus (SCBA)** - an atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.
- 4.33. **Service life** - the period of time that a respirator, filter or sorbent, or other respiratory equipment provides adequate protection to the wearer.

- 4.34. **Supplied-air respirator (SAR) or airline respirator** - an atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
- 4.35. **Tight-fitting facepiece** - a respiratory inlet covering that forms a complete seal with the face.
- 4.36. **User seal check** - an action conducted by the respirator user to determine if the respirator is properly seated to the face.
- 4.37. **Voluntary use** - respirator use that is requested by the employee and permitted by the employer when no respiratory hazard exists.

## 5.0 Procedure

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- 5.1. BNB requires methods such as substituting fewer toxic materials or ventilating the work area to prevent atmospheric contamination. When engineering controls fail to reduce employee exposures to harmful contaminants below the permissible exposure limit (PEL) of a contaminant, respiratory protection and accompanying program elements must be put in place.
- 5.2. Contractors are required to develop and implement a written respiratory protection program for situations in which PELs of airborne contaminants could be exceeded or when the employer requires use of respirators by workers.
- 5.3. The written program also must address voluntary respirator use; respirator selection; medical evaluations; fit testing; use of respirators; user seal checks; maintenance and care of respirators; identification of filters, cartridges, and canisters; employee training; and program evaluation. The standard requires the respiratory program to be administered by a program administrator and updated to reflect the changing workplace conditions that affect respirator use. Applicable federal and state requirements should be addressed to ensure adequacy of written respiratory protection programs.
- 5.4. Many of the elements listed may not need to change for each project. For example, medical evaluations, fit-test procedures, schedules, and procedures for maintaining respirators, air-quality requirements for supplied-air respirators, employee training and program evaluations often can remain consistent. The only change that may be needed in a work-site specific written program is the procedure for respirator selection.
- 5.5. When employees voluntarily wear respiratory protection, the employer still must establish and implement written respiratory program components related to the medical evaluation of a worker's ability to wear the respirator safely.
- 5.6. Elements relating to cleaning, storing and maintaining respirators must be addressed, as well. Applicable federal and state requirements should be addressed regarding requirements for employees who voluntarily wear respiratory protection.

### 5.7. Medical Evaluations

- 5.7.1. Respirator use puts a physical burden on the human body; prior to use of a respirator, a worker must be declared medically fit to wear one through a medical evaluation.

### 5.8. The medical evaluation procedure requires:

- 5.8.1. The employer identifies a physician or other professional licensed health care professional (PLHCP) to evaluate the employee using a medical questionnaire or initial medical examination
- 5.8.2. The information obtained by questionnaire or examination must answer the questions laid out in applicable federal and state regulations
- 5.8.3. Regardless of how a contractor chooses to have employees evaluated, he or she is required to provide supplemental information to the PLHCP before final determinations are made.

### 5.9. This supplemental information includes:

- 5.9.1. Type and weight of respirator to be used
- 5.9.2. Duration and frequency of use
- 5.9.3. Expected physical work effort
- 5.9.4. Whether additional personal protective equipment (PPE) is to be worn



5.9.5. Temperature and humidity extremes

5.9.6. A copy of the written program and the medical evaluation portion of the standard

### **5.10. Fit Testing**

5.10.1. Fit testing is required before any employee wears a respirator. A fit test allows an employee to select a respirator based on comfort, making sure the respirator fits correctly on his or her face.

5.10.2. Either a quantitative fit test (QNFT) or qualitative fit test (QLFT) must be conducted to ensure the proper make, model, size and style of respirator is selected by an employee. Applicable federal and state requirements provide protocol that must be followed when conducting the fit testing. A QLFT involves the introduction of a gas, vapor or aerosol test agent into an area around the head of a person wearing the respirator. If the person can detect the presence of the test agent through smell, taste or irritation, the face piece is inadequate. If the test agent is not detected, the respirator is the correct size, make, model and style for that person.

5.10.3. A QNFT is a type of fit test that actually detects the amount of air leakage into a respirator. This type of fit testing procedure requires appropriate instrumentation.

### **5.11. Additional fit tests are required:**

5.11.1. When a different face piece, size, make or model is used

5.11.2. When the employee reports or the contractor, PLHCP, supervisor or program administrator observes changes in the employee's physical condition that could affect the fit of the respirator

5.11.3. At least annually

### **5.12. Program Evaluation**

5.12.1. The written respiratory program must be evaluated by the program administrator to determine if it is being properly implemented. Employees should be consulted in an effort to determine its effectiveness and identify problems with the program. If any problems are noted, they must be corrected, and the changes reflected in the program.

### **5.13. Record Keeping**

5.13.1. Medical evaluations must be kept by a contractor for 30 years, in accordance with federal and state requirements. Fit-test records should be kept for the current year. When a new fit test is performed, the old fit test can be discarded.

## **5.14 Hazards**

### **5.14.1. Any one of the following types of airborne contaminants may be encountered while working in construction.**

5.14.1.1. Gas - a normally formless fluid that can occupy the space of an enclosure and which can be changed to the liquid or solid state only by the combined effect of increased pressure and decreased temperature. Examples of gases are ozone, carbon dioxide, carbon monoxide, and chlorine.

5.14.1.2. Vapor - the gaseous form of a substance which is normally in the solid or liquid state and which can be changed to these states by either increasing the pressure or decreasing the temperature alone. Vapors can diffuse into a substance in its gaseous state, which is usually a solid or liquid at room temperature. Examples of vapors are methylene chloride, toluene, and mineral spirits.

5.14.1.3. Dust - particulate matter generated from intrusive processes such as grinding, blasting, or mixing. Examples of dusts are wood dust, coal, and silica dust.

5.14.1.4. Mist - a dispersion of visible liquid particles, suspended liquid droplets generated by condensation from the gaseous to the liquid state or by breaking up a liquid into the dispersed state, such as by splashing, foaming, or atomizing. Examples of mists are paint mists and oil



mists.

- 5.14.1.5. Fume - solid particles generated by condensation of vaporized material, generally after volatilization from molten metals. Examples of a fume generating processes are welding, brazing, and smelting. Examples of fumes are lead, zinc, and iron.
- 5.14.1.6. Spores – A small, usually single-celled reproductive body that is highly resistant to desiccation and heat and is capable of growing into a new organism, produced especially by certain bacteria, fungi, algae, and nonflowering plants.
- 5.14.1.7. Fibers - Fibers are solid particles with a length to width ratio of 3:1. Fibers can be found in insulation products. Examples of fibers are asbestos and fiberglass.

## **5.15 Hazard Controls**

### **5.15.1 Engineering Controls**

- 5.15.1.1. An engineering control for respiratory protection would be eliminating the contaminants or substituting them with less toxic materials (e.g., enclosing or isolating the process or using dilution ventilation or local exhaust ventilation).

### **5.15.2 Administrative Controls**

- 5.15.2.1. Contractors are required to develop and implement procedures for use of respirators.

### **5.15.3 Personal Protective Equipment**

- 5.15.3.1. Respiratory selection is critical. To select the proper respirator, it must be understood that respirators only reduce exposures to airborne contaminants-- they do not eliminate them. Based on how they operate, respirators are air purifying (APR), supplied air (SAR), or a combination of the two

#### **5.15.3.2. Air-Purifying Respirators**

- 5.15.3.2.1. APRs use purifying elements to clean the air a wearer is breathing.

##### **5.15.3.2.2. These purifying elements are:**

- 5.15.3.2.2.1. Filters that remove particulate matter
- 5.15.3.2.2.2. Cartridges that remove gas or vapors
- 5.15.3.2.2.3. Filter and cartridge combinations that remove particulates, gas and vapors
- 5.15.3.2.2.4. Canisters that remove gas or vapors (impractical for construction because of bulkiness)

- 5.15.3.2.3. As air passes through a purifying element, contaminants are removed from the air. Wearers operate a respirator by inhaling, which creates a negative pressure in the face piece that allows air to pass through the purifying element.

- 5.15.3.2.4. PAPRs operate similarly, but a pump is used to draw air in through the purifying element and then into the face piece.

- 5.15.3.2.5. A restriction to these types of respirators and their purifying elements is that they cannot be used in, nor do they eliminate the hazards of, oxygen deficient or IDLH atmospheres. An oxygen-deficient atmosphere is an atmosphere that contains less than 19.5% oxygen, which can cause death.

#### **5.15.3.3. Filtering Face Pieces (Dust Masks)**

- 5.15.3.3.1. NIOSH's certification standard for respirators addresses dust masks and refers to them as filtering face pieces. OSHA defines a filtering face piece as a negative-pressure particulate respirator with a filter as an integral part of the face piece or the entire face piece composed of the filtering medium. These ordinarily are disposable, low-cost respirators for protection against particulates when exposures are below the PEL. Some come with integrated exhalation valves and are rated under the N, P or R standards at 95, 99 or 100 efficiency levels.

- 5.15.3.3.2. If a contractor elects to make use of filtering face pieces mandatory, then all the requirements of the OSHA respiratory protection standard apply. If employees voluntarily choose to wear the respirators, the contractor must make Appendix D of the standard available to them.

#### **5.15.3.4. Supplied-Air Respirators**

- 5.15.3.4.1. **There are three basic types of atmosphere-supplying respirators:**

- 5.15.3.4.1.1. Supplied-air respirators (includes emergency escape respirators)
- 5.15.3.4.1.2. Self-contained breathing apparatus
- 5.15.3.4.1.3. Combination of the two

5.15.3.4.2. These respirators are more sophisticated and require extensive training before use. An application for these respirators may be when cleaning out a tanker or similar confined spaces.

5.15.3.4.3. The units are supplied with breathable air from a stationary source, such as a compressor. The compressor must be able to provide breathable air that meets the American National Standards Institute (ANSI) grade-D breathing air requirements.

## 5.16 Training

5.16.1. Each employee required to wear a respirator must be trained before the first use. The training must be comprehensive, hazard/task specific, and repeated annually or more often if necessary.

5.16.1.1. ***This training must include:***

- 5.16.1.1.1. Limitations and capabilities of the respirator
- 5.16.1.1.2. Respirator use during emergencies or when a respirator malfunctions
- 5.16.1.1.3. Reasons why respirators are required
- 5.16.1.1.4. How improper fit, usage and maintenance can adversely affect the respirator
- 5.16.1.1.5. How to inspect, put on and remove, use and check the seals of the respirator
- 5.16.1.1.6. Maintenance and storage procedures
- 5.16.1.1.7. How to recognize medical symptoms that limit or prevent the use of respirators
- 5.16.1.1.8. The requirements of applicable federal and state regulations

## 6.0 References

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[L&I WAC Title 296-62-07717 – Respiratory Protection](#)

[CALOSHA Title 8 Subchapter 7 Group 16 Article 107 – Respiratory Protection](#)

[FEDOSHA 29 CFR 1910.134 – Respiratory Protection](#)

## 7.0 Attachments

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[Voluntary Use of Respirator Form](#)

[Pre-Task Plan](#)

[Silica Exposure Control Plan Template](#)

[Confined Space Entry Permit](#)

[Demolition Permit](#)

## Safety Champion

### 1.0 Purpose

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- 1.1. Each year at our Annual Safety Summit BNB recognizes a "Safety Champion" This person exemplifies our Safety Culture by their actions on and off our projects. Our Safety Champions consistently promote safety on projects by proactively participating in safety on a daily basis by always looking out for their fellow craft workers, speak up at Safety Meetings, finding ways to perform their work in a safer manner, correct unsafe conditions when observed, and always leading by example. Safety Champions are Leaders in safety at the project level.

### 2.0 Scope

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- 2.1. Safety Champions come from our craft employees. The Safety Champions will be selected from the current years pool of "On the Spot Recognition" (OTSR) winners and will be selected by Safety staff, Safety Leadership, and Senior Superintendents. Regional and Safety Grand Champions must be employed with BNBuilders at the time of the selection process.

### 3.0 Responsibility

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- 3.1. BNB Project Management, Site Supervisors, Project Craft Persons, and Safety will recognize and report "On The Spot Recognition" winners by identifying fellow craft workers whom:
  - 3.1.1. Share/Implement ideas that make the project safer.
  - 3.1.2. Correct a hazard(s) they did not create without being asked.
  - 3.1.3. Coach a peer on a safety topic or practice.
  - 3.1.4. Consistently exhibit exceptional commitment to safety.

### 4.0 Definitions

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- 4.1. **On The Spot Recognition Winner** – Will receive a \$50 gift card.
- 4.2. **Monthly On the Spot Winner** – Will receive a \$100 gift card and be invited to the Safety Breakfast/Lunch, be recognized for their safety contributions and be eligible for the Regional Safety Champion award.
- 4.3. **Regional Safety Champion** – Will be recognized at the Regional Safety Summit, receive a check for \$2500, receive a BNB garment with the slogan "Safety – I made a difference" and be eligible for the BNB Safety Grand Champion Award.
- 4.4. **Safety Grand Champion** – Will be recognized via social media/internal communication, receive a check for \$5000, and be recognized at the following years Safety Summit in their region.

### 5.0 Procedure

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#### 5.1 On the Spot Recognitions

- 5.1.1. During each month "OTSR" candidates, which shall be comprised of BNB craft, will be submitted from projects to the Regional Safety leader by the 25<sup>th</sup> of each month. A photo and brief description of the individual and their contribution to project safety will be sent in for review during weekly coordination meeting. OTSR's candidates must be submitted in the month in which the OTSR award was given.

#### 5.2 Monthly On the Spot Winner

- 5.2.1. At the end of each month all "OTSR" winners will be compiled by each regions regional Safety Department and reviewed by the regional Safety Staff and regional Sr. Superintendents in which region the OTSR was recognized to determine who the monthly winner will be. This person will be recognized at the following months regional safety breakfast and also during the monthly incident review meeting

held with all project supervision via online meetings platform. If no BNB employee is recognized in the region in that month then that month will carry forward without a winner.

### 5.3 Regional Safety Champion

5.3.1. At the end of November, the monthly "OTSR" winners will be compiled by the regional safety staff. The safety staff will then submit the package of years OTSR's to the regional Safety staff and regional SR Superintendents as well as the Safety Leadership group to vote. This vote will determine the Regional Safety Champion for each region which will be announced at each regional safety submit.

### 5.4 Safety Grand Champion

5.4.1. Once the selected Regional Safety Champions are selected then Safety will compile the four elected champions and submitted them to the Executive Leadership team in order to determine a Safety Grand Champion. The package submitted to the ELT will be determined by a blind vote, in which only the OTSR factor(s) will be presented for a vote. Regional candidate packages shall be submitted as "A thru D". The region, name of the candidate, and any identifying factors will be removed from the ELT voting package. ELT will vote and provide the Safety Leadership team will the alpha numeric package that received the most votes. The Safety Grand Champion will be announced via social media and recognized by the staff in which office the candidate resides.

## 6.0 References

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None

## 7.0 Attachments

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None

# Scaffolding

## 1.0 Purpose

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- 1.1. The purpose of this standard is to protect personnel whose work activities involve scaffolding.

## 2.0 Scope

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- 2.1. This standard applies to all scaffold types on all BNB projects.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. It is the responsibility of the BNB Project Management & Supervision to ensure that adequate submittals are received, reviewed, and filed for subcontractors who will be erecting, dismantling, and working from scaffolding.
- 3.1.2. Also, BNB Project Management & Supervision must ensure that safe practices are followed during scaffold erection, dismantling, and use.

### 3.2 Workers

- 3.2.1. Workers whose activities involve scaffolding are responsible for following the requirements of their employer, BNB, and applicable federal/state/local programs.

## 4.0 Definitions

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- 4.1. **Adjustable suspension scaffold** - a suspension scaffold equipped with a hoist(s) that can be operated by an employee(s) on the scaffold.
- 4.2. **Bearer (putlog)** - a horizontal transverse scaffold member (which may be supported by ledgers or runners) upon which the scaffold platform rests, and which joins scaffold uprights, posts, poles, and similar members.
- 4.3. **Bricklayers' square scaffold** - a supported scaffold composed of framed squares which support a platform. *Cleat* means a structural block used at the end of a platform to prevent the platform from slipping off its supports. Cleats are also used to provide footing on sloped surfaces such as crawling boards.
- 4.4. **Competent person** - one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.
- 4.5. **Coupler** - a device for locking together the tubes of a tube and coupler scaffold.
- 4.6. **Exposed power lines** - electrical power lines which are accessible to employees, and which are not shielded from contact. Such lines do not include extension cords or power tool cords.
- 4.7. **Fabricated decking and planking** - manufactured platforms made of wood (including laminated wood, and solid sawn wood planks), metal or other materials.
- 4.8. **Fabricated frame scaffold (tubular welded frame scaffold)** - a scaffold consisting of a platform(s) supported on fabricated end frames with integral posts, horizontal bearers, and intermediate members.
- 4.9. **Guardrail system** - a vertical barrier, consisting of, but not limited to, top rails, midrails, toeboards, and posts, erected to prevent employees from falling off a scaffold platform or walkway to lower levels.
- 4.10. **Hoist** - a manual or power-operated mechanical device to raise or lower a suspended scaffold.
- 4.11. **Ladder jack scaffold** - a supported scaffold consisting of a platform resting on brackets attached to ladders.
- 4.12. **Ladder stand** - a mobile, fixed-size, self-supporting ladder consisting of a wide flat tread ladder in the form of stairs.
- 4.13. **Landing** - a platform at the end of a flight of stairs.
- 4.14. **Masons' multi-point adjustable suspension scaffold** - a continuous run suspension scaffold designed and used for masonry operations.
- 4.15. **Maximum intended load** - the total load of all persons, equipment, tools, materials, transmitted loads, and other loads reasonably anticipated to be applied to a scaffold or scaffold component at any one time.
- 4.16. **Mobile scaffold** - a powered or unpowered, portable, caster or wheel-mounted supported scaffold.
- 4.17. **Open sides and ends** - the edges of a platform that are more than 14 inches (36 cm) away horizontally from a sturdy, continuous, vertical surface (such as a building wall) or a sturdy, continuous horizontal surface (such

as a floor), or a point of access. Exception: For plastering and lathing operations the horizontal threshold distance is 18 inches (46 cm).

- 4.18. **Outrigger** - the structural member of a supported scaffold used to increase the base width of a scaffold in order to provide support for and increased stability of the scaffold.
- 4.19. **Platform** - a work surface elevated above lower levels. Platforms can be constructed using individual wood planks, fabricated planks, fabricated decks, and fabricated platforms.
- 4.20. **Pump jack scaffold** - a supported scaffold consisting of a platform supported by vertical poles and movable support brackets.
- 4.21. **Qualified Person** - one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his/her ability to solve or resolve problems related to the subject matter, the work, or the project.
- 4.22. **Rated load** - the manufacturer's specified maximum load to be lifted by a hoist or to be applied to a scaffold or scaffold component.
- 4.23. **Runner (ledger or ribbon)** - the lengthwise horizontal spacing or bracing member which may support the bearers.
- 4.24. **Scaffold** - any temporary elevated platform (supported or suspended) and its supporting structure (including points of anchorage), used for supporting employees or materials or both.
- 4.25. **Stair tower (Scaffold stairway/tower)** - a tower comprised of scaffold components, and which contains internal stairway units and rest platforms. These towers are used to provide access to scaffold platforms and other elevated points such as floors and roofs.
- 4.26. **Step, platform, and trestle ladder scaffold** - a platform resting directly on the rungs of step ladders or trestle ladders.
- 4.27. **Supported scaffold** - one or more platforms supported by outrigger beams, brackets, poles, legs, uprights, posts, frames, or similar rigid support.
- 4.28. **Suspension scaffold** - one or more platforms suspended by ropes or other non-rigid means from an overhead structure(s).
- 4.29. **System scaffold** - a scaffold consisting of posts with fixed connection points that accept runners, bearers, and diagonals that can be interconnected at predetermined levels.
- 4.30. **Tube and coupler scaffold** - a supported or suspended scaffold consisting of a platform(s) supported by tubing, erected with coupling devices connecting uprights, braces, bearers, and runners.
- 4.31. **Unstable objects** - items whose strength, configuration, or lack of stability may allow them to become dislocated and shift and therefore may not properly support the loads imposed on them. Unstable objects do not constitute a safe base support for scaffolds, platforms, or employees. Examples include, but are not limited to, barrels, boxes, loose brick, and concrete blocks.

## 5.0 Procedure

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### 5.1 BNB Required Submittals for Scaffolding Erectors & Suppliers

- 5.1.1. Site-Specific Safety and Health Program that includes Scaffolding
- 5.1.2. Pre-Task Plan (PTP) and Job/Activity Hazard Analysis (J/AHA)
- 5.1.3. The name(s) of the Qualified Person designated by the Subcontractor. Documentation of the Qualified Person's training, experience, and knowledge of the type of scaffolding being erected by the Qualified Person.
- 5.1.4. The name(s) of the Competent Person. Documentation of the Competent Person's training, experience, and knowledge of the scaffolding to be erected.
- 5.1.5. Valid documentation from the manufacturer of the scaffolding that proves through specific signed and stamped documentation that the scaffold complies with applicable scaffold regulations. The documentation shall include, but not be limited to:
  - 5.1.5.1. Testing performed in accordance with the Scaffolding Shoring & Forming Institute's SC 100-05/2005 (or most current test standard) recommended testing standard. Information on the SSFI SC 100-05/2005 standard can be found at [www.ssfi.org](http://www.ssfi.org).
  - 5.1.5.2. Testing other than SSFI SC 100-05/2005 shall be equivalent and performed under the supervision of a qualified registered Professional Engineer who is licensed in the State where the testing was performed and where the scaffold is to be used.
  - 5.1.5.3. Based on valid testing, the Subcontractors scaffold provider and/or erector shall provide the Maximum Allowable Loading per scaffold leg or per scaffold frame.
- 5.1.6. Scaffolds manufactured **outside** of the continental United States shall have valid documentation to prove the scaffolding meets applicable regulations and has been tested in accordance with

the Scaffolding Shoring & Forming Institute's (SSFI) SC 100-05/2005 recommended testing standard. Valid testing documentation must be submitted indicating that the paint and/or coating(s) on the scaffold components do not contain any hazardous materials such as lead, chromium, etc.

- 5.1.7. Scaffolds that are designed by a qualified registered Professional Engineer (P.E.) shall include, at a minimum, the following documentation:
  - 5.1.7.1. Drawings of the bracing pattern(s) for the scaffolding;
  - 5.1.7.2. Drawings of the types and locations of the ties between the scaffold and the structure (tension, compression, and sway ties).
  - 5.1.7.3. Written instructions on how to erect the scaffolding;
  - 5.1.7.4. Written instructions on how to inspect the scaffolding;
  - 5.1.7.5. The maximum allowable loading per scaffold bay and scaffold tier;
  - 5.1.7.6. Any other information the P.E. deems necessary to erect, inspect and maintain a safe scaffold;
  - 5.1.7.7. The allowable deflection in a scaffold leg (when the leg is measured from the uppermost frame to the bottom of the supporting frame at ground, deck, or floor level).
  - 5.1.7.8. The method of accessing each working level (tier).
  - 5.1.7.9. The areas where the scaffold can be enclosed with a tarp or other approved enclosure material.
  - 5.1.7.10. The locations and types of ties to be used when a scaffold is fully or partially enclosed.

### **5.1.8 BNB Required Submittals for Scaffold Users**

- 5.1.8.1. Site-Specific Safety and Health Program that includes Scaffolding
- 5.1.8.2. Pre-Task Plan (PTP) and Job/Activity Hazard Analysis (J/AHA)
- 5.1.8.3. The name(s) of the "Competent Person" and/or "Qualified Person" designated by the Subcontractor
- 5.1.8.4. Proof of scaffold awareness training for all users

### **5.1.9 BNB Scaffolding Erection & Dismantling Requirements**

- 5.1.9.1. Scaffolds are to be erected, modified, or altered and dismantled under the supervision of a Competent Person and with good engineering practices.
- 5.1.9.2. Erecting and dismantling of scaffolding shall be performed using fall protection systems at an elevation of six feet or greater unless approved in writing by BNB. Scaffold erection must be done with 100% fall protection.
- 5.1.9.3. Erectors must have training on fall awareness, site-specific fall hazards, fall protection equipment to be used, and rescue procedures.
- 5.1.9.4. If erectors tie off to scaffold components, follow the recommendations of the manufacturer.
- 5.1.9.5. Interior Drop-Down Ladders / Exterior Stair Tower for access is highly recommended with Typical Exterior Ladder as a last resort.
- 5.1.9.6. Scaffolds must be fully planked with scaffold-grade planks. Planks shall overhang the ledger or support by a minimum of 6" and a maximum of 18".
- 5.1.9.7. Scaffolds more than 4x higher than they are wide must be stabilized as per CAL/OSHA / WAC Requirements.
- 5.1.9.8. Pins must be in place at all connections throughout the scaffolding.
- 5.1.9.9. Scaffolds must be setup level and on a firm foundation.
- 5.1.9.10. Handrails, mid rails, and toe boards must be provided on all scaffold types where platform height is 6' or higher.
- 5.1.9.11. All guardrail systems shall include toe boards throughout the entire system. Toe boards must be installed with a minimum of 1"x 4" inches nominal height. If an exterior screen extends from the ground to the top platform of the scaffolding, toe boards are not required.
- 5.1.9.12. Cross braces will NOT be used as a top or mid-rail. Horizontal members must be installed on all guardrail systems where the scaffold platform is elevated six feet or greater.
- 5.1.9.13. Rolling scaffolds shall be equipped with locking wheels, guardrails, diagonal bracing (if applicable) and outriggers (when applicable).
- 5.1.9.14. Each scaffold shall be designed and constructed using a dead load safety factor that will ensure the scaffold supports, without failure, its own weight and 4 times the maximum intended working (live) load applied or transmitted to it.



- 5.1.9.15. Scaffold planks shall meet the current safety criteria in ANSI A10.8, 29 CFR 1926 Subpart L, Southern Yellow Pine Inspection Bureau, West Coast Inspection Bureau and/or manufacturer's recommendations.
- 5.1.9.16. Scaffolds shall be erected in accordance with the scaffold manufacturer's recommendations.
- 5.1.9.17. Scaffolds that cannot be erected in accordance with the scaffold manufacturer's recommendations shall be designed and evaluated by a Qualified Registered Professional Engineer who is registered in the State where the work is being performed.
- 5.1.9.18. Controlled Access Zones must be established around scaffolding erection/dismantling areas to prevent other personnel from being exposed to potential struck-by hazards.
- 5.1.9.19. When scaffold trusses (put logs) are used in conjunction with the scaffolding, the Subcontractor/scaffold company/scaffold erector shall provide:
  - 5.1.9.19.1. The Maximum Allowable Loading per bay or per square foot that is supported by the trusses (put logs).
  - 5.1.9.19.2. Installation use and inspection requirements (in accordance with the manufacturer's recommendations and qualified engineering services).
  - 5.1.9.19.3. Specialized conditions and/or situations will have to be identified prior to submitting the scaffold bid. These conditions will be identified, and the bidder shall provide valid documentation that the scaffold set up and use is in compliance with applicable regulations and scaffold manufacturer's recommendations.
- 5.1.9.20. All scaffold components shall be installed by the Competent Person per manufacturer specification.
  - 5.1.9.20.1. Scaffolding that has not been erected in a manner that allows for all its parts to fit together as was originally intended by its manufacturer shall not be utilized.
  - 5.1.9.20.2. Tie wire shall not be utilized as a method for securing scaffold sections or components together unless expressly recommended and indicated in writing as being approved by the scaffold manufacturer. Tie wire shall not be used to take the place of the scaffold manufacturer's standard guardrail system components.
  - 5.1.9.20.3. Not all types of scaffolding will work for any given geometrical configuration. For example, Tubular Weld sectional scaffolding would not be the proper choice for the Competent Person to erect around a circular structure-- tube and clamp (coupler) would be the appropriate selection for that configuration.

**5.1.10 BNB Scaffolding Inspection & Tagging Requirements**

- 5.1.10.1. Scaffolds must be inspected by a competent person; daily before each shift; or after any occurrence that might compromise its structural integrity.
- 5.1.10.2. After inspection, if the scaffold is deemed safe, a competent person must sign and date a green tag at the base of each scaffold ladder or access way to indicate the scaffold is safe to access and use.
- 5.1.10.3. After inspection, if the scaffold is deemed unsafe, a competent person must place a red tag or red danger tape at each ladder or access way to indicate the scaffold is not currently safe to be accessed.
- 5.1.10.4. If the scaffold must be altered and/or is partially erected/incomplete a red tag may need to be used to identify the scaffold as under modification and not safe for use.
- 5.1.10.5. All scaffolds are deemed not usable until the scaffold has been inspected and signed off by a competent person(s).

**5.1.11 BNB Scaffolding Use Requirements**

- 5.1.11.1. When BNB "owns/buys-out" scaffolding or stair towers that have been erected on site, all trade partners who will access BNB's scaffold must sign a waiver and release of liability.
- 5.1.11.2. No objects and/or equipment shall be used on top of scaffold platforms to increase work height.
- 5.1.11.3. Never leave a scaffold in an unsafe condition.
- 5.1.11.4. Never climb scaffold braces or guardrail systems-- use the proper ladders and stairs.



- 5.1.11.5. Check for capacities and do not overload.
- 5.1.11.6. Rolling scaffolds wheels shall be locked when work is being performed. Surfing, skating, and riding is prohibited unless proper braking mechanisms are installed, and the floor is free of surface encumbrances or obstacles.
- 5.1.11.7. Perry type and other similar types of rolling scaffolds platforms shall have guardrails installed when used as a working platform when working 6' or higher.
- 5.1.11.8. Prior to any modification of scaffolding (i.e., guardrail removal) the competent person who owns control of the scaffolding must be notified and approve any modifications of the scaffolding. The Competent Person must red tag the scaffold prior to and during the course of modifications. Also, the subcontractor's competent person must ensure that affected personnel are notified.
- 5.1.11.9. When forklifts/tele-handlers are used to hoist equipment/material onto scaffolding, the use of a spotter and/or a controlled access zone must be established around the forklift to prevent other personnel from being exposed to potential struck-by hazards.

## 5.2 Hazards

### **5.2.1. Hazards associated with scaffold use may consist of the following:**

- 5.2.1.1. Falls from scaffold
- 5.2.1.2. Collapse of scaffold
- 5.2.1.3. Tip over of scaffold
- 5.2.1.4. Struck-by hazards from falling material/equipment.
- 5.2.1.5. Electrocution or shock from unprotected power lines or
- 5.2.1.6. Electrocution or shock from electrical cords that contact scaffolding

## 5.3 Hazard Controls

### **5.3.1 Engineering Controls**

- 5.3.1.1. Scaffolding is actually a type of engineering control for hazard elimination since it may allow workers to safely reach work areas at height while being completely guard railed in. However, the use of scaffolding may introduce additional hazards especially during erection and dismantling.
- 5.3.1.2. With that being said, types of scaffolding that may allow for safer erection should be considered. For example, certain manufacturers of scaffolding allow erectors to tie off to scaffold components during erection.
- 5.3.1.3. If overhead utilities such as energized power lines are present near scaffolding, The clearance between scaffolds and power lines shall be as follows:
  - 5.3.1.3.1. Scaffolds shall not be erected, used, dismantled, altered, or moved such that they or any conductive material handled on them might come closer to exposed and energized power lines. Exception: Scaffolds and materials may be closer to power lines than specified above where such clearance is necessary for performance of work, and only after the utility

### **5.3.2 Administrative Controls**

#### **5.3.2.1. Administrative controls for scaffolding consist of:**

- 5.3.2.1.1. Erection of scaffolding by competent personnel
- 5.3.2.1.2. Scaffold inspections and tagging by competent personnel
- 5.3.2.1.3. Use of scaffold by scaffold-safety trained workers

### **5.3.3 Personal Protective Equipment**

- 5.3.3.1. **To mitigate the consequences if an accident or failure does occur, procedures must address Personal Protective Equipment (PPE). For example:**

- 5.3.3.1.1. Hard Hat - ANSI Z89.1
- 5.3.3.1.2. Safety glasses - ANZI Z87.1
- 5.3.3.1.3. Work boots - ASTM F2413
- 5.3.3.1.4. Reflective vest – type II, high visual
- 5.3.3.1.5. Gloves
- 5.3.3.1.6. Personal fall arrest/restraint equipment
- 5.3.3.1.7. Tool leashes that prevent tools from falling
- 5.3.3.1.8. Energized power line shielding

#### **5.4 Training**

- 5.4.1. All personnel engaged in scaffolding activities must be trained on their employer's safety program, site-specific program/plan, Pre-Task Plan (PTP) and Job/Activity Hazard Analysis (J/AHA).
- 5.4.2. Personnel must be adequately trained to erect, dismantle, and modify scaffolding by a Competent Person. Additionally, they may also be required to have thorough fall protection training due to their unique fall exposures during scaffold erection.
- 5.4.3. Personnel who inspect scaffolding and supervise others during scaffold activities must be adequately trained to be a Competent Person.
- 5.4.4. Lastly, all personnel who access and/or work from scaffolding must have been trained on scaffold user awareness.

#### **6.0 References**

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[Fed/OSHA CFR 1926 Subpart L - Scaffolds](#)

[Cal/OSHA T8 CCR Subpart 4 Article 21 - Scaffolds](#)

[L&I WAC Title 296-874 – Scaffolding](#)

[L&I WAC 296-800 – Core Safety](#)

#### **7.0 Attachments**

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[Aerial Work Platform Inspection Checklist](#)

[Scaffold Inspection Checklist](#)

[Pre-Task Plan](#)

# Site Security Policy

## 1.0 Purpose

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- 1.1. BNBuilders projects consist of ground up new construction and interior renovation work. Many of our clients operate in competitive markets and ask us not to disclose specific information about them including requirements to sign nondisclosure documents. We need to do everything we can to establish good fundamentals for site security on our projects.
- 1.2. The purpose of this document is to establish a security strategy to prevent unlawful entry into our sites. Our mitigations include physical barriers, monitoring systems, security personnel (if agreed upon) and other deterrents. At times projects may include background checks to be able to work on the jobsite. The plan also includes quality control measures that guard against failures and a plan to increase communication.

## 2.0 Scope

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- 2.1. Each project will be responsible for updating their Site Security Plan as site conditions change. Considerations need to be made where existing facility security will serve as our site security. These considerations will include but are not limited to what is in place passed our locked doors and if someone needs to access our area in an emergency. Our goal is to implement a security strategy that meets the expectation of our clients and provides a layer of protection to the project.

## 3.0 Responsibility

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- 3.1. Each Project Management team is responsible for ensuring that all jobsites are secured to prevent unlawful access. The guidelines established below must be adhered to in order to accomplish the requirements outlined in this document.

## 4.0 Site Specific Security Strategy

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### 4.1 Construction Hours

*List Hours here*

### 4.2 BNB Staff Contacts list for Security:

*List staff here*

### 4.3 Off Hours Contact List

*List contacts here*

## 5.0 Access to Site and Logistics Plan

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### 5.1 Check in Process

- 5.1.1. Our sites currently use an electronic check in and screening process which must be filled out before the start of every shift. Anyone that does not follow this process is not allowed on site. Any new worker to the site is required to go through our site orientation which covers the site logistics plans, appropriate access to the site and location of crew break areas. No work off hours without supervision and approval from BNBuilders is allowed.

Any site-specific items pertaining to your project should be highlighted in this section.

**5.2 Crew counts should be addressed per the following**

*Date Range Here*

**6.0 Signage and Posting**

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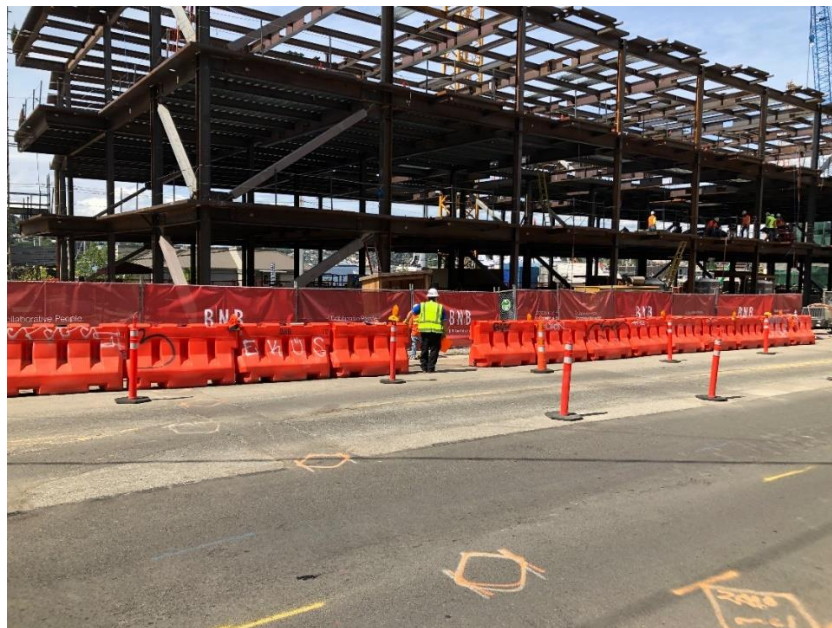
- 6.1. Check In at office
- 6.2. Required PPE
- 6.3. Security postings that the site is under video surveillance (Included at tower cranes)
- 6.4. Posting indicating "authorized personnel only"
- 6.5. Remove existing signs that would attract unauthorized personnel
- 6.6. Premises entry consent to search

**7.0 Site Fencing and Barricade Strategies**

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**7.1 Physical Barriers:**

- 7.1.1. **Perimeter Site Fencing:** When possible use 6-foot Chain link fencing around site property line. Avoid using T stands. Any protruding items in pedestrian areas and/or walkways are prohibited.



*Figure 1 Sites are enclosed with chain-link. All entrances are locked up using a chain and combo style padlock.*



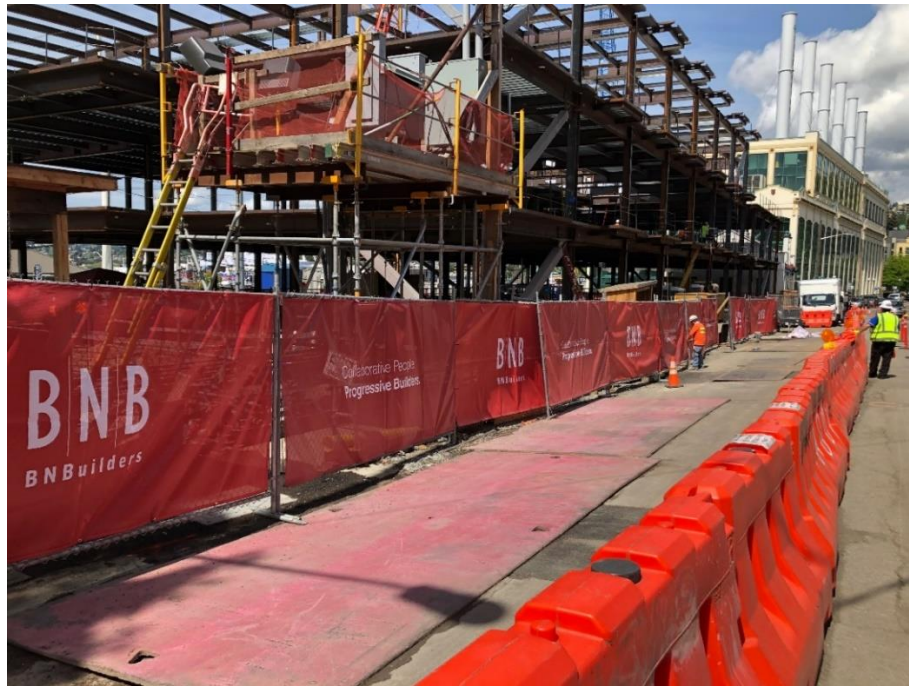


Figure 2 Photo pedestrian traffic delineation



Figure 3 Photo of site fencing

**7.1.2. Plywood Walls Around Access to Tower Cranes:** 8-foot-high plywood walls will be constructed around the tower crane vertical sections at all floors to deter access to crane. Locking assemblies or storing weighted items that can not be easily moved should be considered to eliminate entry. Sign shall be posted stating "Authorized Personnel Only"

**7.1.3. Padlocks:** Padlocks must be suitable for commercial use. Padlocks with shackle guards are preferred. Please keep in mind padlocks are only as good as the hardware they are being used with.

## **8.0 Site Equipment Security:**

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### **8.1 Tower Crane Security**

**8.1.1.** In addition to the plywood walls, there should be a hasp lock at the top of the crane to prevent access to the jib and cab.



*Figure 4 An access door is provided at the Tower Crane enclosure. These doors are equipped with a hasp and padlock that only the site management and Tower Crane operator are provided keys to. Doors should be locked up at the end of each day by site foreman during final walkthrough at the end of each day.*

### **8.2 All terrain and warehouse forklifts**

8.2.1. Remove keys to equipment daily and park in a secure location. Equipment may be used to block other areas, if feasible.

### **8.3 Scissor Lifts**

8.3.1. Must be parked and secured where they cannot be used in off-hours.

### **8.4 Flammable Storage**

8.4.1. Secured location must be identified for flammable storage. Daily safety audits must take place to make sure flammables are not left unsecured.

### **8.5 Tools and Equipment**

8.5.1. Must be stored and locked in metal containers. Containers shall be secured in such a way to prevent their movement or removal from the site.

## 9.0 Secure Areas Within the Site

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9.1. As our projects progress, continued evaluations must be made to keep the site secure and protect new installations and finishes. Areas to consider include but are not limited to:

- 9.1.1. Transformer/Electrical room (future)
- 9.1.2. Generator Room (future)
- 9.1.3. Future Enclosure plans to secure Building

## 10.0 Lighting

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10.1. The following considerations should be made for lighting:

- 10.1.1. What areas can/should be fully lit
- 10.1.2. What areas cannot/should not be fully lit
- 10.1.3. Is access and egress lighting provided for crews
- 10.1.4. Could lighting pose a hazard to near by pedestrian and vehicle traffic
- 10.1.5. Sites may use motion sensor lighting at access points to discourage unlawful entry onto the jobsite. Tower cranes and other fixed locations may also be utilized to cast lighting onto lower-level areas.

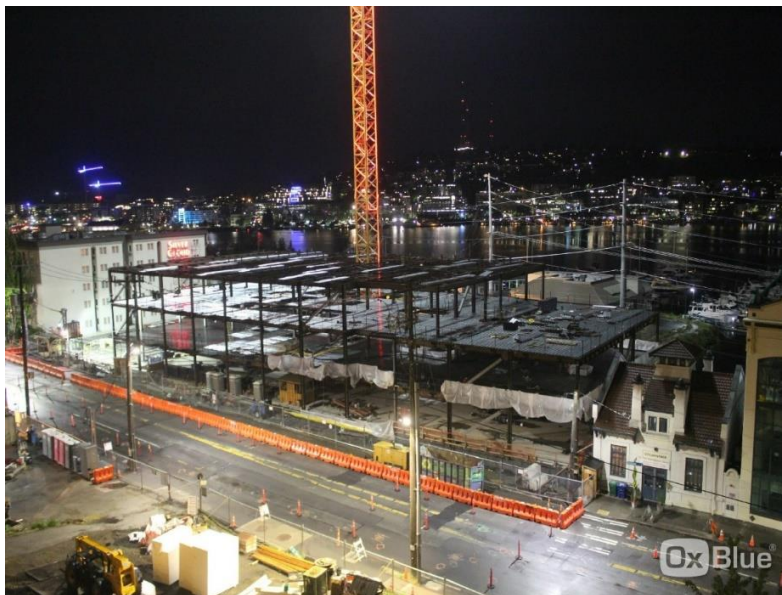


Figure 5 Site Ox Blue Camera photo showing site lighting.



## 11.0 Site Monitoring System

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### 11.1 During Work Hours

- 11.1.1. Each Jobsite to establish protocol for access to the project. Background checks, if applicable, must be in place before personnel are allowed on the site.
- 11.1.2. Many of our projects are near heavily traveled areas. Coordination between local police officers and our traffic control teams may be necessary.

### 11.2 Off Hours Site Monitoring on Projects in unoccupied facilities

- 11.2.1. Create a list identifying who is on call from BNB:

*Add list here*

- 11.2.2. Onsite surveillance being monitored by an off-site security surveillance company should be in place. A plan for communication between the security company, local authorities and BNB should be in place with an emphasis on the relay of information. Surveillance equipment will be strategically placed and should be calibrated on a weekly basis to maintain the appropriate vantage point as the project progresses.
- 11.2.3. BNBuilders recommends that a once a week quality control check of the surveillance systems is performed and documented to ensure the system operates as intended.

### 11.3 Monitoring Process

#### 11.3.1. If motion sensors or cameras detect an interruption.

*Example of process*

- 11.3.1.1. Monitoring company shall
  - 11.3.1.1.1. notify Police Dispatch
  - 11.3.1.1.2. keep track of notification to arrival time
  - 11.3.1.1.3. maintain dialogue with Police about on-site activity and requests an ETA
  - 11.3.1.1.4. Notifies BNB after hour contact

*Example of process with onsite security*

- 11.3.1.2. Security company shall
  - 11.3.1.2.1. notify Police Dispatch
  - 11.3.1.2.2. keep track of notification to arrival time
  - 11.3.1.2.3. maintain dialogue with Police about on-site activity and requests an ETA
  - 11.3.1.2.4. Notifies BNB after hour contact

- 11.3.2. On Site Security to monitor site until police show up.
- 11.3.3. Monitor service forwards a report to BNB for every incident.

## 12.0 On Site Security (if agreed upon)

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Training of the monitoring process will be conducted between off duty security and BNB supervision. Standard Operating Procedures should be developed. Ensure the SOP's are being executed.

### 12.1 Overview

*Create overview of how site security works.*

### 12.2 Onsite Security Initial Check-in and Shift Changes

*Review steps for check in at start of shift between Security and BNB personnel on-site.*



## 12.2 Shift Responsibilities:

List shift responsibilities

## 12.4 In case of an incident

- 12.4.1. List steps between Monitoring company and site security or BNB supervision. If someone is to come into contact with the intruder, they are to take note of what the intruder is wearing, their ethnicity, hair color, license plates, visible weapons, or any other description that will assist the officers upon arrival in profiling the suspect in the case they try to flee. **AT NO POINT SHOULD A SECURITY GUARD PHYSICALLY CONFRONT INTRUDER.** The security guards are to leave the apprehending of the suspect to the Police. As follow up to any incident, the security guard will need to provide a written record of the incident onsite. This record will be completed using the updated Security Report Template provided by BNB.

## 13.0 Notification Process

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- 13.1. BNBuilders to communicate weekly any security concerns in OAC. Someone from the project team is always assigned to take a call during off-hours. Follow contract language for reporting.
- 13.2. *Reports should include events that have taken place on adjacent properties.*
- 13.3. The Report will include at a minimum the information listed below: Reference attached report form.
- 13.4. BNB Report # and Police report #
- 13.4.1. Project Name:
- 13.4.2. Project Number:
- 13.4.3. Project Address:
- 13.4.4. Client:
- 13.4.5. Supervisor Contact Information
- 13.4.5.1. Superintendent(s):
- 13.4.5.2. Project Manager(s):
- 13.4.5.3. Primary BNB Team Security Contact:
- 13.4.5.4. Secondary BNB Team Security Contact:
- 13.4.5.5. Owner Representative Contact(s):
- 13.4.6. Incident Type
- 13.4.6.1. Property Damage/Vandalism
- 13.4.6.1.1. List of damages
- 13.4.6.2. Break In/Burglary
- 13.4.6.2.1. List of stolen items
- 13.4.7. Description of Incident Specifics
- 13.4.7.1. Date:
- 13.4.7.2. Time: \_\_: \_\_ AM/PM
- 13.4.7.3. Location Onsite:
- 13.4.7.4. How was team notified of incident?
- 13.4.7.5. Was local law enforcement notified (Police, SWAT, etc.)?
- 13.4.7.6. Has there been a case number provided by local law enforcement?
- 13.4.7.6.1. Case number:
- 13.4.7.7. Were other Emergency Services Notified (Fire, Paramedics, etc.)?
- 13.4.7.8. Were any construction personnel onsite at time of incident?
- 13.4.7.9. Was news media involved?
- 13.4.8. Incident Description (include pictures, other reports, etc.):
- 13.4.8.1. Property Damage Yes/No
- 13.4.8.2. Describe Damage
- 13.4.8.3. Approximate Damage Value \$ \_\_. \_\_
- 13.4.9. Schedule Impacts Yes/No

- 13.4.9.1. Describe Impact
- 13.4.9.2. Approximate Impact Duration

13.4.10. Client Notification

- 13.4.10.1. Has client been notified?
- 13.4.10.2. When/How Client was notified
- 13.4.10.3. Decision if charges are to be filed.

13.4.11. Description of in place security measures (Security System, Security Guard(s), Fencing, Site Lighting, Gate access, Material/Equipment Storage, etc.)

13.4.12. Have there been any similar incidents?

13.4.13. Have there been any common themes between other incidents? (Day of week, time of day, entry points, targeted items/equipment/materials, etc.)

13.4.14. Description of additional measures required to reduce potential future incidents:

*Create one-page training document that shows current and new members the importance of this document*

*Consider when implementation of Crisis management plan ties to this plan and utilize the Buy Time Statement if media is involved.*

## **14.0 End of day sign off**

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*This is done on a per project basis and created specifically for each project.*

## Site-Specific Orientation

### 1.0 Purpose

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- 1.1. The site-specific orientation is designed to introduce personnel to BNBuilders Safety, Health, and Environmental requirements. The site-specific orientation is intended to be a brief overview and does not take the place of task safety, health and environmental training. The personnel's direct supervisor will need to determine which additional training courses the new personnel must complete prior to being assigned to specific job tasks.
- 1.2. Prior to starting any work on a BNB project, a site-specific orientation is to be conducted.

### 2.0 Scope

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- 2.1. The scope of this policy covers all site-specific orientation components required for both BNB employees and subcontractor employees.

### 3.0 Responsibility

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#### 3.1 Project Management

- 3.1.1. Project management and supervision are responsible for ensuring all BNB employees and subcontractor employees are trained on their site-specific orientation prior to performing any work. If BNB Safety is not available to conduct site orientation, it is the responsibility of project management and supervision to conduct site orientation for new employees.

#### 3.2 Workers

- 3.2.1. All employees must be trained on the site-specific orientation prior to performing any work.

### 4.0 Definitions

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- 4.1. **Plan** – a detailed proposal for doing or achieving something

### 5.0 Procedure

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#### 5.1 General Procedures

##### 5.1.1. *The following items must be covered in the site-specific orientation:*

- 5.1.1.1. Project Location – project address
- 5.1.1.2. BNBuilders approach to safety
- 5.1.1.3. Reporting procedures
- 5.1.1.4. Safety audit
- 5.1.1.5. Disciplinary policy
- 5.1.1.6. Site logistics – access / egress, muster point, evacuation route, sprinkler shut-off
- 5.1.1.7. Emergency response - with a map from the project to nearest clinic and hospital
- 5.1.1.8. Site Safety Board – First aid kit, SDS book, PPE, live utility plans, etc.
- 5.1.1.9. PPE requirements
- 5.1.1.10. Certified trainings
- 5.1.1.11. Hazard Communication
- 5.1.1.12. Pre-task planning
- 5.1.1.13. Material Handling procedures
- 5.1.1.14. Tool inspections
- 5.1.1.15. Excavations / Dig Permit
- 5.1.1.16. Live Utility Plan / Map
- 5.1.1.17. Hot Work Permit

- 5.1.1.18. Fall Protection – Site-specific plan
- 5.1.1.19. Ladder use
- 5.1.1.20. Lifts & Scaffolds
- 5.1.1.21. Caution / Danger tape procedures
- 5.1.1.22. Electrical
- 5.1.1.23. Steel erection (if applicable)
- 5.1.1.24. Silica procedures – Table 1 for WA
- 5.1.1.25. Employee empowerment

5.1.2. Any other hazards specific to the project must also be included in the site-specific orientation.

## **6.0 References**

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[L&I WAC 296-800 – Core Safety](#)

[CALOSHA – Guidance for Construction Employers](#)

## **7.0 Attachments**

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[Site-Specific Orientation PowerPoint Template](#)

[Pre-Task Plan](#)

[Job Hazard Analysis](#)

[Hot Work Permit](#)

[Dig Permit](#)

## Sprinkler Impairment

### 1.0 Purpose

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- 1.1. The purpose of this procedure is to provide a system that minimizes the risks associated with sprinkler system impairment. Unplanned sprinkler impairment as a result of broken heads, dislodged pipes, out-of-service systems during major demolition and/or construction, or an emergency impairment resulting from a broken supply line or service outage may pose a risk of flooding and/or the spread of fire. In the event of flooding, mold may then become a hazard which must be cleaned, and the source of moisture eliminated.

### 2.0 Scope

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- 2.1. This procedure applies to all sprinkler impairments -whether planned (for replacement, repair, or maintenance work), or unplanned. See [Utility Avoidance Policy](#) for more information.

### 3.0 Responsibility

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#### 3.1 Project Management

##### **3.1.1. BNB Project Management & Supervision are responsible for:**

- 3.1.1.1. Issuing, signing, logging, posting, tracking, and closing out all sprinkler impairments.
- 3.1.1.2. Tracking all current and outstanding impairments and ensuring that subcontractors receive appropriate notice if impairment is not properly closed out by the planned restoration date and that reinstatement must occur as soon as possible.
- 3.1.1.3. Ensuring that sprinkler sections and valves are clearly marked and labeled so that specific sections can be found easily in the event of an emergency.
- 3.1.1.4. Ensuring all sprinkler valves are in working order.
- 3.1.1.5. Identifying Halon fire suppression systems and working with the property owner to establish protective measures.

#### 3.2 Workers

- 3.2.1. Workers responsible for the fire sprinkler impairment shall request permission from BNB prior to the impairment of the fire sprinkler system. After restoring the impaired fire sprinkler system, the responsible workers shall notify BNB.

### 4.0 Definitions

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- 4.1. **Foam Fire Suppression System** - typically used in areas exposed to severe fire hazards and helps to contain the fire more effectively than water. It can be used with either a wet or dry system, and in certain cases, water may be mixed with the foam to better fight the fire or increase pressure in the pipes.
- 4.2. **Dry Chemical Fire (Gaseous) Suppression System** - typically used in areas where water damage is a primary concern, such as museums or computer rooms. These systems use traditional sprinkler pipes and heads but rely on carbon-based chemicals such as halon to suppress the fire. Halon works by absorbing the oxygen in the room, which keeps the fire from spreading.
- 4.3. **Impairment** – a condition resulting from an event that causes all or part of a fire sprinkler system to be out of service.
- 4.4. **Emergency Impairment** - Unplanned sprinkler impairment resulting from a broken sprinkler line or head, or a break or outage of the sprinkler supply water service.

- 4.5. **Planned Impairment** - Planned sprinkler impairment for maintenance, alteration, or construction activities.
- 4.6. **Designated Ownership Contact** - Person designated by the owner to contact for all activities relating to the fire sprinkler impairment. (Building Owner/Property Manager/Building Engineer)

## 5.0 Procedure

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### 5.1 Planned Impairments

#### ***5.1.1. When applicable, the following are guidelines for when sprinkler impairment is planned:***

- 5.1.1.1. Notify local fire department
- 5.1.1.2. Provide additional firefighting equipment
- 5.1.1.3. Ensure adequate control of sprinkler system and labeling/tagging of affected valves
- 5.1.1.4. Ensure adequate training/job planning
- 5.1.1.5. Plan to do the work when the facility is not operating, and/or shutdown hazardous processes, if possible.
- 5.1.1.6. Follow applicable lock-out tag-out procedures when applicable.
- 5.1.1.7. Cap all sprinkler heads or otherwise provide appropriate protection in work areas prior to contractor commencing work.
- 5.1.1.8. Prohibit all Hot Work during fire sprinkler impairment:
  - 5.1.1.8.1. There may be instances where elements of the system are isolated specifically for hot work activities. In such cases, fire watch procedures and any other appropriate precautions as per the pre-task plan (PTP) must be implemented.
  - 5.1.1.8.2. Make ready fire hoses / fire extinguishers (confirm that fire extinguishers and/or fire hoses are on hand and in working order at every entrance and exit point of the affected work area)
  - 5.1.1.8.3. Confirm a fire watch is in place and appropriate notifications have been made.
- 5.1.1.9. The fire watch must be trained in the use of fire extinguishing equipment and be familiar with the Project Specific Fire Prevention Plan.
- 5.1.1.10. Any proposed modifications to the building sprinkler system (via submittal of engineering and/or shop drawings) must be approved and permitted by the PTP. NOTE: In some instances, drawings may also require certification from an engineer.
- 5.1.1.11. Standard Impairment Controls
  - 5.1.1.11.1. Whenever a sprinkler system is to be impaired, the applicable subcontractor/vendor must request permission from BNB Project Management & Supervision.
  - 5.1.1.11.2. BNB Project Management & Supervision is to notify:
    - 5.1.1.11.2.1. the local Fire Department, the alarm monitoring service, and security for all impairments.
    - 5.1.1.11.2.2. the Designated Ownership Contact of any sprinkler impairment.
    - 5.1.1.11.2.3. any tenants affected by the sprinkler impairment if building is occupied.

### 5.2 Un-Planned Impairments

#### **5.2.1. When applicable, the following are guidelines for when sprinkler impairment is not planned (emergency impairment):**

- 5.2.1.1. If an emergency impairment occurs, stabilize the situation and initiate impairment precautions with BNB Project Management & Supervision.
- 5.2.1.2. Correct/repair the cause of the impairment.
- 5.2.1.3. Ensure fire watch is in place.

**5.2.2. BNB Project Management & Supervision is to:**

- 5.2.2.1. notify the Safety Manager and Designated Ownership Contact. Details are to include the time of impairment, apparent cause of the impairment, expected duration of the impairment, and extent of the impairment to building systems.
- 5.2.2.2. see that an Incident Report Form is completed by the appropriate parties and distributed within 24 hours of the incident.
- 5.2.2.3. notify the Divisional Safety Manager and Designated Ownership Contact when the impairment is cleared.

**5.3 Hazards**

**5.3.1. In the event of a sprinkler system impairment that uses water, the following are potential hazards:**

- 5.3.1.1. Flooding
- 5.3.1.2. Water Intrusion (See [Environmental Policy](#))
- 5.3.1.3. Mold
- 5.3.1.4. Electrical Shock
- 5.3.1.5. Property Damage
- 5.3.1.6. Illness from contact with stagnant water inside fire lines
- 5.3.1.7. In the event of a Halon sprinkler system impairment, a potential hazard is Asphyxiation.

**5.4 Hazard Controls**

**5.4.1 Engineering Controls**

- 5.4.1.1. Cap, cover, flag, or otherwise protect sprinklers that have the potential to be damaged

**5.4.2 Administrative Controls**

**5.4.2.1. In facilities where sprinklers are energized and must not be damaged (see [Pressurized Lines Policy](#)):**

- 5.4.2.1.1. Personnel must be trained on avoiding contact with sprinklers and lines
- 5.4.2.1.2. Signage and / or caution tape may be posted to warn personnel about the location(s) of sprinkler(s)
- 5.4.2.1.3. Stop blocks or other barricades may be used to prevent personnel/equipment travel into areas where sprinklers may be contacted
- 5.4.2.1.4. Make available sprinkler damage kits
- 5.4.2.1.5. Inform crews of sprinkler system shut-off method

**5.5 Training**

**5.5.1. Personnel who work near sprinkler heads should be trained on:**

- 5.5.1.1. The hazards of sprinkler impairment during New Hire Orientation
- 5.5.1.2. Notification, shut-off and response procedures for emergency impairment

**6.0 References**

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[NFPA 15-17](#)

[L&I WAC 296-800 – Core Safety](#)

[L&I WAC 296-155-260 – Fire Protection](#)

[FEDOSHA 29 CFR 1910.159 – Automatic Sprinkler Systems](#)

[CALOSHA Title 8 Subchapter 7 Group 27 Article 159 – Automatic Sprinkler Systems](#)

**7.0 Attachments**

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[Hot Work Permit](#)

[Demolition Permit](#)





[Pre-Task Plan](#)

[Aerial Work Platform Inspection Checklist](#)

## Steel Erection

### 1.0 Purpose

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- 1.1. Steel erection is a potentially high-risk task, so it is imperative that proper control measures are utilized to prevent incidents during steel erection. Certain control measures may eliminate hazards, but the process of risk elimination must be started in advance of the work taking place. This standard outlines the hazards and controls associated with steel erection.

### 2.0 Scope

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- 2.1. Any BNBuilders project that will erect steel must use this standard as a guideline for ensuring proper control measures are in place to eliminate risk. Steel erection activities include hoisting, connecting, welding, bolting, and rigging structural steel, steel joists and metal buildings; installing metal deck, siding systems, miscellaneous metals, ornamental iron and similar materials; and moving from point-to-point to perform these activities. Please also reference [Material Handling and Rigging](#)

### 3.0 Responsibility

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#### 3.1 Designers/Architects/Engineers

- 3.1.1. Designers/Architects/Engineers have the responsibility to eliminate risk through design of the structure and/or process by using methods such as off-site fabrication and assembly.

#### 3.2 Project Management

- 3.2.1. BNB Project Management and Supervision has the duty to ensure that controls have been enacted as early and effectively as possible to eliminate risk. They must communicate with the steel erection subcontractor well in advance of the subcontractor's mobilization on site.
- 3.2.2. BNB Project Management and Supervision must ensure that steel erection subcontractors are provided with a written notification to proceed (see attachment).
- 3.2.3. BNB Project Management and Supervision must ensure adequate access roads into and through the site for the safe delivery and movement of derricks, cranes, trucks, other necessary equipment, and the material to be erected.
- 3.2.4. BNB Project Management and Supervision must ensure a firm, properly graded, drained area, adequately compacted to support the intended loads, readily accessible to the work with adequate space for the safe storage of materials and the safe operation of the erector's equipment.

#### 3.3 Subcontractors

- 3.1.1. Subcontractors are responsible for attending the preconstruction meeting.

#### 3.4 Workers

- 3.4.1. Workers engaged in steel erection are responsible for working in a safe manner and following safety requirements.

### 4.0 Definitions

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- 4.1. **Competent Person** - One who can identify existing or predictable hazards in surroundings or working conditions which are dangerous to employees who is authorized by the nature of their position to take prompt corrective action. This person must have knowledge of the requirements for steel erection.
- 4.2. **Multiple Lift Rigging** - A rigging assembly manufactured by wire rope rigging suppliers that facilitates the attachment of up to 5 independent loads to the hoist rigging of crane.

## 5.0 Procedure

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### 5.1 Hazards

- 5.1.1. Hazards associated with steel erection have potentially lethal repercussions if not properly controlled. Hazards may consist of inclement weather, falls, struck-byes, unstable loads, unsafe rigging practices, structural collapse, crane tip overs, fire, flash burn, electrical shock, property damage, injury, and more.

### 5.2 Engineering Controls

#### 5.2.1. Fall Prevention:

- 5.2.1.1. Reduce the number of people who need to work at height, e.g. through off site manufacture or prefabrication. Give priority to collective measures over individual measures, e.g. fixed edge protection is preferable to every worker wearing fall prevention equipment. Consider the addition of nets/outrigger platforms to cover shafts/openings below the work. Other fall exposures could be controlled by using aerial work platforms to access the work area. Another engineering control is to install steel posts either inside of curbs or attached to the outside of the curb. This practice will enable decking contractors to utilize the guardrail cables for fall protection at the openings—see photos below.

#### 5.2.2. Struck by Prevention:

- 5.2.2.1. Control falling objects by installing netting or other overhead protection. Barricade the area within swing radius of crane counterweights to prevent access by personnel.

### 5.3 Administrative Controls

- 5.3.1. An administrative control to reduce the consequences of dropped items would be to establish controlled access zones around the area underneath of steel erection activities. Signage and barricades could be used to delineate the area and prevent unauthorized access. Workers should tether equipment such as hand/power tools, hard hats, ladders, tape measurers, etc. when possible and the amount of materials stored at heights should be kept to a minimum.
- 5.3.2. In the event of inclement weather such as high wind or lightning storms, operations may need to be suspended.

### 5.4 Personal Protective Equipment (PPE)

- 5.4.1. In addition to the required minimum PPE, additional PPE for steel erection activities may include leathers, ear plugs, face shields, personal fall protection, etc.

### 5.5 Training

#### 5.5.1. *Personnel must be trained according to the tasks they're engaging in. Typically, most steel erection personnel will need at least one of the following trainings/certifications:*

- 5.5.1.1. Certified crane operator
- 5.5.1.2. Certified rigger
- 5.5.1.3. Certified signal person
- 5.5.1.4. Aerial work platform training
- 5.5.1.5. Welding certification as applicable
- 5.5.1.6. Connector training

#### 5.5.2. *Steel erection training requirements:*

- 5.5.2.1. Multiple lift rigging procedures
- 5.5.2.2. Connector procedures
- 5.5.2.3. Controlled decking zone procedures
- 5.5.2.4. Ladder selection and use

**5.5.3. Fall Hazard Training:**

- 5.5.3.1. Recognition and identification of fall hazards in the work area
- 5.5.3.2. The use and operation of guardrail systems (including perimeter safety cable systems), personal fall arrest systems, positioning device systems, fall restraint systems, safety net systems, and other protection to be used
- 5.5.3.3. The correct procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used
- 5.5.3.4. The procedures to be followed to prevent falls to lower levels and through or into holes and openings in walking/working surfaces and walls; and the fall protection requirements for structural steel erection
- 5.5.3.5. Procedures for erecting, maintaining, disassembling, and inspecting the fall protection systems to be used
- 5.5.3.6. Site-specific fall prevention plan

**6.0 References**

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[FED / OSHA 1926 Subpart R – Steel Erection](#)

[CAL / OSHA T8CCR1710 – Erection of Structures](#)

[L&I WAC 296-155-702 – Erection Plan](#)

[Freedom from Danger – Material Handling and Rigging Policy](#)

**7.0 Attachments**

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[Crane Pick Plan](#)

# Utility Avoidance

## 1.0 Purpose

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- 1.1. The purpose of this policy is to ensure any work in close proximity to utilities is carried out in a manner that supports our goal of Freedom from Danger.

## 2.0 Scope

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- 2.1. Any scope of work that involves the penetration of the ground or a structure whether by hand or machine or is located in proximity to overhead utilities must be executed in accordance with this standard. Activities covered by this standard range from saw cutting, jackhammering, coring, trenching, excavating, demolition, boring, drilling, grading, mass excavation, etc.

## 3.0 Responsibility

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### 3.1. Project Management & Supervision

#### 3.1.1. *BNB Project Management & Supervision are responsible for:*

- 3.1.1.1. ensuring compliance with this standard;
- 3.1.1.2. acquiring safety submittals from subcontractors;
- 3.1.1.3. setting up and hosting pre-dig meetings;
- 3.1.1.4. ensuring completion and filing of “Dig Permits” and “Coring and Saw Cutting Checklist.”

### 3.2. Subcontractors

- 3.2.1. Subcontractors are responsible for following the requirements of this program, submitting required submittals to the BNB Project Team, attending pre-dig meetings, and completing “Dig Permits” and “Coring and Saw Cutting Checklist”.

## 4.0 Definitions

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- 4.1. **Proximity** – nearness in place
- 4.2. **Strike** – Unwanted contact with an energized utility
- 4.3. **Overhead Utility** – Typical overhead utilities are power lines such as those running along sidewalks.
- 4.4. **Coring and Saw Cutting** – Any activity where core drillers or saw cutting equipment is used to drill or cut into concrete/asphalt/walls.
- 4.5. **Underground Utility** – Typical underground utilities are gas, water, sewer, storm drain, and communications.
- 4.6. **Potholing** – The act of digging with only hand tools or vacuum/water extraction methods.
- 4.7. **Proximity Warning Device** – A piece of equipment that assists operators who may become distracted or unable to see the dangerous overhead high voltage power lines in their work area.

## 5.0 Procedure

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### 5.1. Underground Utilities Procedures

#### 5.1.1. *Required Submittals for Subcontractors*

- 5.1.1.1. For activities involving the penetration of the ground’s surface, the Subcontractor shall submit the following in addition to typically required safety documents prior to starting work:

- 5.1.1.1.1. The name(s) of the designated "Competent Person" with supporting documentation indicating training and competency. (No excavating or work in excavations will be allowed without the Competent Person onsite and supervising these operations at all times).
- 5.1.1.1.2. A Job Hazard Analysis that adequately addresses the task(s) involving penetration of the ground's surface and safe measures for preventing utility strikes.

## 5.2. New Utility Procedures

- 5.2.1. It is a BNB Best Practice, if possible, to have all new underground electrical utilities encased in concrete that is dyed red.
- 5.2.2. Another BNB Best Practice, if possible, is to use concrete instead of CDF for duct banks.
- 5.2.3. Duct banks will be installed a minimum of 4' below finish grade when possible.
- 5.2.4. When duct banks are installed less than 4' deep the entire trench will be filled with concrete up to rough grade if possible.
- 5.2.5. Warning signs will be posted at source of electrical and at feed location (i.e., sign at panel and tower crane).
- 5.2.6. Duct bank locations will be marked with red paint with regularly scheduled re-marking to ensure lines are identified at all times.
- 5.2.7. On sites where ground conditions (mud) obscure locate paint/markings stakes or delineators will be installed every 20' to identify utilities route.
- 5.2.8. Newly installed underground utilities will be incorporated into existing Live Utility Map.
- 5.2.9. Location of all underground utilities will be reviewed at:**
  - 5.2.9.1. Preparatory meetings with subcontractors.
  - 5.2.9.2. New Hire Orientations.
- 5.2.10. When working within 10' of newly installed utilities the following steps must be taken:**
  - 5.2.10.1. Contractor performing work must call for locates prior to work and coordinate with BNB to ensure new utilities are identified prior to dig.
  - 5.2.10.2. Radar Imagine affected area as needed.
  - 5.2.10.3. MOP or JHA must be submitted 1 week prior to scheduled work.
  - 5.2.10.4. Dig Permit must be completed.
  - 5.2.10.5. Core Drilling / Saw Cutting Checklist.
- 5.2.11. Utilities Permit and activity plans (MOP or JHA) must be reviewed on the day that work is to begin with BNB Staff and all workers involved in the utility installation activity.

## 5.3. Live Utility Map Requirements

- 5.3.1. Live Utilities Awareness Map shall be generated at the start of all projects.
- 5.3.2. Applicable utility phone numbers must be included on Live Utilities Map.
- 5.3.3. Map colors must match AWPA color codes as outlined below.
- 5.3.4. Valve locations must be indicated on map.
- 5.3.5. Dimensions/depth shall be outlined on map as necessary.
- 5.3.6. Newly installed utilities shall be incorporated into the map.
- 5.3.7. Maps shall be dated to ensure the most recent version is posted.
- 5.3.8. Maps shall be incorporated into sub preparatory meetings, jobsite orientations and be posted in job shack, jobsite office and on safety board.

## 5.4. Strike Prevention Procedures

- 5.4.1. Every effort must be made to remove or de-energize utilities as the first order of business.

- 5.4.2. If a utility is properly identified, shut down, and “safed-off” via lock out tag out, and the utility is struck during an activity, BNB does not consider the event a utility strike, but it would be considered property damage and must be repaired by the party responsible for the damage.
- 5.4.3. Note, lock out tag out must be performed by a qualified person and testing must verify a zero-energy state for the utility.
- 5.4.4. When within three (3) feet or 36 inches in any direction of known utilities that are energized, hand digging, or vacuum excavation is required.

## 5.5. Potholing Procedures

- 5.5.1. Potholing is performed to verify the location and depth of utility lines and potholing procedures shall be followed to prevent damage to the identified underground utilities. Before ground-penetrating activities begin, potholing for the utilities will take place. Potholing will be done using hand labor or a vacuum excavation system. NOTE: Utilities typically identified by locate services have a three-foot safe zone. In other words, the utility should be within a three-foot zone of either side of the markings.
- 5.5.2. Potholing will be performed to locate the utility. The utility **MUST** be found prior to the start of excavation operations. The soil must be excavated in 6” lifts (approximately) by hand to verify that no utilities are present. If utilities are located, then the utilities must be exposed by hand. The proper tools that can be used for handwork are shovels and pry bars (or other tools of this nature), OR vacuum excavation systems. At no time should a pickaxe or other similar tools be used. Before using a vacuum excavation system, it may be necessary to contact the utility owner to determine if the utility owner will allow the use of a vacuum system. Not all utility owners allow the use of vacuum systems for locating the utility. Check your local regulations to determine if this is necessary.
- 5.5.3. **Do not assume that the utility will continue on the same line and grade.** If any damage occurs to any line, contact the utility company, the utility engineer, and the project superintendent IMMEDIATELY. An Incident Report must be completed IMMEDIATELY by the BNB Project Team. **All existing utilities will be located, marked, and visually verified prior to starting any operation. Locate markings must be protected as applicable. It is recommended that time-stamped photos be taken of markings prior to breaking ground.**
- 5.5.4. Underground Utility Pothole Spacing and Frequency - Any deviation from this procedure will require approval from the BNB Project Manager. The following spacing and frequency requirements will be followed on all projects:
- 5.5.5. Life threatening utilities such as gas, forced sewer mains, water mains and electrical services will be exposed through the entire length of the excavation.
- 5.5.6. Gas and electric lines within 10 feet of your work area will be potholed and marked every 20 feet or less to verify that the line has not changed directions.
- 5.5.7. Gas and electric lines outside the 20 feet of the work zone will be potholed at least once on each end of the limits of the excavation to verify Underground Service Alert and the utility plans.
- 5.5.8. Communication Lines- Fiber-optic lines will be potholed every 20 feet at minimum or more frequently within the work area. Telephone/Cable lines will be potholed every 20 feet at minimum or more frequently within the work area. IF there is any damage to a fiber optic line, **DO NOT LOOK INTO THE FIBER OPTICS. THE LIGHT WAVES GOING THROUGH THE FIBER OPTICS CAN CAUSE SERIOUS EYE INJURIES.**
- 5.5.9. **Other Utilities:**
  - 5.5.9.1. Will be potholed every 20 feet at minimum or more frequently.
  - 5.5.9.2. At least two (2) potholes must be obtained for each utility within the work zone regardless of the size of the work area.
- 5.5.10. **Utilities in Roadways:**
  - 5.5.10.1. Utilities that are located within the roadway will be potholed.

5.5.10.2. Street plates will be obtained to cover a pothole when there is live traffic on the roadway. The street plates shall be of sufficient size and thickness to allow traffic to safely drive over them by pre-grind to allow the trench plates to be flush with the horizontal plane. The street plates shall be secured in place in accordance with the local, state and/or federal requirements.









5.5.10.3. For roadway work not scheduled to be excavated in the current operation, an asphalt patch will be placed over the pothole. This will be done after all pothole information has been recorded and the pothole has been offset using stakes and ribbon.

**5.5.11. Utility Locating:**

5.5.11.1. Subcontractors shall locate and identify all utilities prior to the start of ground-penetrating activities. Equipment operators must understand the locations and types of utilities.

5.5.11.2. Prior to the start of any excavation a utility locate service must be contacted. Each state has a different locate service with specific rules outlining their services. It is very important to understand the state or local guidelines in advance of your excavation. Typically locate companies require 2 days advanced notice before performing a locate. Before calling for locate services, the excavation area must be pre-marked with white paint, stakes or flags. In addition, newly constructed work IS NOT covered (i.e. drainage, electrical subcontractor new installations, etc.) and shall be located by other means. The Subcontractor engineer, foreman, or superintendent responsible for this work will be contacted to verify what has been constructed and an appropriate as-built requested. The One Call service can be contacted by calling 811.

5.5.12. **Utility Color Markings** - The following colors and symbols have been adopted by all utilities for marking underground utilities:

|   |        |  |
|---|--------|--|
|  | Blue   | Water  |
|  | Orange | Telephone, Railroad, Cable TV                              |
|  | Green  | Sewer, Storm Drain   |
|  | Red    | Street Lighting, Electric, Traffic Signals (may be orange) |
|  | Yellow | Gas  |
|  | Pink   | Survey   |
|  | White  | Proposed Excavation  |
|  | Purple | Reclaimed Water, Irrigation, and Slurry Lines              |

**5.5.13. Dig permits**

5.5.13.1. A Dig Permit is required for all operations which penetrate the original ground surface. Dig permits are required to be reviewed and signed by the BNB superintendent or BNB designated representative. The Subcontractor foreman of each operation is responsible for ensuring that the Dig Permit, Job Hazard Analysis (JHA) and Pre-Task Plan (PTP) and all necessary drawings are available at the operation and in the cab of the excavator, backhoe, etc. The operator is ultimately responsible and will be held accountable to ensure the operation does not proceed without a valid Dig Permit. The BNB Management will verify that the Dig Permit has been properly completed.



**5.5.13.2. The following documents will be attached before being distributed to the foreman and operator:**

- 5.5.13.2.1. A signed copy of the Job Hazard Analysis (JHA).
- 5.5.13.2.2. A Pre-Task Plan (PTP) must be completed by the crew and signed by all members.
- 5.5.13.2.3. The page of the Topography & Utility Plan sheets for the work zone that the permit covers. Any utility relocations that have been completed before the start of the operation must be clearly noted on these drawings.
- 5.5.13.2.4. A copy of the Utility Plan sheets for the work zone the permit covers. Notes and highlights must be made on these drawings to indicate which runs have been installed.

**5.5.13.3. Unintentional Uncovering of a Utility (known or unknown utility):**

- 5.5.13.3.1. If during the course of excavation, a utility has been exposed, it is the Subcontractors' responsibility to inspect and support these facilities prior to backfilling. If damage of any kind is discovered, or any suspicion of damage exists, call the utility engineer so documentation can take place. The utility engineer will then notify the utility owner.
- 5.5.13.3.2. All unidentified underground utilities that are discovered during the course of excavation activities shall be marked on the As Built Plans and the BNB Superintendent or BNB designated representative shall be IMMEDIATELY notified.

**5.5.14. Reporting Requirements:**

- 5.5.14.1. If a utility strike/hit does occur, several reporting steps are required:
  - 5.5.14.1.1. First and foremost, clear and secure the area if there is potential for further exposure to hazardous environments.
  - 5.5.14.1.2. Contact the appropriate utility owner to inform them of the damage so they can inspect and repair, if necessary.
  - 5.5.14.1.3. Notify the Utility Engineer and BNB Project Superintendent.
  - 5.5.14.1.4. The Subcontractor shall complete the Incident Report Form and transmit it to the BNB Project Manager.

**5.5.15. Overhead Utilities Procedure:**

- 5.5.15.1. Any equipment having the ability to work under, cross underneath, and/or reach over overhead electrical lines will follow the guidelines set forth by OSHA in 1926.1408, 1926.1411, & 1926.600. BNB recommends that equipment working in close proximity to overhead electrical lines be equipped with a Proximity Warning Device (PWD) to notify the operator and/or operatives surrounding the equipment of the proximity to the danger zone.
- 5.5.15.2. If working near overhead electrical lines, the Subcontractor will install "DANGER OVERHEAD POWERLINES" signs at all designated equipment crossings. This sign must state the voltage of the overhead line. For all other utilities, the Subcontractor will install "DANGER OVERHEAD UTILITY" signs to warn of the overhead hazard. For all other equipment traveling underneath overhead utilities, to include use of on-road or off-road haul trucks transporting dirt / materials to the project a "NO DUMP ZONE" will be established to eliminate dumping within 50' of either side of the overhead line. The Subcontractor will identify the "NO DUMP ZONE" through the use of signage.
- 5.5.15.3. Subcontractor will provide a full-time spotter(s) whenever any equipment has the ability to work under, cross underneath, and / or reach over overhead utility lines, for example, electrical, cable, phone, fiber-optic, etc. This spotter will assume no other duty and be equipped with air horn, reflective vest, and red flag.

5.5.15.4. Subcontractor will limit equipment travel underneath overhead utilities to designated areas only. To prevent equipment from traveling underneath lines, the Subcontractor will install a means of protection. At a minimum, protection will consist of yellow poly rope with red flagging.

5.5.15.5. Subcontractor will protect all guy wires and utility poles from contact with equipment operating in the area through the use of barricades (water-filled barricade, temporary concrete barrier, or pipe bollards). If installed on a road project and within the clear zone of an active travel lane all barriers must be installed per the Department of Transportation (DOT) Index & Manual on Uniform Traffic Control Devices (MUTCD).

## **5.6. Hazards**

5.6.1. The accidental exposure to utilities could result in an injury or even fatality. Injury could be caused by explosion, fire, electrical shock, asphyxiation, struck-by hazards, and more.

### **5.6.2. Hazard Controls**

5.6.2.1. If utility conflicts are found, a potential option for hazard elimination would be to change the plans to avoid being in proximity with existing utilities. Effort must be taken to have the utility conflicts related to the scope of work removed or relocated prior to commencing work. If, after contacting the appropriate utility companies, the utility cannot be removed or relocated prior to commencing, then additional means and methods shall be employed following the hierarchy of controls identified below.

### **5.6.3. Engineering Controls**

5.6.3.1. If utilities in proximity of the work cannot be eliminated/relocated, then the next preferred control is to raise the height of overhead utilities or insulate the wires.

### **5.6.4. Administrative Controls**

5.6.4.1. Administrative controls could be the installation of warning signs, use of spotters, use of protective barricades, proximity warning/control devices for equipment, and/or use of technology to visually identify utilities.

### **5.6.5. Personal Protective Equipment**

5.6.5.1. Personal Protective Equipment controls could consist of grounded cabs on equipment, insulated/rated gloves, rated face shields, and/or reflective vests.

## **5.7. Training**

5.7.1. BNB Operations personnel and all subcontractor personnel engaged in excavation or work in proximity to overhead lines must be trained on this standard and BNB's Utility Avoidance Policy. BNB will discuss this policy, dig permits, coring and saw-cutting checklists, live utility maps, and all other relevant material to this policy at the pre-construction meeting with the contractor. BNB will also ensure that the crews performing the work understand the applicable procedures to their scope.

## **6.0 References**

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[OSHA 1926.1408](#)

[OSHA 1926.1411 – Power Line Safety](#)

[OSHA 1926.600 - Equipment](#)

[Cal/OSHA T8CCR1541. General Requirements for Excavations](#)

[L&I WAC 296-32 – Safety Standards for Telecommunications](#)

## 7.0 Attachments

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[Dig Permit](#)

[Core Drilling / Saw Cutting Checklist](#)

[Subcontractor Requirements](#)

[Utility Avoidance - Best Practices](#)

# Walking and Working Surfaces

## 1.0 Purpose

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- 1.1. The purpose of this standard is to establish requirements for the design, maintenance, and use of walking and working surfaces and stairs.

## 2.0 Scope

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- 2.1. This policy applies to walking and working surfaces and stairs at BNB projects and offices.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. BNB Project Management & Supervision are responsible for preplanning walking and working surfaces and stairways for each project. For example, the use of ladders to access work areas on different levels should be identified during preconstruction, so effective controls such as a temporary stair tower may be put in place during construction. During construction, BNB Project Management & Supervision are responsible for inspecting walkways, stairs, and other surfaces to ensure a safe workplace.

### 3.2 Workers

- 3.2.1. Workers are expected to maintain all walkways and stairs in a safe condition throughout the workday and report any issues to management. Work areas must be cleaned up at a pace consistent with production and waste-generating activities. If their work will close an emergency exit or walkway, they must work with BNB Project Management & Supervision.

## 4.0 Definitions

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- 4.1. **Debris** – Materials, supplies, equipment, trash, etc. that have accumulated during work activities.
- 4.2. **Floor Holes** - an opening measuring less than twelve inches but more than one inch in its least dimension in any floor, roof, platform, or surface through which materials but not persons may fall, such as a belt hole, pipe opening, or slot opening.
- 4.3. **Floor Openings** - an opening measuring twelve inches or more in its least dimension in any floor, roof, platform, or surface through which persons may fall.
- 4.4. Unprotected sides and edges means any side or edge (except at entrances to points of access) of a stairway where there is no stair rail system or wall 36 inches (.9 m) or more in height, and any side or edge (except at entrances to points of access) of a stairway landing, or ladder platform where there is no wall or guardrail system 39 inches (1 m) or more in height.
- 4.5. **Unstable Ground** – earth material that because of its nature or the influence of related conditions cannot be depended upon to remain in place without extra support.
- 4.6. **Walking and Working Surface** - any area including, but not limited to, floors, a roof surface, bridge, the ground, and any other surfaces whose dimensions are forty-five inches or more in all directions, through which workers can pass or conduct work.
- 4.7. **Wall opening** - an opening at least thirty inches high and eighteen inches wide, in any wall or partition, through which persons may fall, such as an opening for a window, a yard arm doorway, or chute opening.

## 5.0 Procedure

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### 5.1 General

- 5.1.1. Walkways, stairways and roadways shall be kept clear to allow the safe movement of persons, material and equipment.
- 5.1.2. Electrical cords, hoses, ropes, conduit, pipe and other hazards shall not be placed in walkways, stairways and work areas in such a manner as to create a tripping hazard. Examples of acceptable methods for avoiding a tripping hazard include: taping the items down, running the items along the area edge or barricading the area.
- 5.1.3. Impalement protection must be installed on rebar or other similar objects in walkways.

- 5.1.4. Barricades, fencing, and other materials in public areas can't have hardware, locks, protrusions, or irregular surfaces on the public side that a person could strike against, or snag/catch their clothes or body parts on.
- 5.1.5. Fencing shall be secure. Fence bases that have the potential to cause a tripping hazard shall be labeled, coned and secured.
- 5.1.6. Minimum 28-inch wide aisles will be provided at all times
- 5.1.7. Emergency exits and evacuation routes shall be clearly marked and kept clear at all times
  - 5.1.7.1. A clean work area prevents slips, trips and falls and helps safety and production.
  - 5.1.7.2. Clean as you go and at the end of each day.
  - 5.1.7.3. Materials must be stored in an orderly manner.
  - 5.1.7.4. Spills and leaks are to be cleaned up immediately.
  - 5.1.7.5. Round containers can be trip hazards and can be easily kicked off a floor.
  - 5.1.7.6. When a building or structure has only one point of access between levels, that point of access shall be kept clear to permit free passage of employees. When work must be performed or equipment must be used such that free passage at that point of access is restricted, a second point of access shall be provided and used.
  - 5.1.7.7. When a building or structure has two or more points of access between levels, at least one point of access shall be kept clear to permit free passage of employees.

#### **5.1.8 Open Holes**

- 5.1.8.1. Floor hole and floor opening covers shall be secured against displacement and adequately marked with the word "Hole" or "Cover".
- 5.1.8.2. All covers must be designed to support without failure 4 times the intended load.
- 5.1.8.3. Hole covers need a tapered/beveled edge to be flush with the existing surface to minimize trip hazards.
- 5.1.8.4. Cover and secure roof/floor openings wider than 2" and never leave them unprotected and/or unattended.
  - 5.1.8.4.1. Guardrails can be used in lieu of covers.
  - 5.1.8.4.2. Equipment should not travel over hole covers—hole covers may be constructed to prevent equipment from being able to travel over the cover.

#### **5.1.9 Cords, hoses, lines, etc.**

- 5.1.9.1. Cords, hoses, etc. in public areas must have ADA-compliant covers to protect them from damage and give safe passage to the public.
- 5.1.9.2. Correct tripping hazards such as cords, hoses or debris in work areas or paths of travel.
  - 5.1.9.2.1. Extension cords, hoses, welding leads, etc., must be run safely overhead in all stairs, aisles, and exit areas.

#### **5.1.10 Elevated Walking and Working Surfaces**

- 5.1.10.1. When working/walking surfaces are 6' CA / 4' WA or greater in height, proper fall protection methods must be used.
  - 5.1.10.1.1. BNB will approve perimeter access points for material handling. Personal fall protection must be put in place before cables or rails are taken down, or holes uncovered. Barricade the area, place signage, and leave a spotter.
  - 5.1.10.1.2. Barricades must be a minimum of 10' from edges.
- 5.1.10.2. Never remove guardrails or warning barricades without permission from BNB Project Management & Supervision.
- 5.1.10.3. Railings and toe boards shall be provided along all unprotected and open sides, edges, and surfaces 6' above ground levels.

**5.1.11 Guardrails**

5.1.11.1. Guardrails must be provided at floor openings, open sides, and/or leading edges or personal fall protection must be used.

**5.1.11.2. Guardrails or wire cables must follow these requirements:**

- 5.1.11.2.1. shall have a vertical height within the range of 42 inches to 45 inches from the upper surface of the top rail to the floor, platform, runway, or ramp level. (Note: the permissible tolerance on height dimensions is one inch).
- 5.1.11.2.2. The maximum deflection for the top rail when a load of 200 pounds is applied in any direction at any point on the top rail shall not exceed 3 inches in any direction.
- 5.1.11.2.3. Mid-rail/cable and toe boards must be installed and able to withstand 150 lbs. CA / 200 lbs. WA
- 5.1.11.2.4. Guardrails or wire cables will not be used for anchoring personal fall arrest/restraint.
- 5.1.11.2.5. Upright supports for a wood guardrail system shall be spaced no greater than every 8 ft. on center.

**5.1.12 Stairways**

- 5.1.12.1. Temporary stair towers or prefabricated stairs should be used to access different building levels.
- 5.1.12.2. Never use stairs and ramps that are incomplete, incorrectly constructed, improperly installed, or damaged.
- 5.1.12.3. Stairs, ladders, and ramps must be inspected before use.
- 5.1.12.4. A stairway or ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches or more, and no ramp, runway, sloped embankment, or personnel hoist is provided. Stairways must extend to the uppermost floor that has been planked or decked if steel framed.
- 5.1.12.5. Stair steps must be illuminated with at least 5-foot candles of light
- 5.1.12.6. Stairway openings must be guarded on all sides except the entrance.
- 5.1.12.7. Snow and Ice must be removed from stairs before they are allowed to be used.
- 5.1.12.8. Stairways shall be at least 24 inches in width and shall be equipped with stair rails, handrails, treads, and landings.
- 5.1.12.9. Railings and toe boards shall be installed around stairwells.
- 5.1.12.10. Temporary stairways that will not be a permanent part of the structure on which construction work is being performed shall be at least 24 inches in width. The stairway shall have landings at each floor, or level, of not less than 30 inches in the direction of travel and extend at least 24 inches in width at every 12 feet or less of vertical rise.
- 5.1.12.11. Stairs shall be installed between 30° and 50° from horizontal.
- 5.1.12.12. Unprotected sides and edges of stairway landings shall be provided with railings.
- 5.1.12.13. Metal pan landings and metal pan treads, when used, shall be secured in place before filling with concrete or other material.
- 5.1.12.14. All parts of stairways shall be free of hazardous projections, such as protruding nails.
- 5.1.12.15. Slippery conditions on a stairway shall be eliminated before the stairway is used to reach another level.

**5.1.12.16. Stairways having four or more risers or rising more than 30 inches (76 cm), whichever is less, shall be equipped with:**

- 5.1.12.16.1. At least one handrail; and

- 5.1.12.16.2. A stair rail consisting of a top rail and mid-rail along each unprotected side or edge.
- 5.1.12.16.3. The height of stair rails shall be not less than 36 inches from the upper surface of the stair rail to the surface of the tread, in line with the face of the riser at the forward edge of the tread.
- 5.1.12.16.4. Mid-rails shall be located at a height midway between the top edge of the stair rail and the stairway steps.
- 5.1.12.16.5. Screens, mesh, or other material, when used in lieu of mid-rails, shall extend from the top rail to the stairway step, and along the entire opening between top rail supports.
- 5.1.12.16.6. Handrails and the top rails of stair rails shall be capable of withstanding, without failure, a force of at least 200 pounds (890 n) applied within 2 inches of the top edge, in any downward or outward direction, at any point along the top edge.
- 5.1.12.16.7. Stair and handrails shall be so surfaced as to prevent injury to employees from punctures or lacerations, and to prevent snagging of clothing.
- 5.1.12.16.8. Handrails shall provide an adequate handhold.
- 5.1.12.16.9. Except during stairway construction, foot traffic is prohibited on stairways with pan stairs where the treads and/or landings are to be filled in with concrete or other material at a later date, unless the stairs are temporarily fitted with wood or other solid material at least to the top edge of each pan.
- 5.1.12.16.10. Except during stairway construction, foot traffic is prohibited on skeleton metal stairs where permanent treads and/or landings are to be installed at a later date, unless the stairs are fitted with secured temporary treads and landings long enough to cover the entire tread and/or landing area.
- 5.1.12.16.11. Treads for temporary service shall be made of wood or other solid material, shall cover the full width and depth of the stair and shall be supported to prevent undue deflection.

### **5.1.13 Ramps**

- 5.1.13.1. Ramps must have non-skid surfaces.
- 5.1.13.2. Ramps or runways shall be not less than 20 inches in width and shall be secured and supported so as to avoid deflection and springing action.
- 5.1.13.3. Securely fastened cleats or other means shall be used on inclined runways that are sloped two feet in 10 feet or more to improve the footing. Where cleats are used, they shall be eight inches or more in length and not more than 16 inches apart.
- 5.1.13.4. When planks are used for raised walkways, runways, or sidewalks, they shall be secured against displacement. Planks shall be uniform in thickness and all exposed ends shall be provided with beveled cleats to prevent tripping.
- 5.1.13.5. Wheelbarrow ramps over three feet high shall be not less than two feet, six inches wide and secured at each end to prevent ramp from sliding. Platform planks shall be firmly cleated together.

## **5.2 Hazards**

- 5.2.1. Potential hazards associated with inadequate walking/working surfaces and stairs may be trips, slips, falls, electrical shock, damage to equipment, etc.

## **5.3 Hazard Controls**

### **5.3.1 Engineering Controls**

- 5.3.1.1. Personnel should locate their equipment and materials in areas where they will not protrude in walkways.

5.3.1.2. Instead of using ladders to access different levels, temporary or permanent stairways can be installed and used.

### **5.3.2 Administrative Controls**

5.3.2.1. Housekeeping must be sufficient throughout the workday and conducted in accordance with [Housekeeping](#). Inspections should be conducted daily to ensure walking and working surfaces are kept in proper condition. Signage may be posted to remind workers to keep walkways clear.

### **5.3.3 Personal Protective Equipment**

5.3.3.1. All personnel must wear sturdy boots with ankle protection and hard soles. No running shoes of any kind are permitted on work sites. NO SAFETY TOE TENNIS SHOES ALLOWED.

### **5.3.4 Training**

5.3.4.1. Personnel will receive site-specific training on walking and working surfaces during New Hire Orientation. In addition, employees who use stairways should receive additional training as necessary.

## **6.0 References**

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[FED / OSHA 29 CFR 1926 Subpart X](#)

[FED / OSHA 29 CFR 1910 Subpart D & I – Walking Working Surfaces and Personal Fall Protection Systems](#)

[CAL / OSHA T8 Subchapter 4 A17 – Construction Safety Orders](#)

[L&I WAC 296-155-24609 – Walking & Working Surfaces](#)

[L&I WAC 296-800 – Core Safety](#)

## **7.0 Attachments**

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[Fall Protection Plan](#)

[Pre-Task Plan](#)

[Demolition Permit](#)

[Aerial Work Platform Inspection Checklist](#)

[Scaffolding Inspection Checklist](#)



## Welding, Cutting & Hot Work

### 1.0 Purpose

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- 1.1. Each year numerous deaths from explosions, electrocutions, asphyxiation, falls and crushing injuries are associated with welding activities. In addition, numerous health hazards are associated with exposure to fumes, gases, and ionizing radiation formed or released during welding, cutting, and brazing, including heavy metal poisoning, lung cancer, metal fume fever, flash burns, and welder’s flash (burn to eyes). Diligent and proper enforcement of this standard will protect our work, property, and the ongoing operations of our projects.

### 2.0 Scope

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- 2.1. This standard applies to welding, cutting, grinding, and other hot-work related activities that take place on BNB projects. Hot work activities consist of open flames, heat, arcs, and / or sparks.

### 3.0 Responsibility

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#### 3.1 Project Management

- 3.1.1. BNB Project Management is to convey the requirements of this program to BNB personnel or subcontractors who engage in hot-work operations prior to the start of their work. Project Management must ensure that adequate HS&E documentation has been submitted, including a Hot-Work Permit, Respirator Fit Testing Data (if applicable), Pre-Task Plan, and any Air Monitoring documentation associated with the work. Project Management must also check with local municipalities pertaining to hot work permitting.

#### 3.2 Supervision

- 3.2.1. Supervision should understand safe practices and enforce company safety policies and procedures associated with hot-work operations. Supervisors are to ensure a Hot-Work Permit has been completed and reviewed by BNB prior to the start of work. Also, supervision must ensure that hot-work operations are carried out in compliance with the requirements of the Hot-Work Permit.

#### 3.3 Workers

- 3.3.1. Workers must be responsible for safe work practices related to Hot-Work operations. Shall operations not be performed safely with controlled hazards; workers shall cease all hot work operations. Equipment operators should tag and remove defective equipment. Repairs shall be made only by qualified personnel and in accordance with the manufacturer’s recommendations.

### 4.0 Definitions

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- 4.1. **Competent Person** – One who can identify existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them
- 4.2. **Hydraulic Back-Pressure Valve / Hydraulic Seal / Hydraulic Flash Arrester / Hydraulic Valve and Backflow Check Valve** – Terms used interchangeably to mean a device designed and constructed to prevent a flash-back from reaching a fuel gas source, manifold or cylinder and to prevent accidental mixing of fuel gas and oxygen by reverse flow.
- 4.3. **Welder and Welding Operator** – Any operator of electric or gas welding and cutting equipment
- 4.4. **Qualified Person, Attendant or Operator** – A person designated by the employer who by reason of training, experience, or instruction has demonstrated the ability to safely perform all assigned duties and, when required, is properly licensed in accordance with federal, state, or local laws and regulations
- 4.5. **Fire Watch** – An individual listed on the Hot-Work Permit with required training on the inspection and use of fire-fighting equipment. The Fire Watch is to continuously monitor the work area during Hot-Work and for 30 minutes after the Hot-Work is completed
- 4.6. **Hot Work** – Any work involving burning, welding, or similar operations as defined above that is capable of initiating fires or explosions

- 4.7. **Hot-Work Permit (HWP)** – A multi-part form consisting of instructions, identification of who will be involved in the Hot-Work operations, location of the Hot-Work operations, the nature of the Hot-Work operation, and precautions to be taken prior to and during Hot-Work operations

## 5.0 Procedure

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### 5.1 General Procedures

- 5.1.1. Refer to the [Confined Spaces policy](#) for ventilation and other requirements for hot work in confined spaces.
- 5.1.2. Inspect the immediate work area and areas adjacent, beneath and above the immediate work area for combustible and/or flammable materials or liquids.
- 5.1.3. Cover all wood planking, scaffolds, wooden forms, and flammable and/or combustible materials or liquids within 35ft. of the work area that cannot be removed, with approved fire-retardant blankets, pads, curtains, covers and/or shields.
- 5.1.4. When hot work is performed at an elevated location, consider sparks or slag that can fall and land under the hot work operation.
- 5.1.5. At least one fully charged and operable fire extinguisher that is appropriate for the type of possible fire must be immediately available at the hot work location.
- 5.1.6. Adequate ventilation is required for all hot work operations.
- 5.1.7. The floor is swept clean within 35ft. of the work area.
- 5.1.8. Combustible floors are protected with approved fire-retardant blankets, pads, curtains, covers and/or shields.
- 5.1.9. Special precautions should be taken for heating pipes or other metal that is in contact with combustibles, walls, partitions, ceilings, or roofs.
- 5.1.10. Sprinkler heads and/or sensors must be protected if hot work is done in close proximity to an automatic fire detection or suppression system. Systems may need to be placed in test mode during hot work activities.

**5.1.11. Hot work is not allowed in the following areas:**

- 5.1.11.1. In areas not authorized by BNB Management.
- 5.1.11.2. In the presence of explosive atmospheres (e.g. gases, vapors, liquids, or dusts).
- 5.1.11.3. In areas where explosive atmospheres could potentially develop.
- 5.1.11.4. In areas with an accumulation of combustible dusts.

### 5.2 Fire Watch Procedures

**5.2.1. The fire watch must:**

- 5.2.1.1. See [Fire Prevention Policy](#) for more information.
- 5.2.1.2. Be familiar with the Project Specific Fire Prevention Plan.
- 5.2.1.3. Be aware of the inherent hazards of the work area and of the hot work.
- 5.2.1.4. Stop hot work operations if unsafe conditions develop and shall notify management and the supervisor for reassessment of the conditions.
- 5.2.1.5. Have fire-extinguishing equipment readily available and is to be trained in its' use.
- 5.2.1.6. Be familiar with the facilities and procedures for sounding an alarm in the event of a fire.
- 5.2.1.7. Watch for fires in all exposed areas.
- 5.2.1.8. Extinguish fires only when the fires are within the capacity of the fire-extinguishing equipment available and sound an alarm according to the Project Specific Fire Prevention Plan.
- 5.2.1.9. Follow specific Hot Work Permit instructions.
- 5.2.1.10. Additional fire watch personnel might be necessary when working in close proximity to open shafts, elevated heights, or where sparks can travel through openings.

### 5.3 Hot-Work Permits (HWP)

#### 5.3.1. HWP shall be completed:

- 5.3.1.1. For welding, cutting, grinding, and other hot-work activities.
- 5.3.1.2. Prior to hot work activities commencing.
- 5.3.1.3. For up to one work shift with the exception of exterior construction such as steel erection or reinforcing steel which may be completed for up to one week.

#### 5.3.2. HWP Process

- 5.3.2.1. Personnel who are to engage in hot work obtain a permit from BNB.
- 5.3.2.2. Personnel completes permit section 1.
- 5.3.2.3. Personnel gives completed permit to BNB Supervisor.
- 5.3.2.4. BNB Supervisor verifies adequacy of the permit.
- 5.3.2.5. BNB Supervisor and personnel sign Part 1.
- 5.3.2.6. BNB Supervisor retains Part 1.
- 5.3.2.7. Personnel takes Part 1A and retains it for records.
- 5.3.2.8. Personnel fills out and displays permit at the location of the hot work.
- 5.3.2.9. BNB Supervisor to retain HWP until conclusion of the project.

### 5.4 Gas Welding and Cutting Operations

#### 5.4.1. Personnel conducting Gas Welding and Cutting Operations must:

- 5.4.1.1. Inspect torches, hoses, valves and cylinders prior to use and immediately remove defective equipment from service.
- 5.4.1.2. Keep oxygen fittings, cylinders, caps, couplings, regulators, hoses, and other apparatus away from and free of oil and grease. Do not handle oxygen cylinders while wearing oily gloves.
- 5.4.1.3. Ensure flashback arrestors/check valves are installed at all oxygen and fuel gas regulator gauges.
- 5.4.1.4. Use only hose couplings that cannot be unlocked or disconnected by means of a straight pull.
- 5.4.1.5. Keep hoses clear of walkways, ladders, and stairways.
- 5.4.1.6. Use a spark lighter (striker) to light torches. Do not use matches and/or lighters.
- 5.4.1.7. Do not strike an electrode against a cylinder to strike an arc.
- 5.4.1.8. Ensure that hot sparks, hot metal or cut pieces do not fall on cylinders, hoses, machinery, combustible material, legs, feet, or persons below.
- 5.4.1.9. Shut off cylinder valves and bleed regulators and hoses at the end of each shift.

### 5.5 Arc Welding and Cutting Operations

#### 5.5.1. Personnel conducting arc welding and cutting activities must:

- 5.5.1.1. Inspect equipment prior to use and immediately remove damaged equipment from service.
- 5.5.1.2. Use and position screens or shields properly in order to protect workers and the public from arc ray exposure during Arc Welding and Cutting Operations.
- 5.5.1.3. Never overload welding cables or operate with poor connections.
- 5.5.1.4. Never strike an electric arc on a gas cylinder.
- 5.5.1.5. Use only properly designed metal electrode holders.
- 5.5.1.6. Never dip hot electrode holders in water.
- 5.5.1.7. Dispose of discarded electrode stubs properly, as they can create a slip/trip/fall hazard.
- 5.5.1.8. Ensure that the frame of the welding machine is properly grounded.
- 5.5.1.9. Welding/cutting/ground cables must be in operable condition with no visible damage.

- 5.5.1.10. Never attach a ground cable to a pipeline containing gases or flammable liquids.
- 5.5.1.11. Keep cables clear of walkways, ladders, and stairways. String all cables overhead with non-metallic hangers if needed.
- 5.5.1.12. Ensure that cables are protected from equipment damage (e.g. forklifts, scissor lifts, etc.).
- 5.5.1.13. Locate grounds as close to the work location as possible to prevent arcing.
- 5.5.1.14. Stop operations if unsafe conditions develop and notify management and the supervisor for reassessment of the conditions.

## 5.6 Cylinder Handling

### 5.6.1. Personnel handling cylinders must:

- 5.6.1.1. Store, move or use cylinders in an upright position.
  - 5.6.1.2. Close valves, remove regulators, and replace valve safety caps before moving or storing.
  - 5.6.1.3. Move cylinders by tilting and rolling them on their bottom edges; by use of a bottle cart; or with motorized equipment. Never lay cylinders on their sides and roll them.
  - 5.6.1.4. Store Oxygen cylinders separated from fuel-gas cylinders or combustible materials (especially oil or grease), a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.
  - 5.6.1.5. Never use cylinders as rollers or supports whether full or empty.
  - 5.6.1.6. Never drop cylinders or permit them to strike one another violently, even when empty.
  - 5.6.1.7. Use bottle carts, chains, or other steadying devices to keep cylinders from being knocked over while in use.
  - 5.6.1.8. Ensure cylinders are marked with the chemical or trade name of the gas.
  - 5.6.1.9. Keep storage areas free of debris and other combustible materials.
  - 5.6.1.10. Open cylinder valves slowly to prevent damage to the regulator.
  - 5.6.1.11. Close and tighten the gland nut when the valve on a fuel gas cylinder is opened and there is a leak around the valve stem. If this action does not stop the leak, the cylinder shall be properly tagged, removed from the work area, and taken outdoors away from personnel and sources of ignition. The supplier shall promptly be notified of the leaking cylinder valve and the supplier's instructions shall be followed.
  - 5.6.1.12. Position cylinders where they will not be struck by sparks, hot slag, or flame, and where they cannot become part of an electrical circuit.
  - 5.6.1.13. Never take cylinders containing oxygen, acetylene into confined spaces.
  - 5.6.1.14. Not use acetylene at a pressure in excess of 15 pounds per square inch gauge pressure.
  - 5.6.1.15. Not use oxygen as a substitute for compressed air.
- 5.6.2. Before a regulator to a cylinder valve is connected, the valve shall be opened slightly and closed immediately ("cracking"). The person cracking the valve shall stand to one side of the outlet, not in front of it. Never crack a valve near ignition sources.
- 5.6.3. In the event that fuel gas should leak from the cylinder valve, rather than from the valve stem, and the gas cannot be shut off, the cylinder shall be properly tagged, removed from the work area, and taken outdoors away from personnel and sources of ignition. The supplier shall promptly be notified of the leaking cylinder valve and the supplier's instructions shall be followed.

## 5.7 Hazards

- 5.7.1. Hazards related to hot work may consist of uncontrolled ignition of flammable gas, personnel or public injury, property damage, uncontrolled release of high-pressure gases, fire and/or explosion, electrical shock, struck-by, injury to eyes, skin, and lungs, and potential death.

## 5.8 Hazard Controls

### **5.8.1. Engineering Controls**

- 5.8.1.1. If possible, eliminate the presence of flammable/combustible materials during the design phase at or around planned welding activities to mitigate potential fire hazards during construction.
- 5.8.1.2. Alternate methods to hot work should be considered where practical. For example, repetitive cutting of metal studs may be performed at a central location where no combustibles are present, bolting in lieu of welding, or prefabrication offsite.

### **5.8.2. Administrative Controls**

- 5.8.2.1. Combustibles should be moved to a designated safe distance from the work or have combustibles properly shielded against ignition, if the work cannot be moved.
- 5.8.2.2. If fire hazards cannot be removed, guards or fire blankets should be used to confine the heat sparks and slag and to protect the immovable fire hazards.
- 5.8.2.3. Make sure that the welding area is watched for one-half hour after welding is completed to ensure that no sparks or smoldering fires are present.
- 5.8.2.4. Complete hot work permits and assign fire watch as necessary.

## **5.9 Personal Protective Equipment**

### **5.9.1. Welders must wear:**

- 5.9.1.1. Non-flammable gloves with gauntlets
- 5.9.1.2. Appropriate foot protection
- 5.9.1.3. Aprons (leather) and or shirts that have leather sleeves and collars
- 5.9.1.4. Helmets, hoods, and face shields designed to attach to a standard hardhat
- 5.9.1.5. Eye protection
- 5.9.1.6. Cutting goggles must be worn with oxyacetylene cutting activities
- 5.9.1.7. Respiratory protection:
  - 5.9.1.8. Outdoors: Respirators are required for any operation involving stainless steel, beryllium, cadmium, lead, or mercury. For other materials, respirators may be required when natural or mechanical ventilation is insufficient to prevent exposure to airborne contaminants.
  - 5.9.1.9. Indoors: Respirators shall be used when local exhaust or mechanical ventilation is not feasible or able to prevent listed exposure limits.
  - 5.9.1.10. Enclosed spaces: Supplied-air respirators shall be used when local exhaust ventilation is not an effective means for preventing potentially hazardous exposures.

## **5.10 Training**

- 5.10.1. Only authorized and trained individuals shall be permitted to perform hot work operations.
- 5.10.2. Fire watch personnel must be trained in the use of fire extinguishing equipment and be familiar with the Project Specific Fire Prevention Plan. Personnel performing hot work activities must have adequate training and experience to perform their duties safely. Personnel operating arc welding equipment and gas-shielded welding equipment must be competent. Personnel handling fuel gas must be instructed on safe practices.

## **6.0 References**

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[FED / OSHA 1926 Subpart J - Welding and Cutting](#)

[FED / OSHA 1910.251-255 – Welding, Cutting, and Brazing](#)

[CAL / OSHA T8CCR Subchapter 7 – General Industry Safety Orders](#)

[L&I WAC 296-24-680 – Welding, Cutting, and Brazing](#)

[L&I WAC 296-800 – Core Safety](#)

[American Welding Society Standards](#)

## **7.0 Attachments**

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[Hot-Work Permit](#)

[Pre-Task Plan](#)

[Demolition Permit](#)

[Confined Space Entry Permit](#)

# Wildfire Smoke & Outdoor Air Quality

## 1. Purpose

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- 1.1. Air quality can be negatively impacted by wildfires, SMOG, agricultural activities, and other atmospheric emissions. This Policy is intended to provide a guideline to monitor, evaluate and respond to changing conditions as a result of environmental impacts such as wildfires which may affect the Safety and Health of our employees.

## 2. Scope

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- 2.1. This section applies to workplaces where the current Air Quality Index (AQI) for PM2.5 is 151 or greater in California or 69 or greater in Washington, regardless of the AQI for other pollutants, **and where BNB** should reasonably anticipate that **our** employees may be exposed to atmospheric contaminants such as wildfire smoke, SMOG, agricultural activities and other contaminants.
- 2.2. **The following workplaces and operations are exempt:**
  - 2.2.1. Enclosed buildings or structures in which the air is filtered by a mechanical ventilation system and the employer ensures that windows, doors, bays, and other openings are kept closed to minimize contamination by outdoor or unfiltered air.
  - 2.2.2. Enclosed vehicles in which the air is filtered by a cabin air filter and the employer ensures that windows, doors, and other openings are kept closed to minimize contamination by outdoor or unfiltered air.
  - 2.2.3. BNB demonstrates that the concentration of PM2.5 in the air does not exceed a concentration that corresponds to a current AQI of 151 or greater by measuring PM2.5 levels at the jobsite location.
  - 2.2.4. Employees exposed to a current AQI for PM2.5 of 151 or greater for a total of one hour or less during a shift.

## 3. Responsibility

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### 3.1. Project Management & Supervision

- 3.1.1. BNB management and supervision will be responsible for relaying AQI information when it is at or exceeds 151 in California or 69 in Washington. Management and supervision are also responsible for ensuring that the monitoring of the current air quality index for PM 2.5 is less than 151 (CA) or 69 (WA). However, if the air quality is at or greater than 151, regardless of the AQI for other pollutants, voluntary respirator use of the N95 or equivalent APF 10 will be provided along with the Voluntary Respirator Use Form.

### 3.2. Workers

- 3.2.1. All employees working on a BNB project are highly encouraged to utilize available PPE provided while working during wildfire smoke and other air quality contaminant events and to inform BNB management of air quality hazards at the jobsite. This includes worsening of air quality and any adverse symptoms that may be the result from unhealthy or hazardous air quality such as asthma attacks, difficulty breathing, and chest pain. The “Voluntary Respirator Use Form” must be completed prior to donning any supplied respirator.

## 4. Definitions

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- 4.1. **Current Air Quality Index (Current AQI).** The method used by the U.S. Environmental Protection Agency (U.S. EPA) to report air quality on a real-time basis. Current AQI is also referred to as the “NowCast,” and represents data collected over time periods of varying length in order to reflect present conditions as accurately as possible.



**4.2. Washington Air Quality Advisory (WAQA)** The method used by the Washington State Department of Ecology to report air quality on a real-time basis. It represents data collected over time periods of varying length in order to reflect present conditions as accurately as possible.

**4.2.1.** The current AQI is divided into six categories as shown in the table below, adapted from Table 2 of Title 40 Code of Federal Regulations, Part 58, Appendix G.

| Air Quality Index (AQI) | Levels of Health Concern       |
|-------------------------|--------------------------------|
| Categories for PM2.5    |                                |
| 0 to 50                 | Good                           |
| 51 to 100               | Moderate                       |
| 101 to 150              | Unhealthy for Sensitive Groups |
| 151 to 200              | Unhealthy                      |
| 201 to 300              | Very Unhealthy                 |
| 301 to 500              | Hazardous                      |

**4.3. NIOSH.** The National Institute for Occupational Safety and Health of the U.S. Centers for Disease Control and Prevention. NIOSH tests and approves respirators for use in the workplace.

**4.4. PM2.5.** Solid particles and liquid droplets suspended in air, known as particulate matter, with an aerodynamic diameter of 2.5 micrometers or smaller.

**4.5. Wildfire Smoke.** Emissions from fires in “wildlands,” as defined in Title 8, section 3402, or in adjacent developed areas.

## 5. Procedure

### 5.1. Atmospheric Monitoring

**5.1.1.** BNB shall determine employee exposure to PM2.5 for jobsites covered by this section before each shift and periodically thereafter, as needed to protect the health of the employee, by any of the following methods:

#### 5.1.2. California or Other Regions Not Regulated by Local Authorities

5.1.2.1. Check AQI forecasts and the current AQI for PM2.5 from any of the following: [U.S. EPA AirNow website](#), U.S. Forest Service Wildland Air Quality Response Program website, California Air Resources Board website, local air pollution control district website, or local air quality management district website; or

5.1.2.2. Obtain AQI forecasts and the current AQI for PM2.5 directly from the EPA, California Air Resources Board, local air pollution control district, or local air quality management district by telephone, email, text, or other effective method.

#### 5.1.3. Washington

5.1.3.1. Check PM2.5 forecasts and the current PM2.5 from any of the following: Washington Air Quality Advisory website, Air Quality WA mobile app, Washington Smoke Information website, U.S. EPA AirNow website, EPA AirNow mobile app, U.S. Forest Service AirFire website, Local Clean Air Agency website; or

5.1.3.2. Obtain PM2.5 forecasts and the current PM2.5 directly from the Department of Ecology, Local Clean Air Agency, U.S. EPA, EPA EnviroFlash.info, or local clean air agency by telephone, email, text, or other effective method; or

5.1.3.3. Measure PM2.5 levels at the work location in accordance with Appendix A in WAC Chapter 296-62-085.



5.1.3.4. If an index such as WAQA or AQI are used, the employer must use following table to find the equivalent WAQA or AQI for PM2.5.

| NowCast PM <sub>2.5</sub> in Micrograms per Cubic Meter (µg/m <sup>3</sup> ) | NowCast Washington Air Quality Advisory (WAQA) | NowCast Air Quality Index (AQI) |
|--|--|---------------------------------|
| 20.5µg/m <sup>3</sup>  | 101  | 69                              |
| 55.5µg/m <sup>3</sup>  | 173  | 151                             |

**5.2. Communicating to employees**

5.2.1. BNB Safety Department will disseminate air quality information on a daily basis to effectively communicate the hazards of unhealthy or hazardous air quality to all affected employees. Employees are encouraged to inform BNB supervision of unhealthy or hazardous air quality at the jobsite. The communication shall include the following procedures:

5.2.1.1. Informing employees of the current AQI for PM2.5 prior to the start of work.

5.2.1.2. Provide protective measures to employees to reduce their unhealthy or hazardous air quality exposures.

5.2.1.3. Encouraging employees to inform their employer of worsening air quality; and any adverse symptoms that may be the result of unhealthy or hazardous air quality exposure such as asthma attacks, difficulty breathing, and chest pain.

**5.3. Engineering Controls**

5.3.1. BNB shall reduce employee exposure to PM2.5 to less than a current AQI of 151 by engineering controls whenever feasible, for instance by providing enclosed buildings, structures, or vehicles where the air is filtered. If engineering controls are not sufficient to reduce exposure to PM2.5 to less than a current AQI of 151, then the BNB shall reduce employee exposures as much as feasible. In Washington this will be considered and encouraged at AQI 69, and mandatory at 151.

**5.4. Administrative Controls**

5.4.1. Whenever engineering controls are not feasible or do not reduce employee exposures to PM2.5 to less than a current AQI of 151, BNB shall implement administrative controls, if practicable, such as relocating work to a location where the current AQI for PM2.5 is lower, changing work schedules, reducing work intensity, or providing additional rest periods. In Washington this will be considered and encouraged at AQI 69, and mandatory at 151.

**5.5. PPE**

5.5.1. When required by this policy a N95 respirator equivalent APF 10 or higher shall be provided for voluntary use. (See Voluntary Respirator Use Form)

**5.6. Training**

5.6.1. As required in our “Freedom from Danger”, BNB shall provide employees with effective training and instruction.

5.6.1.1. For California employees training requirements shall be in accordance with [CSO 5141.1 Appendix B](#)

5.6.1.2. For Washington employees training requirements shall be in aligned with the WAC 296-62-085 Appendix B

5.6.2. Training topics for all employees will include, at a minimum:

5.6.2.1. The health effects of wildfire smoke

5.6.2.2. The right to obtain medical treatment without fear of reprisal

5.6.2.3. How employees can obtain the current concentration of PM2.5 in the air

5.6.2.4. The requirements of WAC 296-62-085 wildfire smoke rule (for projects in Washington)

- 5.6.2.5. The employer's methods to protect employees from wildfire smoke
- 5.6.2.6. The importance, limitations, and benefits of using a respirator when exposed to wildfire smoke
- 5.6.2.7. How to properly put on, use, and maintain the respirators provided by the employer

**5.6.3.** Supervisor Training will be provided to all supervisors prior to supervising employees performing work that exposes the worker to PM 2.5 that exceed their respective region's threshold for implementing worker protections (AQI 151/69). Supervisors will be trained in the following topics:

- 5.6.3.1. The procedures the supervisor must follow to implement the applicable provisions of WAC 296-62-085 Wildfire Smoke or CSO 5141.1
- 5.6.3.2. The procedures the supervisor must follow if an employee exhibits adverse symptoms of wildfire smoke exposure, including appropriate emergency response procedures; and
- 5.6.3.3. Procedures for moving or transporting employees to an emergency medical service provider, if necessary. Local emergency facilities are located in each project's Site Specific Safety Plan and Crisis Management Plan.

### **5.7. Medical procedures in place for treatment of related symptoms**

**5.7.1.** If an employee has any of the following symptoms stated below that may be related to the exposure of unhealthy or hazardous air quality, they will need to report such symptoms to their immediate supervisor:

- 5.7.1.1. Irritation to the lungs
- 5.7.1.2. Persistent coughing
- 5.7.1.3. Phlegm, wheezing, or difficulty breathing

**5.7.2.** Upon notification of symptoms from an employee, the supervisor will monitor the employee to determine if medical attention is necessary. If medical attention is necessary, the supervisor will implement the BNB Crisis Management Plan reporting and response procedures and facilitate the appropriate medical attention. Employees will not be penalized for seeking medical attention.

### **5.8. Notifications and Responses**

**5.8.1.** Supervisors will report directly to the assigned BNB safety professional if they have an employee report symptoms related to wildfire smoke exposure.

## **6. References**

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- 6.1. CAL / OSHA Subchapter 7. General Industry Safety Orders
- 6.2. [Appendix B to Section 5141.1](#)
- 6.3. Group 16. Control of Hazardous Substances
- 6.4. Article 107. Dusts, Fumes, Mists, Vapors and Gases

## **7. Attachments**

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- 7.1. [BNB Respiratory Protection Program](#)
- 7.2. [Air Quality Guide for Particle Pollution](#)
- 7.3. [Voluntary Respirator Use Form](#)

# Working over Water

## 1.0 Purpose

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- 1.1. This policy provides guidelines and recommendations for construction work carried out on, adjacent to or over water where hazard to personnel exists.

## 2.0 Scope

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- 2.1. This policy applies to all BNB projects where personnel are potentially exposed to hazards while working over water.

## 3.0 Responsibility

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### 3.1 Project Management

- 3.1.1. BNB Project Management & Supervision are responsible for conducting a preconstruction risk assessment to identify work tasks that may be adjacent to or over water where hazards to personnel exists. Control measures must be identified and followed up with to ensure implementation in the field. It is the responsibility of BNB Project Management & Supervision to ensure that these conditions are satisfied to prevent unprotected working over water.
- 3.1.2. It is the responsibility of BNB Project Management & Supervision to ensure that personnel potentially exposed to working over water have and follow an adequate Site-Specific Working over Water Plan (WOW Plan). Submittals that must be received and reviewed by BNB Project Management & Supervision consist of:

#### 3.1.2.1. Site-Specific Working over Water Plan

- 3.1.2.1.1. Job/Activity Hazard Analysis (JHA)
- 3.1.2.1.2. Pre-Task Plan (PTP)
- 3.1.2.1.3. Competent Person
- 3.1.2.1.4. Responsibilities
- 3.1.2.1.5. Rescue equipment and procedures
- 3.1.2.1.6. Lifesaving equipment to be used
- 3.1.2.1.7. Fall protection measures
- 3.1.2.1.8. Proof of training on:
  - 3.1.2.1.8.1. The employer’s safety programs and procedures
  - 3.1.2.1.8.2. Fall awareness for working over water
  - 3.1.2.1.8.3. Equipment to be used (use, installation, maintenance, storage, etc.)
  - 3.1.2.1.8.4. Competent person
  - 3.1.2.1.8.5. OSHA 30
  - 3.1.2.1.8.6. CPR and First Aid
  - 3.1.2.1.8.7. Site-specific hazards
  - 3.1.2.1.8.8. Rescue equipment and procedures
  - 3.1.2.1.8.9. Lifesaving and personal protective equipment

- 3.1.2.2. Lastly, BNB Project Management & Supervision must “inspect what we expect” by monitoring field conditions to ensure that Working over Water Plans are adequate and appropriately followed.

### 3.2 Workers

- 3.2.1. Workers engaged in working over water are responsible for following their employer’s safety program, procedures, and WOW Plan. Foremen are responsible for ensuring JHAs and daily pre-task plans are conducted, understood, and followed by their crew members. Competent persons are responsible for ensuring that their WOW Plan is adequate, amended as needed, communicated, and followed by crew members.

## 4.0 Definitions

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- 4.1. **Barge** - An unpowered, flat bottom, shallow draft vessel including scows, car floats and lighters. For purposes of this section, the term does not include ship shaped or deep draft barges.
- 4.2. **Body harness** - Straps which may be secured about the employee in a manner that will distribute the fall arrest forces over at least the thighs, shoulders, chest and pelvis with means for attaching it to other components of a personal fall arrest system.
- 4.3. **Bulwark** – The side of a ship above the upper deck.
- 4.4. **Coamings** - A raised border around an opening in a deck, roof, or floor, designed to prevent water from running below.
- 4.5. **Competent Person** - Purposes of this part means a person who is capable of recognizing and evaluating employee exposure to hazardous substances or to other unsafe conditions and is capable of specifying the necessary protection and precautions to be taken to ensure the safety of employees as required by the particular regulation under the condition to which it applies.
- 4.6. **Gangway** - Any ramp-like or stair-like means of access provided to enable personnel to board or leave a vessel including accommodation ladders, gangplanks and brows.
- 4.7. **Gunwale** - The upper edge of the side or bulwark of a vessel.
- 4.8. **Jacob's ladders** - A hanging ladder having ropes or chains supporting wooden or metal rungs or steps.
- 4.9. **Lifeline** - A component consisting of a flexible line for connection to an anchorage at one end to hang vertically (vertical lifeline), or for connection to anchorages at both ends to stretch horizontally (horizontal lifeline), and which serves as a means for connecting other components of a personal fall arrest system to the anchorage.
- 4.10. **Lower levels** - Those areas or surfaces to which an employee can fall. Such areas or surfaces include but are not limited to ground levels, floors, ramps, tanks, materials, water, excavations, pits, vessels, structures, or portions thereof.
- 4.11. **Personal fall arrest system** - a system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, body belt or body harness and may include a lanyard, a deceleration device, a lifeline, or a suitable combination of these. As of January 1, 1998, the use of a body belt for fall arrest is prohibited.
- 4.12. **Positioning device system** - A body belt or body harness system rigged to allow an employee to be supported at an elevated vertical surface, such as a wall or window, and to be able to work with both hands free while leaning.
- 4.13. **Qualified person** - A person who by possession of a recognized degree or certificate of professional standing, or who, by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems related to the subject matter and work.
- 4.14. **Restraint (tether) line** - A line from an anchorage, or between anchorages, to which the employee is secured in such a way as to prevent the employee from walking or falling off an elevated work surface. Note: A restraint line is not necessarily designed to withstand forces resulting from a fall.
- 4.15. **Rope grab** - A deceleration device which travels on a lifeline and automatically, by friction, engages the lifeline and locks so as to arrest the fall of an employee. A rope grab usually employs the principle of inertial locking, cam/level locking or both.
- 4.16. **Skiff** - A flat-bottomed open boat of shallow draft, having a pointed bow and a square stern and propelled by oars, sail, or motor.
- 4.17. **Vessel** - Every description of watercraft or other artificial contrivance used, or capable of being used, as a means of transportation on water, including special purpose floating structures not primarily designed for or used as a means of transportation on water.

## 5.0 Procedure

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### 5.1 Protection against drowning

- 5.1.1. When work is being carried out in an exposed position where there is a foreseeable risk of falling into water and it is impracticable to provide guardrails at the edges over water, personnel must wear a lifejacket or use a buoyancy aid. Rescue equipment should be provided.
- 5.1.2. Guardrails and toeboards should be installed at edges where persons are liable to fall from height or into water. The guardrails should have adequate strength and should be securely fixed to a height between 39-45 inches above the ground or floor.
- 5.1.3. A minimum of two workers is required for operations when water is entered.

**5.1.4 Elevated Work Platforms**

- 5.1.4.1. The design, construction, and use of elevated work platforms should comply with Scaffolds. Every edge of an elevated work platform from which a person might fall into water should be guard railed.

**5.1.5 Mobile Equipment**

- 5.1.5.1. If equipment is used on a site near water, concrete barricades should be installed at the water's leading edges whenever practicable.
- 5.1.5.2. During earth filling work (e.g. reclamation work) in which installation of concrete barricades is impracticable, equipment should not get near the edge of a temporary earth slope. The distance between any wheel of the equipment and the edge of the slope should not be less than ten feet. The fill materials deposited by the equipment should be spread and compacted by crawler track-mounted equipment, such as a bulldozer.
- 5.1.5.3. When crawler track-mounted equipment works at the edge of a permanent slope, overhanging of any part of the crawler track should not be permitted.
- 5.1.5.4. When operating aerial work platforms near or over water, lift occupants are not required to tie off because in the event that an error occurred that resulted in the employees being in the water, being tied-off would exacerbate the drowning hazard.

**5.1.6 Concrete Barricades**

- 5.1.6.1. When concrete barricades are required, they should be substantially constructed to a height at least 42 inches above the working surface, at a distance of at least ten feet from the edge near water.

**5.1.7 Edges over water (i.e., leading edges, wall/floor openings, unprotected edges)**

- 5.1.7.1. Every edge over water where a person is liable to fall from height or into water, should be provided with guardrails and toeboards. Please reference Walking and Working Surfaces and Fall Protection for additional information.

**5.1.8 Safety Nets**

- 5.1.8.1. Provisions to eliminate the risk of falling should always be the first consideration. However, if this is not practicable, use of suitable and adequate safety nets, harnesses, and lanyards attached continuously to a suitable and secure anchorage should be considered.
- 5.1.8.2. A safety net should be installed as close as possible to the working level and in compliance with the level specified by the manufacturer. Manufacturer's recommended procedures must be followed for assembly and disassembly.

**5.1.9 Safe means of access and egress**

- 5.1.9.1. Every means of access and egress should be kept safe. Every edge from which a person might fall from height or into water should be provided with guardrails and toeboards. The means of access and egress should also be clear of any cargo lifting area and so located that no suspended load passes over it.
- 5.1.9.2. Every opening affecting safe use of the means of access and egress should either be fenced or be securely covered. If a means of access has been rendered unsafe for any reason, a controlled access zone must be established (i.e., physical barriers should be erected and warning notices prohibiting its use should be posted at every approach).
- 5.1.9.3. The means of access and egress and its immediate approaches should have non-slippery surfaces and should so far as is reasonably practicable be gritted. It should be kept free from

any slippery material, obstruction or hazard caused by projecting fixtures or fittings. If such fixtures or fittings cannot be removed immediately, it should be suitably fenced off, painted or marked to alert users of the access and egress.

- 5.1.9.4. The means of access and egress should be kept in position as long as it is required. It should be well lit and properly maintained. At least two satisfactory means of escape should be available for use in an emergency.

**5.1.10 Access to and from Vessels, Wharves, Floats, Barges, and/or Boats**

- 5.1.10.1. Ramps for access of vehicles to or between barges shall be of adequate strength, provided with side boards, well maintained, and properly secured.
- 5.1.10.2. Unless employees can step safely to or from the wharf, float, barge, or river towboat, either a ramp or a safe walkway shall be provided.
- 5.1.10.3. When dredge discharge pipelines are used as walkways, they shall be provided with a flat surface walkway at least 12 inches wide, anchored to the pipeline to prevent displacement. A railing providing at least a single rail or taut rope 42 to 45 inches high shall be provided along one side. When rope is used, it shall be at least as strong as 3/4-inch diameter Manila or at least 3/8-inch diameter wire rope, or equivalent.
- 5.1.10.4. Catwalks or platforms shall be at least 20 inches wide with railings provided at all locations over bodies of water more than 4 feet deep. Planks for such use at those locations subject to immersion shall be rough sawn and treated to resist rot. Railings shall be installed.
- 5.1.10.5. When the upper end of the means of access rests on or is flush with the top of the bulwark, substantial steps properly secured and equipped with at least one substantial hand rail not less than thirty-four (34) inches or more than thirty-eight (38) inches above the tread nosing shall be provided between the top of the bulwark and the deck.
- 5.1.10.6. Obstructions shall not be laid on or across the gangway, ramp, catwalk or other means of access. The means of access shall be adequately illuminated for its full length.
- 5.1.10.7. Jacob's ladders shall be of the double rung or flat tread type. They shall be well maintained and properly secured. A Jacob's ladder shall either hang without slack or be pulled up entirely.

**5.1.11 Working Surfaces of Barges**

- 5.1.11.1. Employees shall not be permitted to walk along the sides of barges with coamings more than 5 feet high unless there is a 3-foot clear walkway or a grab or a taut hand line is provided.
- 5.1.11.2. Decks and other working surfaces shall be maintained in a safe condition.
- 5.1.11.3. Employees shall not be permitted to pass fore and aft, or over, or around deck loads, nor shall employees be permitted to walk over deck loads from rail to coaming, unless there is a safe passage.
- 5.1.11.4. If it is necessary for an employee to stand at the outboard or inboard edge of the deck load where less than 36 inches of bulwark, rail, coaming, or other protection exists, the employee shall be provided with a suitable means of protection against falling from the deck load.

**5.1.12 Rescue Procedures**

- 5.1.12.1. A rescue team should be organized to deal with emergency situations, such as incidents. Every member of the team should be trained in rescue and emergency procedures. At least one of the members should be certified in CPR and First Aid.
- 5.1.12.2. First aid supplies, a stretcher, and a portable AED should be provided and kept readily accessible for emergency use.

**5.1.12.3. Notices in English and the predominant language should be posted in prominent positions, especially at edges near water, stating the following:**

- 5.1.12.3.1. the locations and types of the rescue and life-saving equipment;
- 5.1.12.3.2. the location of the room, if any, for treatment of injuries;
- 5.1.12.3.3. the names of members of the rescue team; and
- 5.1.12.3.4. the means of communication.

**5.1.13 Emergency procedure**

- 5.1.13.1. Emergency procedures should be identified in [BNB's Crisis Management Program](#) and the WOW plan.

**5.1.13.2. The procedures should be expressed clearly in writing and should at least include the following:**

- 5.1.13.2.1. sounding the alarm for emergency including calling the police by dialing '911';
- 5.1.13.2.2. activating the rescue team;
- 5.1.13.2.3. dealing with emergency situations;
- 5.1.13.2.4. providing and using emergency and first aid facilities;
- 5.1.13.2.5. stating routes for rescue operation if necessary; and
- 5.1.13.2.6. sending rescued persons to hospital for medical treatment due to immersion in water (possibly polluted) or injury.
- 5.1.13.2.7. BNB's Crisis Management Plan and the WOW plan's emergency procedures should be posted in prominent locations.
- 5.1.13.2.8. All personnel should be trained on the emergency procedures. Drills and practices should be held regularly so as to ensure that all personnel are familiar with the emergency procedures.
- 5.1.13.2.9. The emergency procedures should be updated regularly so as to suit the progress of construction work. Drills and practices held can also help to identify the areas of weakness for improvement.

**5.1.14 Rescue equipment**

- 5.1.14.1. The following safety devices shall be provided for and used by employees at those locations where the danger of drowning exists. EXCEPTION: Where employees are 100% protected by railings, nets, personal fall arrest, etc.
- 5.1.14.2. Employees shall be required to wear U. S. Coast Guard approved personal flotation devices that are marked or labeled Type I PFD, Type II PFD, or Type III PFD, or a U.S. Coast Guard approved Type V PFD that is marked or labeled for use as a work vest for commercial use or for use on vessels.
- 5.1.14.3. U. S. Coast Guard approved 30-inch ring buoys with at least 150 feet of 600-pound capacity line shall be readily available for emergency rescue operations. Distance between ring buoys shall not exceed 200 feet.
- 5.1.14.4. One or more lifesaving boats, either manually or power-operated, shall be provided and readily accessible at all times. Lifesaving boats shall be properly maintained, ready for emergency use and equipped with oars and oarlocks attached to the gunwales, boathook, anchor, ring buoy with 50 feet of 600-pound capacity line and two life preservers. Oars are not required on boats that are powered by an inboard motor.
- 5.1.14.5. Where, because of swift current, lifeboats cannot be used, a line shall be stretched across the stream with tag lines or floating planks trailing in the water at intervals not to exceed 6 feet. If this is impracticable, some other arrangement for providing effective lifelines near the water surface shall be provided.



- 5.1.14.6. The employer shall ensure that there is in the vicinity of each barge in use at least one portable or fixed ladder which will reach from the top of the apron to the surface of the water. If the above equipment is not available at the pier, the employer shall furnish it during the time that the barge is in use.
- 5.1.14.7. All items of rescue equipment provided should be checked daily so as to ensure that they are in their proper locations and in good serviceable condition. All personnel should be informed of the functions and limitations of each item of equipment and be trained on how to use it properly.
- 5.1.14.8. Buoyant lifelines should be fiber ropes made of polypropylene with nominal diameter not less than 5/16” (8mm).
- 5.1.14.9. Grab lines should be provided where practicable, for the purpose of giving a person in water something to grab onto in emergency. The grab line provided should be of buoyant type and of sufficient length to accommodate high and low tides. A marker float at the free end of the grab line should be provided and trailing ends of undue length should be avoided so as to prevent the boats nearby from coming in contact with the grab line.
- 5.1.14.10. Lifebuoys, each fitted with a buoyant lifeline should be set at suitable locations but not exceeding 165 feet (50m) intervals along the edges over water where work is being carried out. Each buoyant lifeline should be knotted at every 10 feet (3m) to assist handhold and have a length of about 100 feet (30m).
- 5.1.14.11. The lifebuoys should be constructed of either cork with canvas covering, or of polyurethane foam with a rigid PVC cover. It is normally of 30 inches (760mm) outside diameter and 18 inches (455mm) inside diameter. For night work, a self-activating light should be fitted to it.
- 5.1.14.12. Rescue lines should be provided where practicable. Each rescue line should at least consist of a buoyant lifeline and a floatation device. Throwing the device out to a person in water can allow the person to grab the lifeline and he/she can be hauled to safety.
- 5.1.14.13. To achieve the best result, a lifebuoy or rescue line should be thrown as near as possible to a person in the water. If a tide is running, it should be thrown on the upstream side.
- 5.1.14.14. At least one rescue boat should be provided and kept ready for immediate use whenever personnel are employed to work over or adjacent to turbulent or tidal water where rescue of them would have to be carried out by boat. The rescue boat may be a rigid or an inflatable vessel. It should be properly maintained so that it is operational at any time and in good condition.
- 5.1.14.15. The rescue boat should be power-driven with a fixed self-starting engine. Effective two-way radio communication should be set up between the rescue boat and the management on the shore. If night work is to be carried out, a powerful swivel-mounted spotlight should be installed on the rescue boat so that any person fallen into water can be spotted easily.
- 5.1.14.16. The rescue boat should be fitted with grab lines and provided with at least one lifebuoy fitted with a minimum 50 feet (15m) long buoyant lifeline. For a large rescue boat, it should also be provided with an overside boarding ladder or equivalent means to help rescue any unconscious person from the water.
- 5.1.14.17. The rescue boat should be marked clearly to show its intended use and it should not be permitted to use as a working vessel or an ordinary means of transport. First aid equipment including a bulb syringe for clearing a person's airway and blankets for covering the rescued person should be provided. The first aid equipment should be suitably protected from getting wet.
- 5.1.14.18. The rescue boat should be manned by competent boatmen who should be trained in rescue and emergency procedures and should have completed a course in CPR/first aid. The boatmen should be competent in swimming, and they should be at least equipped with buoyancy aids while they are patrolling on board. So far as is reasonably practicable, there should be at least two boatmen on a rescue boat so that one is always free to rescue the person in water.



**5.2 Hazards**

**5.2.1. The following is a list of construction scopes where water may be a potential hazard:**

- 5.2.1.1. Bridge building
- 5.2.1.2. Marine works (i.e., wharfs, barges, decks, etc.)
- 5.2.1.3. Machinery or pipework installations over water
- 5.2.1.4. Dams, dykes, retaining walls, etc.

**5.2.2. "Water" does not have to be just seawater, either. It can include any work on, over, or adjacent to:**

- 5.2.2.1. Rivers or streams
- 5.2.2.2. Lakes or lagoons
- 5.2.2.3. Water storage areas
- 5.2.2.4. Sewage processing plants and pipelines
- 5.2.2.5. Sediment ponds
- 5.2.2.6. Etc.

5.2.3. The one major hazard involved in any of these examples is the possibility of a fall into the water, and drowning. Work on wastewater systems or locations (i.e., sewage plants, outlets, etc.) also presents health hazards which must be recognized.

5.2.3.1. Work over stagnant water, sewage ponds, or in fact any contaminated water, presents special hazards. Should it be necessary, personnel will be inoculated against the several diseases which can be prevalent in these conditions, before starting on the job. ANY injury where the skin is broken, no matter how slight, MUST be treated with disinfectant immediately. Water quality even in rivers cannot be guaranteed.

5.2.3.2. Hazards also exist in the use of machinery on barges, wharfs, decks, etc. where stability becomes a major issue. A barge (unless it is a jack-up type) makes an unstable base, especially when operating machinery. Be careful of loading, and watch weight distribution. In these conditions, personnel MUST be aware of the hazards created with water swell.

5.2.3.3. Working on any site will usually involve wearing a tool belt and often heavy clothing, all of which will weigh a person down and make getting back to the surface very difficult.

5.2.3.4. Several areas along the coast have large tidal rises and falls. This can mean a carefully planned work sequence is needed to ensure that nobody gets trapped by a rising tide. [NOAA \(National Oceanic and Atmospheric Administration\)](#), local newspapers, etc. have detailed tide tables.

5.2.3.5. Especially at rivers and earth-bank canals, erosion can create hazards by undercutting and washing away the banks. What may have been a safe working area one day, could be hazardous after overnight rain.

5.2.3.6. Heavy rain in the catchment/basin area of a river can lead to river levels rising suddenly, and the water flow speeding up dramatically. This can apply quite some distance from the rain area, and with little warning.

5.2.3.7. (This can also affect falsework, scaffolding and temporary structures!)

5.2.3.8. Working alongside or over sea water can expose personnel and their equipment to the effects of salt spray. This can have a serious effect on skin and clothing, metal tools, and especially electrical equipment. Skin care is essential, as is clean and dry clothing and footwear.

5.2.3.9. Tools and metal items will need regular cleaning, and protection with a spray such as WD40 or similar lubricant. Salt can severely corrode and rust metals.

- 5.2.3.10. Tidal surges and boat wakes can create trapping hazards when working on barges or working platforms alongside piles, wharves, fixed access ladders, etc.
  - 5.2.3.11. Any work where water and electricity have the potential to mix, require careful planning and operation.
  - 5.2.3.12. The power supply to the job will have been determined to provide the safest possible conditions, and personnel **MUST** use any protective systems provided such as ground fault circuit interrupter, etc. Pay special attention to cord insulation and wrap cord connections with a waterproofing medium.
  - 5.2.3.13. Use a tether device with power tools to stop them from falling into the water if they are dropped. **NEVER** use a power tool near any breaking waves.
  - 5.2.3.14. Personnel must be aware that working over water can make footing slippery and hazardous. Be prepared for these conditions and ensure that personnel are always using the necessary safety equipment.
- 5.2.4. Potentially hazardous or unfavorable site conditions which will likely affect the safety of the workplace should be considered in the planning and design of the construction project.

**5.2.4.1. These may include the following:**

- 5.2.4.1.1. sites with strong tides, winds or waves;
  - 5.2.4.1.2. sites which are too remote from the city center or hospitals;
  - 5.2.4.1.3. sites which have restricted space for maneuvering, such as those for temporary storage;
  - 5.2.4.1.4. the activities of other contractors including sub-contractors within the sites;
  - 5.2.4.1.5. adjacent maritime activities; and
  - 5.2.4.1.6. emission of noise, toxic gases, harmful chemicals or dust from processes on or around the sites.
- 5.2.5. Weather conditions that could have an adverse effect on the work over water include rain, high wind or typhoon, and those causing poor visibility, such as fog, marine layer, mist or glare.

### **5.3 Personal Protective Equipment**

- 5.3.1. Life vests are required when personnel are within six feet of the water's edge except when 100% fall protection is in place (i.e., guardrails, personal fall arrest systems, etc.) or when personnel are inside of equipment/machinery.
- 5.3.2. Footwear with non-slippery soles should be worn while at work near water.
- 5.3.3. Employees working over or near water, where the danger of drowning exists, shall be provided with U.S. Coast Guard-approved life jacket or buoyant work vests. Prior to and after each use, the buoyant work vests or life preservers shall be inspected for defects which would alter their strength or buoyancy. Defective units shall not be used.
- 5.3.4. Personnel who have a foreseeable risk of falling into water should wear a lifejacket. Buoyancy aids are considerably inferior in performance to lifejackets. Use of a buoyancy aid will only be appropriate if the wearer is a proficient swimmer working close to the shore and he/she will unlikely be incapacitated by the environment. Instructions on the suitability of the equipment for specific situations should be sought from the manufacturers.
- 5.3.5. A lifejacket or buoyancy aid should fit the wearer and should allow the wearer freedom in action and movement. It should not unduly restrict his/her vision, hearing or breathing, nor contain any component causing injury to the wearer in normal use.
- 5.3.6. The lifejacket or buoyancy aid should have distinctive and easily visible color. Retro-reflective material should also be affixed on its surface which is normally above the water when it is in use. Its protective cover should be made of robust material which is resistant to abrasion, puncture and molten metal splash.

- 5.3.7. The lifejacket or buoyancy aid should preferably be provided with a whistle (for day work) and/or a self-activating light (for night work) which can aid in locating the wearer to facilitate rescuing.
- 5.3.8. The lifejacket or buoyancy aid should be properly maintained in a good serviceable condition. Prior to and after each use, it should be checked by the user for defect which might alter its strength or buoyancy. Any defect observed should be reported to the appropriate supervisor. Defective units should not be used.

#### 5.4 Training

- 5.4.1. All employees who are placed in a work situation where there is potential exposure to working over water must be trained on the PTP / JHA related to the work. Employees must have also gone through the [Site-Specific Orientation](#).

#### 6.0 References

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[FED/OSHA 29 CFR 1926.106 Subpart E – Personal Protective and Life Saving Equipment](#)

[CAL/OSHA T8 CCR Subchapter 4 Article 13 – Work over or near Water](#)

[L&I WAC 296-155-200 through 296-155-240 – Personal Protective and Life Saving Equipment](#)

#### 7.0 Attachments

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[JHA](#)

[Pre-Task Plan](#)

[Fall Protection Work Plan](#)

# Attachments



**HIGH-LIFT POLICY**

|               |           |
|---------------|-----------|
| Code #        | Oper-19A  |
| Rev.          | 0         |
| Date          | June-2018 |
| Original Date | June-2018 |

**Aerial Work Platform (Scissor Lift/Boom Lift) Inspection**


Company Name \_\_\_\_\_  
 Type of Lift \_\_\_\_\_

Contact Number \_\_\_\_\_  
 Model or Equip Number \_\_\_\_\_

| DATE   |  | MON | TUE | WED | THU | FRI | SAT | SUN |
|--|--|-----|-----|-----|-----|-----|-----|-----|
| <i>Initials of person performing inspection</i>                              |  |     |     |     |     |     |     |     |
| Has the operator been instructed in the safe operation of this type of lift? |  | Y/N | Y/N | Y/N | Y/N | Y/N | Y/N | Y/N |
| Inspection Item & Description  |  | P/F | P/F | P/F | P/F | P/F | P/F | P/F |
| <b>Pass Fail Status</b>  |  |     |     |     |     |     |     |     |
| 1  | Operating and emergency controls are in proper working condition - EMO button or Emergency Stop Device.                                |     |     |     |     |     |     |     |
| 2  | Upper drive control interlock mechanism is functional (i.e., foot pedal, spring lock, or two hand controls).                           |     |     |     |     |     |     |     |
| 3  | Emergency lowering function operates properly.   |     |     |     |     |     |     |     |
| 4  | Lower operating controls successfully over-ride the upper controls.  |     |     |     |     |     |     |     |
| 5  | Both upper and lower controls are adequately protected from inadvertent operation.   |     |     |     |     |     |     |     |
| 6  | Control panel is clean & all buttons/switches are clearly visible (no fire proofing, paint over spray, etc.)                           |     |     |     |     |     |     |     |
| 7  | All switch & mechanical guards are in good condition and properly installed.   |     |     |     |     |     |     |     |
| 8  | All Safety Indicator lights work.  |     |     |     |     |     |     |     |
| 9  | Drive controls function properly & accurately labeled (up, down, right, left, forward, back).  |     |     |     |     |     |     |     |
| 10   | Motion alarms are functional.  |     |     |     |     |     |     |     |
| 11   | Safety decals are in place and readable.   |     |     |     |     |     |     |     |
| 12   | All guardrails are sound and in place, including basket chains.  |     |     |     |     |     |     |     |
| 13   | Work platform & extension slides are clean, dry, & clear of debris.  |     |     |     |     |     |     |     |
| 14   | Work platform extension slides in and out freely with safety locking pins in place to lock setting on models with extension platforms. |     |     |     |     |     |     |     |
| 15   | Inspect for defects such as cracked welds, fuel leaks, hydraulic leaks, damaged control cables or wire harness, etc.                   |     |     |     |     |     |     |     |
| 16   | Tires and wheels are in good condition, with adequate air pressure if pneumatic.   |     |     |     |     |     |     |     |
| 17   | Braking devices are operating properly.  |     |     |     |     |     |     |     |
| 18   | The manufacturer's operations manual is stored on unit.  |     |     |     |     |     |     |     |


**Workplace Assessment**

|   |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|---|
| Survey work area for potential hazardous operating conditions prior to use of lift. Ensure all the hazards identified are addressed in pre task planning with sufficient strategies to mitigate the hazards and or risks. | <b>Are Conditions Present <input checked="" type="checkbox"/></b> |   |   |   |   |   |   |
| Floor conditions: Drop offs, holes, uneven surfaces, sloped floors, etc.  | O   | O | O | O | O | O | O |
| Housekeeping: debris, floor obstructions, cords, construction material/supplies, etc.   | O   | O | O | O | O | O | O |
| Hazardous Energy: Electrical power cables or panels, chemical lines, gas lines, drain lines, utilities, etc.  | O   | O | O | O | O | O | O |
| Overhead obstructions: tight working conditions, adjacent structures, pipe racks, ceiling grids, etc.   | O   | O | O | O | O | O | O |

|   |   |                     |               |
|---|---|---------------------|---------------|
|  | <b>Alternative Methods Documentation Form</b> | <b>Cod: Oper-9C</b> |               |
|   |   | <b>Rev.0</b>        | <b>Dec-18</b> |

Use with Chapter 296-809 WAC, Confined Spaces

|  |   |           |
|--|---|-----------|
| <b>Location of the Space</b>   |   |           |
| <b>Entry Date:</b>   | <b>Entry Duration:</b>  |           |
| <b>List of Entrants</b>  |   |           |
|  |   |           |
|  |   |           |
|  |   |           |
| <b>List of Physical Hazards in the space</b>   | <b>List of (Potential or Actual) Atmospheric Hazards in the space</b> |           |
|  |   |           |
|  |   |           |
| <b>List each action taken to eliminate physical and atmospheric hazards in the space</b>     |   |           |
| <b>Action:</b>   | <b>Description:</b>   |           |
|  |   |           |
|  |   |           |
|  |   |           |
| <b>Ventilation</b>   |   |           |
| Is forced air ventilation required?  | <b>YES</b>  | <b>NO</b> |
| If "Yes", specify the type of ventilation (I.E. Local exhaust). Are multiple units required? | Amount of ventilation (CFM or AC/Hr)                                  |           |
|  |   |           |
| <b>Air Monitoring</b>  |   |           |

|   |   |  |              |        |
|---|---|--|--------------|--------|
|  | <b>Alternative Methods Documentation Form</b> |  | Cod: Oper-9C |        |
|   |   |  | Rev.0        | Dec-18 |

| Substance Monitored: | Unit: | Permissible Levels: | Monitoring Results: |                            |
|----------------------|-------|---------------------|---------------------|----------------------------|
|                      |       |                     | Initial Test:       | Peak Reading During Entry: |
|                      |       |                     |                     |                            |
|                      |       |                     |                     |                            |

**Instruments used for Air Monitoring**

| Model Number or Type | Calibration Date: | Calibration Check Date: |
|----------------------|-------------------|-------------------------|
|                      |                   |                         |

Additional Notes about the space and entry (including whether evacuation was necessary)

|  |
|--|
|  |
|--|

|  |
|--|
|  |
|--|

**Person Responsible for Ensuring the Space is Safe to Enter:**

|       |            |
|-------|------------|
| Name: | Job Title: |
|-------|------------|

|            |
|------------|
| Signature: |
|------------|

## BNBuilders

### ASSURED GROUNDING POLICY

Project: \_\_\_\_\_

Electrical sub responsible: \_\_\_\_\_

Competent Person: \_\_\_\_\_

The person above shall be designated as the competent person, pursuant to WAC 296-155-447. This person shall be capable of identifying hazards relating to grounding and shall have the authority to see that any corrections are made. The procedure described is suitable for compliance with the requirements of WAC 296-155-447. It is BNB's to establish and implement an Assured Grounding Conductor Program to test for continuous circuitry on:

- (a) Cord sets and receptacles **NOT** a part of the permanent wiring of buildings or structures.
- (b) All electrical equipment and tools used in processes of construction or alterations.

#### POLICY

Ground Fault Circuit Interrupters (GFCI) are required by the codes for all 120 volt, single phase, 15-20 ampere receptacle outlets which are not a part of the permanent wiring of a building on a construction project. As an alternative to the Ground Fault Circuit Interrupter requirement, it will be the policy of the BNBuilders to instruct employees **NOT** to use any equipment that does not meet the requirements of the Assured Grounding Program.

#### PROCEDURE

All equipment to be used shall be tested, identified and coded using the following procedures, with the exception of the "double insulated" system, which need not be tested.

#### TESTING

- All equipment shall be tested before first use for grounding and continuity of the circuitry.
- Equipment returned to service following repairs shall be tested for continuity before being used.
- Tests shall be done quarterly, at intervals not exceeding one every three months.
- Tested equipment shall be identified by use of color-coding. Two (2) colors shall be used. First color to identify the quarter and the second to identify the month within the quarter.
- Equipment shall be visually inspected before use each day for external defects, including deformed or missing pins, insulation damage and indication of possible internal damage. Equipment shall not be used until repaired, retested and recorded.

#### RECORDING

The tests shall be recorded on the safety inspections scheduled and retained at the jobsite!

EMPLOYER CP \_\_\_\_\_

- 1<sup>st</sup> Quarter – White - White/Yellow /Blue
- 2<sup>nd</sup> Quarter – Green - Green/Yellow /Blue
- 3<sup>rd</sup> Quarter – Red - Red/Yellow/Blue
- 4<sup>th</sup> Quarter – Orange - Orange/Yellow/Blue



## ASSURED GROUNDING COLOR CODING SCHEME

| Month/ Quarter | Quarterly | Monthly |
|----------------|-----------|---------|
| JANUARY        | WHITE     | WHITE   |
| FEBRUARY       |           | YELLOW  |
| MARCH          |           | BLUE    |
| APRIL          | GREEN     | GREEN   |
| MAY            |           | YELLOW  |
| JUNE           |           | BLUE    |
| JULY           | RED       | RED     |
| AUGUST         |           | YELLOW  |
| SEPTEMBER      |           | BLUE    |
| OCTOBER        | ORANGE    | ORANGE  |
| NOVEMBER       |           | YELLOW  |
| DECEMBER       |           | BLUE    |

## **Assured Grounding Program**

**Policy:**

*Ground Fault Circuit Interrupters (GFCI)* are required by the captioned codes for all 120 volt, single phase, 15-20 ampere receptacle outlets which are not a part of the permanent wiring of a building or structure of/ or on a construction project. As an alternative to the Ground Fault Circuit Interrupter requirement, it will be the policy of the undersigned to instruct employees **not** to use any equipment that does not meet the requirements of the Assured Grounding Program.

**Procedure:**

All equipment to be used on the construction site shall be tested, identified and coded using the following procedures, with the exception of the "double insulated" system, which need not be tested.

**Testing:**

- All Equipment shall be tested before first use for grounding and continuity of the circuitry.
- Equipment returned to service following repairs shall be tested for the continuity before being used.
- Tests shall be done quarterly, at intervals not exceeding one every three months.
- Tested equipment shall be identified by way of color-coding. Two (2) colors shall be used. First color to identify the quarter and the second to identify the month within the quarter.
- Equipment shall be visually inspected before use each day for external defects, including deformed or missing pins, insulation damage and indication of possible internal damage. Equipment shall not be used until repaired, re-tested and results recorded.

**All tests shall be recorded and attached to the site-specific schedule and retained at the job site.**

**BNBuilders**

**ASSURED EQUIPMENT GROUNDING CONDUCTOR PROGRAM  
TRACKING FORM**

COMPANY NAME: \_\_\_\_\_

COMPETENT PERSON: \_\_\_\_\_

JOB NAME OR NUMBER \_\_\_\_\_

| LOCATION | DATE TESTED | ACTION, IF ANY | REASON-<br>A-B-C-D | TESTED BY<br>CP |
|----------|-------------|----------------|--------------------|-----------------|
|          |             |                |                    |                 |
|          |             |                |                    |                 |
|          |             |                |                    |                 |
|          |             |                |                    |                 |
|          |             |                |                    |                 |
|          |             |                |                    |                 |
|          |             |                |                    |                 |
|          |             |                |                    |                 |
|          |             |                |                    |                 |
|          |             |                |                    |                 |
|          |             |                |                    |                 |

- \*REASON FOR TEST:
- A. BEFORE FIRST USE.
  - B. BEFORE EQUIPMENT IS RETURNED TO SERVICE FOLLOWING ANY REPAIRS
  - C. MONTHLY INSPECTION OR AFTER INCIDENT
  - D. QUARTERLY TESTING/INSPECTION

COMPANY AUTHORIZED SIGNATURE:



### CONFINED SPACE ENTRY PERMIT

Cod: Oper-9B

Rev.1

Dec-18

|         |         |      |
|---------|---------|------|
| Company | Project | Date |
|---------|---------|------|

|                            |      |
|----------------------------|------|
| Location of Confined Space | Time |
|----------------------------|------|

|                       |           |
|-----------------------|-----------|
| Entry Supervisor Name | Signature |
|-----------------------|-----------|

|                            |
|----------------------------|
| Entry Attendant(s) Name(s) |
|----------------------------|

|                               |
|-------------------------------|
| Authorized Entrant(s) Name(s) |
|-------------------------------|

If 'NO' to all questions in Step 1 (below), this space may be entered using the Alternate Entry Procedures (Sign below)

|      |           |
|------|-----------|
| Name | Signature |
|------|-----------|

**STEP 1 - IDENTIFY HAZARDS**

| HAZARD   | YES | NO | HAZARD                  | YES | NO |
|--|-----|----|-------------------------|-----|----|
| Hazardous Atmosphere (including the potential)   |     |    | Pre-Opening Hazards     |     |    |
| Sloping or converging walls or floors  |     |    | Flammables / Fire       |     |    |
| Engulfment / Entrapment  |     |    | Toxic Gases / Corrosive |     |    |
| Any other serious safety hazard  |     |    | Hazardous Energy        |     |    |
| Type of serious hazard   |     |    | Conditions Outside      |     |    |
| If 'YES' to any question in section A (above) the space must be classified as PERMIT REQUIRED. Other serious safety hazards are those in which an injunt of serious nature is reasonably likely to occur if specific controls are not applied. |     |    | Falls/ Falling Objects  |     |    |
|  |     |    | Lighting / Noise        |     |    |
|  |     |    | Biological Hazards      |     |    |
|  |     |    | Other                   |     |    |

**STEP 2 - IDENTIFY CONTROLS**

| PRE-ENTRY AIR TESTING    |            |         | PROCEDURE                    | DONE | PROCEDURE                     | DONE |
|--------------------------|------------|---------|------------------------------|------|-------------------------------|------|
| GAS                      | ACCEPTABLE | READING | Pre-Entry Checklist          |      | Lighting / Hearing protection |      |
| Oxygen                   | 19.5-23.5% |         | Oxygen Pre-Entry Reading     |      | Thermal Protection            |      |
| LEL                      | <10%       |         | Chemical Cleanout Electrical |      | Hydraulic Protection          |      |
| Toxics                   | <PEL / TLV |         | Ventilation Purge Time       |      | Radiation Protection          |      |
| Other                    |            |         | Lock out/ Tag out            |      | Traffic Control / Barricading |      |
| Date of last calibration |            |         | Mechanical isolation         |      | Pneumatic Isolation           |      |
| Test Instrument and #    |            |         | Fall Protection              |      | Hot Work                      |      |

**STEP 3 - IDENTIFY REQUIRED EQUIPMENT**

| EQUIPMENT                        | REQUIRED | EQUIPMENT           | REQUIRED |
|----------------------------------|----------|---------------------|----------|
| Ventilator                       |          | PPE                 |          |
| Respirator                       |          | Body Protection     |          |
| Atmospheric Monitor              |          | Hearing protection  |          |
| Blocking device                  |          | Spark-proof tools   |          |
| Harness                          |          | Ladder/ Safe access |          |
| Tripod - Emergency Escape        |          | Fire Extinguisher   |          |
| Ground Fault Provided            |          | Lighting            |          |
| Intrinsically safe radio / phone |          | Other               |          |

**STEP 4 - VERIFY ACCEPTABLE ENTRY CONDITIONS ARE IN PLACE**

| ACTION                                   | DONE | EQUIPMENT  | DONE |
|--|------|--|------|
| Review Permit with Attendant and Entrant |      | All Safety Equipment Available                       |      |
| Entry Permit Posted at Portal            |      | MSDSs Reviewed                                       |      |
| Preparation / Isolation Procedures Done  |      | Pre-Opening Hazards Eliminated                       |      |
| Traffic Control / Barricading Done       |      | Employees Task Trained                               |      |
| Attendant/Entrant Communication Tested   |      | Atmospheric Tests Satisfactory                       |      |
| Emergency Services                       |      | Surrounding Areas Free From Vapors and Other Hazards |      |

**STEP 5 - PERFORM CONTINUOUS MONITORING OF ENTRY**

| GAS    | ACCEPTABLE | TIME | READING | TIME | READING | TIME | READING |
|--------|------------|------|---------|------|---------|------|---------|
| Oxygen | 19.5-23.5% |      |         |      |         |      |         |
| LEL    | <10%       |      |         |      |         |      |         |
| Toxics | <PEL/ TLV  |      |         |      |         |      |         |
| Other  |            |      |         |      |         |      |         |

LEL = Lower Explosive Limit / PEL = Permissible Exposure Limit / TLV = Threshold Limit Value

**STEP 6 - CLOSE OUT PERMIT WHEN ENTRY IS COMPLETE**

Post Entry Cancellation of Permit by Confined Space Entry Supervisor \_\_\_\_\_

## CORE DRILLING/SAW CUTTING CHECKLIST

**AUTHORIZATION VALID FOR \_\_\_\_\_ ON \_\_\_\_/\_\_\_\_/\_\_\_\_ ONLY.**

**IDENTIFY LIVE UTILITY/PT CABLES \_\_\_\_\_**

This core drilling/saw cutting checklist is required to be completed prior to conducting any core drilling or saw cutting operation(s). Identify utilities in the area (Electrical, Sprinkler Supply, Gas, Water Supply, Sanitary/Storm Sewer, Process Pipe (Etc.). Applicable Job Hazard Analysis (JHA) and/or Pre-Task Plan, must be completed and attached to this document.

Project: \_\_\_\_\_

Locate/Scanner Receipt/Ticket # \_\_\_\_\_ Date Scanned: \_\_\_\_/\_\_\_\_/\_\_\_\_

- Has the core or saw cutting location been reviewed and approved by the structural engineer or architect?
- If available, have As-Builts and other drawings been reviewed to determine utility/drop beam/P.T. cable locations?
- Has imaging been done by 3<sup>rd</sup> party to locate P.T. cables and other utilities (in house scanning only is NOT allowed)? (GPR/X-ray/Other)
- Did BNB supervisor accompany scanner during scanning process?
- Does imaging need to be conducted from the underside of slab? If so, did markings get transferred to the top side?
- Is penetration laid out the correct distance away from PT cable? (at least 3-inches away)
- Is penetration the correct distance away from rebar? (1-inch away, or approval from engineer to cut rebar)
- Is penetration the correct distance away from electrical conduit? (at least 3-inches away)
- Penetrations in slab greater than 3/4-inch have been scanned by 3<sup>rd</sup> party (This includes roto-hammering for anchors)
- If there is electrical in the slab, has it been de-energized by the electrician, locked and tagged out?
- Have you checked to see if there are other utilities on the underside of the slab you need to protect?
- Is there a JHA and/or Pre-Task plan for scope of work?
- Use pilot hole or exit point tool prior to coring.
- Is there a plan in place to catch the core drill or saw cut?
- Delineation with spotter below core drill/saw cut in place?
- Does the spotter and core driller/saw cutter have radio contact?
- Does the core driller or saw cutter have proper silica dust control in place per OSHA's Table 1?
- Are adequate noise control methods prepared?
- Is the tool operator trained/certified/competent?
- Are edges or openings protected by curbs or stop-logs to prevent equipment from running over the edges?
- Has a BNB supervisor walked, reviewed, and approved the core/saw cut location? (Core has been marked green with BNB supervisor's initials next to it)

Activity Start Time: \_\_\_\_\_ Schedule Completion Time: \_\_\_\_\_

Contractor Competent Person Assigned to Task (print name): \_\_\_\_\_

BNBuilders site supervisor has reviewed work plan (BNB Signature): \_\_\_\_\_

BNBuilders PM or Foreman has reviewed (Signature): \_\_\_\_\_

Electrical Supervisor has performed lockout tagout if necessary: \_\_\_\_\_

Date Reviewed: \_\_\_\_/\_\_\_\_/\_\_\_\_ Reviewed with whom at BNB?: \_\_\_\_\_



# CORE DRILLING/SAW CUTTING CHECKLIST

Contractor Signature: \_\_\_\_\_

Date: \_\_\_\_\_

I have reviewed this Core Drilling/Saw Cutting Checklist and understand that I am required to carry out the above-described work in accordance with this document, including the attached Job Hazard Analysis (JHA), and Pre-Task Plan.

|                     |                    |                  |
|---------------------|--------------------|------------------|
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |
| _____<br>Print Name | _____<br>Signature | _____<br>Company |

If there is **ANY conflict** with the core or saw cut, **STOP**, and bring it to BNB’s attention. This core or saw cut location should be reviewed with the engineer and architect before continuing. Options that may need to be discussed include but are not limited to; moving the core location, re-routing the system a different way, or surface mounting that particular system. All crews involved in the coring and saw cutting process shall review this document before they start their operations.



## Crane Pick Plan

Description of Load \_\_\_\_\_  
Project Name \_\_\_\_\_  
Project Address \_\_\_\_\_  
Date of Pick \_\_\_\_\_  
Crane Provider \_\_\_\_\_

Owner \_\_\_\_\_  
Owner's Representative \_\_\_\_\_

BNB Superintendent (Site Supervisor) \_\_\_\_\_  
BNB Project Manager \_\_\_\_\_

Contractor Responsible \_\_\_\_\_  
Contractor Superintendent \_\_\_\_\_  
Contractor Project Manager \_\_\_\_\_

Lift Director \_\_\_\_\_  
A/D Director (Mobile Crane) \_\_\_\_\_  
A/D Director (Tower Crane) \_\_\_\_\_

### Narrative

Complete a detailed description of the pick plan.

# Pick Permit

| Pick Plan Weights              |       |           |                            |
|--------------------------------|-------|-----------|----------------------------|
| Load                           | _____ | lbs       |                            |
| Block                          | _____ | lbs       | Wire Rope _____ lbs        |
| Ball                           | _____ | lbs       | Rigging _____ 0 lbs        |
| Spreader Bar                   | _____ | lbs       | Deduction of Jib _____ lbs |
|                                |       |           | <b>Total Load</b> 0 lbs    |
| Has load weight been verified? |       | Yes _____ | No _____                   |
| How? _____                     |       |           |                            |
| Is this a tandem pick?         |       | Yes _____ | No _____                   |

| Crane Information                                   |       |                      |                 |
|---|-------|----------------------|-----------------|
| Serial #  | _____ | Outrigger Extension: | Full _____      |
| Crane Capacity                                      | _____ |                      | Half _____      |
| Boom Radius   | _____ |                      | N/A _____       |
| Boom Height   | _____ |                      |                 |
| Boom Angle  | _____ | Lift Will Be:        | Side _____      |
| Boom Length   | _____ |                      | Front _____     |
| Counterweight                                       | _____ |                      | Rear _____      |
| Parts of Line                                       | _____ |                      |                 |
| Line Capacity                                       | _____ | On Crawlers          | Extended _____  |
|   |       |                      | Retracted _____ |
| Wind Speed Shutdown                                 | _____ |                      | N/A _____       |
| <b>Crane Picks on Rubber Tires Are Not Allowed!</b> |       |                      |                 |

| Capacity Verification                        |                 |                |       |
|--|-----------------|----------------|-------|
| Total Load                                   | _____           | 0              | lbs   |
| Crane Capacity                               | _____           |                | lbs   |
| <b>Lifting Percentage of Crane Capacity:</b> |                 | <b>#DIV/0!</b> |       |
| Pick Classification:                         | Normal Lift     | 0% - 74%       | _____ |
|  | Critical Lift   | 75% - 89%      | _____ |
|  | Engineered Lift | 90% - 100%     | _____ |
| Permit Completed By: _____                   |                 |                |       |



## Site Logistics

---

Location of Pick \_\_\_\_\_

Site Logistics Map Included? Yes \_\_\_\_\_ No \_\_\_\_\_

Crane Set Up On: Soil \_\_\_\_\_ Asphalt \_\_\_\_\_ Concrete \_\_\_\_\_

Soil Bearing Pressure \_\_\_\_\_

Max Load On Individual Outrigger \_\_\_\_\_

Are Underground Utilities Present? Yes \_\_\_\_\_ No \_\_\_\_\_

List Utilities \_\_\_\_\_

Are Overhead Utilities Present? Yes \_\_\_\_\_ No \_\_\_\_\_

List Utilities \_\_\_\_\_

Proximity of Overhead Utilities to Pick \_\_\_\_\_

Sketch Map of Pick if Not Included

## Rigging Information

| Shackles        |          |       |        |              |
|-----------------|----------|-------|--------|--------------|
| Type            | Capacity | Qty   | Weight | Total Weight |
| _____           | _____    | _____ | _____  | _____        |
| _____           | _____    | _____ | _____  | _____        |
| _____           | _____    | _____ | _____  | _____        |
| _____           | _____    | _____ | _____  | _____        |
| Shackle Weights |          |       |        | 0            |

| Synthetic Straps/Slings |               |          |       |        |              |
|-------------------------|---------------|----------|-------|--------|--------------|
| Type/Color              | Configuration | Capacity | Qty   | Weight | Total Weight |
| yellow                  | _____         | _____    | _____ | _____  | _____        |
| blue                    | _____         | _____    | _____ | _____  | _____        |
| _____                   | _____         | _____    | _____ | _____  | _____        |
| _____                   | _____         | _____    | _____ | _____  | _____        |
| Synthetic Weights       |               |          |       |        | 0            |

| Wire Rope         |          |       |        |              |
|-------------------|----------|-------|--------|--------------|
| Type              | Capacity | Qty   | Weight | Total Weight |
| _____             | _____    | _____ | _____  | _____        |
| _____             | _____    | _____ | _____  | _____        |
| Wire Rope Weights |          |       |        | 0            |

| Chains        |          |       |        |              |
|---------------|----------|-------|--------|--------------|
| Type          | Capacity | Qty   | Weight | Total Weight |
| _____         | _____    | _____ | _____  | _____        |
| _____         | _____    | _____ | _____  | _____        |
| Chain Weights |          |       |        | 0            |

| Spreader Bars        |          |       |        |              |
|----------------------|----------|-------|--------|--------------|
| Type                 | Capacity | Qty   | Weight | Total Weight |
| _____                | _____    | _____ | _____  | _____        |
| _____                | _____    | _____ | _____  | _____        |
| Spreader Bar Weights |          |       |        | 0            |

|                             |          |
|-----------------------------|----------|
| <b>Total Rigging Weight</b> | <b>0</b> |
|-----------------------------|----------|

# Rigging Diagram

---

Is a Rigging Diagram included?

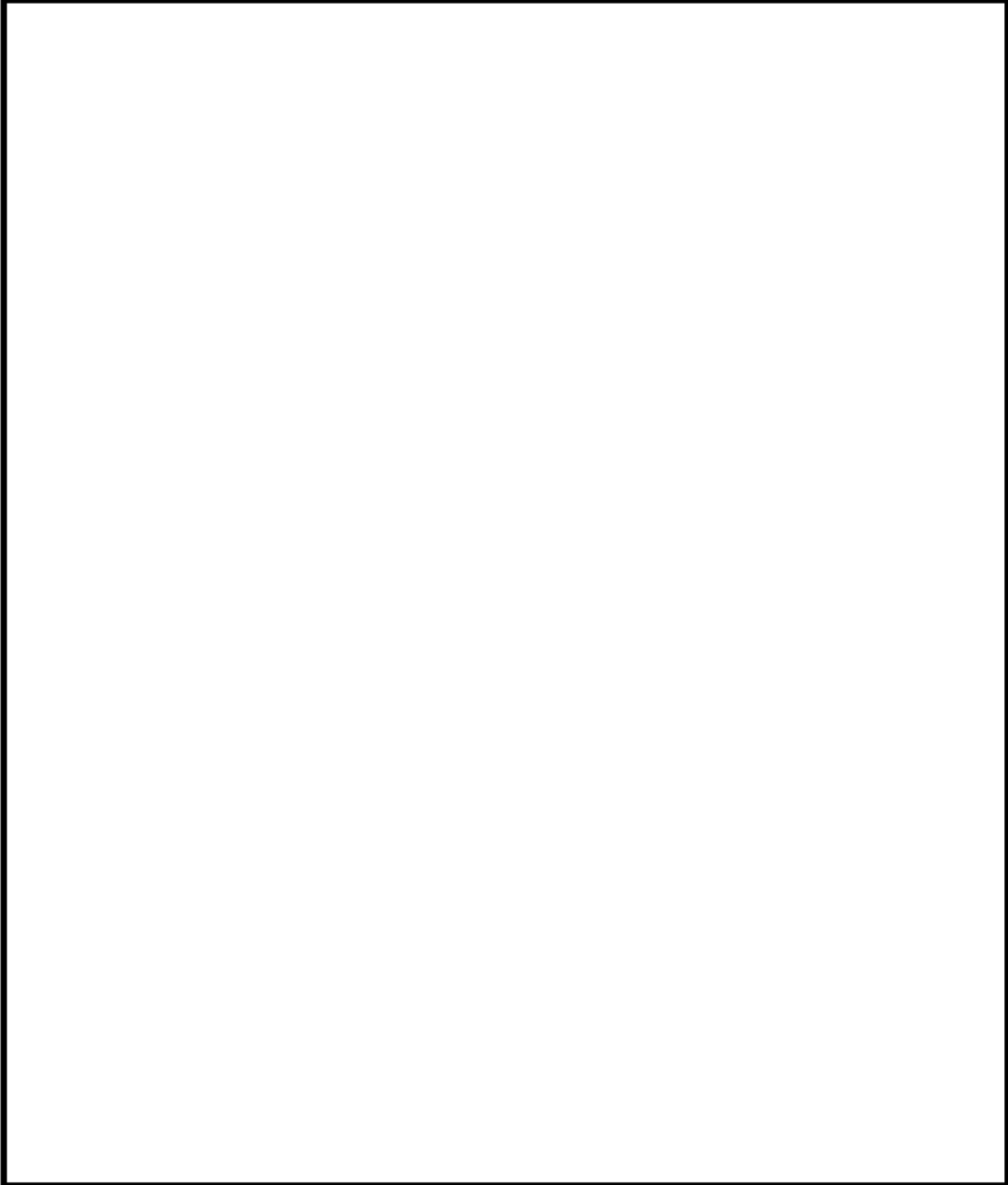
Yes

\_\_\_\_\_

No

\_\_\_\_\_

Sketch Rigging Diagram if not included(Site plan and vertical)

A large, empty rectangular box with a black border, intended for sketching a rigging diagram. The box is currently blank.

# Sign - Off

## Contractor Responsible

Contractor Superintendent

Contractor Project Manager

Contractor Safety Manager  
(If Required)

## BNB

BNB Superintendent

BNB Project Manager

Safety Director  
(If Required)

## On-Site Pre-Pick Meeting

Lift Director

Crane Operator

A/D Director (Mobile Crane)

A/D Director (Tower Crane)

Certified Rigger/Signal Person

Crew Members

# Crane Pick Plan Checklist



| BNB                             | Yes | No | N/A | Notes |
|---------------------------------|-----|----|-----|-------|
| Live Utility Map                |     |    |     |       |
| Underground Structures          |     |    |     |       |
| Soil Bearing Pressure           |     |    |     |       |
| Overhead Utilities              |     |    |     |       |
| Barricade and Signage Required? |     |    |     |       |
| Building Heights                |     |    |     |       |

| Responsible Contractor                | Yes | No | N/A | Notes |
|---------------------------------------|-----|----|-----|-------|
| Detailed Narrative                    |     |    |     |       |
| Load Weight Verification              |     |    |     |       |
| Site Logistics                        |     |    |     |       |
| Crane Layout                          |     |    |     |       |
| Rigging Diagram                       |     |    |     |       |
| Identify Load Pick Points             |     |    |     |       |
| Does Load Include Oil/Coolant?        |     |    |     |       |
| JHA Complete?                         |     |    |     |       |
| Engineering for Multiple Crane Pic    |     |    |     |       |
| Hoisting Over Occupied Spaces?        |     |    |     |       |
| Hoisting in Close Proximity to Power  |     |    |     |       |
| Hoisting Long Lead or High Value Item |     |    |     |       |
| Engineered Pick? - Stamped Calcs In   |     |    |     |       |
| Fall Protection Plan                  |     |    |     |       |

| Crane Provider                             | Yes | No | N/A | Notes |
|--|-----|----|-----|-------|
| Annual Crane Cert.                         |     |    |     |       |
| Is Customer Named on Insurance Certificate |     |    |     |       |
| Crane Serial Number                        |     |    |     |       |
| Crane Capacity                             |     |    |     |       |
| Load Charts                                |     |    |     |       |
| Crane Configuration                        |     |    |     |       |
| Boom Height/Angle                          |     |    |     |       |
| Crane Radius                               |     |    |     |       |
| Load Over Any Outrigger                    |     |    |     |       |
| Crane Mats/Blocking/Steel Plates           |     |    |     |       |
| Certified Crane Operator NCCCO Card        |     |    |     |       |
| Certified Rigger Card                      |     |    |     |       |
| Communication System?                      |     |    |     |       |
| Lattice Boom Crane                         |     |    |     |       |
| Erection/Dismantle Plan                    |     |    |     |       |
| Load Test Required                         |     |    |     |       |
| On Site Inspection                         |     |    |     |       |



**DEMOLITION PERMIT**

| Project:   | Date: | RESP. | Comments |
|--|-------|-------|----------|
| <b>Good Faith Survey</b>   |       |       |          |
| Did We Receive a Good Faith Survey?  |       |       |          |
| If Yes, Does It Satisfy Our Requirements?  |       |       |          |
| If Not, Need to Complete Material Sampling/Testing   |       |       |          |
| <b>**Lab Equipment - Do We Have Documentation That It is Clean?</b>                                      |       |       |          |
| Have We Sent Copy of Information to Subs / Employees?  |       |       |          |
| Is the Building Safe to Enter?   |       |       |          |
| Are There Specific Areas That Are Unsafe to Enter?   |       |       |          |
| PCB ballasts and fluorescent light bulb disposal Required?   |       |       |          |
| <b>Type of Demolition</b>  |       |       |          |
| Select Non Structural Demo?  |       |       |          |
| Structural Demo - Concrete, Roof, Steel, Wood?   |       |       |          |
| Lab/Specialty Equipment - Biohazards, Chemicals, Hazmat?   |       |       |          |
| Demo Methods - Labor, Heavy Equipment, Handtools?  |       |       |          |
| Building Structure Type  |       |       |          |
| <b>**If Demo of Post Tension Concrete - Need to Verify Preventative Measures and/or Destressing Plan</b> |       |       |          |
| HAZMAT Concerns?   |       |       |          |
| Is Building Safe for Equipment Weights? Structural Engineer to Review                                    |       |       |          |
| Noise / Vibration Concerns within Building?  |       |       |          |
| Noise Concerns in Neighborhood?  |       |       |          |
| Need Industrial Hygienist?   |       |       |          |
| <b>Required Permits</b>  |       |       |          |
| Does Demo Require City Permit?   |       |       |          |
| Abatement Permit?  |       |       |          |
| Noise Variance Permit?   |       |       |          |
| Street Use Permit?   |       |       |          |

| <b>Specialty Tools &amp; Plans</b>  |  |  |  |
|---|--|--|--|
| Air Quality Plan: Air Sniffers, Fans, Fresh Air Supply, Exhaust?              |  |  |  |
| Temp Protection: Interior / Exterior, Safety Rails, Signage                   |  |  |  |
| Shoring & Support Scaffold?   |  |  |  |
| Specialty PPE: High Visibility Clothing, Kevlar Sleeves?                      |  |  |  |
| <b>Internal checklist</b>   |  |  |  |
| Completed BNB Electrical Demo Checklist? Separate Document                    |  |  |  |
| Completed BNB HVAC Demo Checklist? Separate Document                          |  |  |  |
| Completed BNB Plumbing/Piping Demo Checklist? Separate Document               |  |  |  |
| Live Utility Plan Completed and Reviewed with Subs?                           |  |  |  |
| **Includes Locations of All Shutoff Valves for Utilities                      |  |  |  |
| **Includes Review of As-Builts & Tenant / Building Owner                      |  |  |  |
| **Includes Utility Locates (Exterior & Interior) Subs to Call Dig Alert #?    |  |  |  |
| **Need to Pot Hole to Confirm?  |  |  |  |
| **Includes Identifying Any Electrical or Mechanical Room Outside of Work Area |  |  |  |
| If Using Demo Subcontractor - Do We Have Sub Demo Work Plan?                  |  |  |  |
| Site Specific Safety Plan Completed?  |  |  |  |
| Site Conditions Reviewed By BNB Safety Representative?                        |  |  |  |
| Logistics Plan Completed?   |  |  |  |
| JHA, PPE Assessment and Pretask Plans Completed?                              |  |  |  |
| **Identified MEP Systems to Remain - Marked in Field?                         |  |  |  |
| **Electrical Sub Confirm Work Area Safe'd Off?                                |  |  |  |
| **Fire Alarm System Shutdown or Put in Test?                                  |  |  |  |
| **Fire Sprinkler Drained? Fire Watch Required?                                |  |  |  |
| **Coordinated Shutdowns with Building Owner/Tenant?                           |  |  |  |
| **Shutdowns Require MOP?  |  |  |  |
| **Hot Work Permits Required?  |  |  |  |
| Lockout Tag Out Program in Place?   |  |  |  |
| Existing Equipment Decommissioned (Tanks, HVAC Chemicals, Light Ballasts?)    |  |  |  |
| Is There a Need for an L&I Consultation?                                      |  |  |  |
| Emergency Evacuation Plan in Place?   |  |  |  |

|  |                  |             |
|--|------------------|-------------|
| <b>Required Training</b>                             |                  |             |
| 2 Hr. Asbestos Awareness Training?                   |                  |             |
| Lead Awareness/RRP Training?                         |                  |             |
| Mold Awareness Training?                             |                  |             |
| Is There Any Other Training Needed for This Project? |                  |             |
| <b>Sign off on Demolition</b>                        | <b>Signature</b> | <b>Date</b> |
| <b>BNB Safety Director or General Superintendent</b> |                  |             |
| <b>Site safety representative</b>                    |                  |             |
| <b>Foreman in charge</b>                             |                  |             |
| <b>Site Superintendent</b>                           |                  |             |



## Electrical Demolition Work Plan

The steps below are required to perform Make Safe Activities for demolition:

1. Identify all electrical circuits feeding into or passing through the area / room – if any conduit cannot be identified, bring it to the attention of BNB/ Owner for further review.
2. Identify all electrical items and conduit for Lock Out Tag Out (LOTO) noted on the demolition plan
3. Submit LOTO circuit list to facilities (CMC)
4. Facilities & electrical contractor to LOTO all identified circuits - (two locks)
5. Verify Zero Energy
  - Identify required PPE
    - Arc Flash Protection – Electrical contractor to identify OSHA PPE requirements based on activities
    - Shock Protection – Hard hat, safety glasses, face shield, long sleeves, leather gloves, pants, work boots – no high vis vest or polyester clothing
  - Use Muti Meter at final termination – verify zero reading
    - A Primary Authorized Person (PAP) and a separate reviewer (BNB) must witness the zero energy reading
    - Fill out and sign BNB's LOTO portion of the Electrical Demo Sign Off Check List
6. Once zero energy is verified at the termination point, mark/ label within 6" in green tape or paint indicating demo.
7. Continue through all remaining LOTO circuits repeating steps 5 & 6
8. Open all 'J' boxes or pull boxes on circuits/ conduit to demo – leave boxes open
9. Perform a redundant test using a pen type inductance tester where applicable – examples including but not limited to: 'J' boxes, pull boxes, found conductors, etc., verifying each conductor again for zero energy – shock protection PPE required
10. Label/ mark each conduit leg within 6" of the box - green for demo or red to stay.
11. Pull conductors or wires as directed by the demo drawings. If wiring is to be coiled up for later use, label/ Tag the end of the wires with the corresponding LOTO information.
12. Label/ mark conduits to demo every 15' and at both sides of the wall as required per demo drawings
13. Make a 6" visual cut or separation at both sides of walls as required.
14. A **ring system** must be utilized for the demo of the conduits. The ring slides forward along the conduit as demo progresses. **Only the conduits with the ring may be cut.**
15. Once complete, fill out remaining portion of the BNB's Electrical Demo Sign off Check List and submit it to the superintendent.
16. Post Demo signs in area – **Green is Go (demo), Red is Stay, No label – STOP!**
17. Demo all green labeled electrical items.

## ELECTRICAL DEMO SIGN OFF CHECK LIST

PROJECT NAME: \_\_\_\_\_

ZONE - ROOM - NAME - LOCATION: \_\_\_\_\_

| DISCIPLINE:                                   | CONTRACTOR | RESPONSIBLE PERSON (Print Clearly) | DATE |
|---|------------|------------------------------------|------|
| <b>Electrical - greater than 50V</b>          |            |                                    |      |
| List circuits affected, Panels, MCCs, etc.    |            |                                    |      |
| Lock Out Tag Out Complete                     |            |                                    |      |
| Witness                                       |            |                                    |      |
| Verification of Zero Energy in the field      |            |                                    |      |
| Witness                                       |            |                                    |      |
| <b>Electrical - greater than 50V complete</b> |            |                                    |      |

| <b>Electrical - less than 50V</b>          |  |  |  |
|--|--|--|--|
| Security System                            |  |  |  |
| Cameras                                    |  |  |  |
| Access Control                             |  |  |  |
| Fire Alarm                                 |  |  |  |
| Smoke Detectors                            |  |  |  |
| Duct Detectors                             |  |  |  |
| HVAC Controls                              |  |  |  |
| Telecom / Data                             |  |  |  |
| Equipment Alarms / Monitoring Devices      |  |  |  |
| Miscellaneous                              |  |  |  |
| <b>Electrical - Less than 50V complete</b> |  |  |  |
| <b>BNB Quality Control</b>                 |  |  |  |

|   |  |  |  |
|---|--|--|--|
| <p><b>ALL UTILITY LAYOUT/<br/>LABELING MUST BE<br/>COMPLETE</b></p> | <p><b>GREEN is GO</b><br/><b>(demo)</b></p> <p style="font-size: small; color: green;">Junction boxes are open<br/>Visible separation at walls<br/>Green markings are required every 15 feet</p> | <p><b>RED is STAY</b></p> <p style="font-size: small; color: red;">Use red danger tape to identify energized lines<br/>Red Markings are required every 15 feet</p> |  |
|---|--|--|--|

BY SIGNING THIS DOCUMENT YOU AGREE THAT YOU HAVE INSPECTED YOUR WORK IN THIS ROOM AND YOUR WORK IS COMPLETE AND PERFORMED CORRECTLY PER CONTRACT DRAWINGS, SPECIFICATIONS AND DEMO REQUIREMENTS. ALL SAFE OFF ACTIVITIES HAVE BEEN COMPLETED.

## HVAC Demolition Work Plan

The steps below are required to perform Make Safe Activities for demolition:

1. Identify all HVAC systems feeding into or passing through the area / room
2. Verify all Fume exhaust ductwork has been cleaned and no hazardous chemicals are present
  - Obtain a written copy of proof from BNB
3. Identify all systems to demo for Lock Out Tag Out (LOTO) from the demolition plan
4. Submit LOTO list to facilities (CMC)
5. Facilities (CMC) & HVAC contractor to LOTO all identified systems - (two locks)
6. Continue through all remaining LOTO of systems, repeating steps 5, 6 and 7.
7. Perform cut and capping activities.
8. If a Hot Work permit is needed:
  - Verify approval and obtain a hot work permit
  - Verify the fire alarm is on test
  - Using a dedicated fire watch (see BNB/CMC's Fire Watch requirements)
  - Use a 20 lb dedicated fire extinguisher
9. Label/ mark each end of the HVAC duct to be demo'd - green for demo and red to stay.
10. Label/ mark HVAC duct and equipment to demo every 15' and at both sides of the wall as required per demo drawings
11. Make a 6" visual cut or separation at both sides of walls or equipment as required.
12. Once complete, fill out remaining portion of the BNB's HVAC Demo Sign off Check List and submit it to the superintendent.
13. Post Demo signs in area – **Green is Go (demo), Red is Stay, No label – STOP!**
14. Demo all green labeled HVAC items.

## HVAC DEMO SIGN OFF CHECK LIST

PROJECT NAME: \_\_\_\_\_

ZONE - ROOM - NAME - LOCATION: \_\_\_\_\_

| DISCIPLINE:  | CONTRACTOR | RESPONSIBLE PERSON (Print Clearly) | DATE |
|--|------------|------------------------------------|------|
| <b>HVAC</b>  |            |                                    |      |
| <b>Supply</b>  |            |                                    |      |
| Lock Out Tag Out Complete for each system  |            |                                    |      |
| Witness  |            |                                    |      |
| <b>All HVAC Supply Cut and Cap/ Isolation/ Make Safe activities are complete</b>       |            |                                    |      |
| <b>Exhaust</b>   |            |                                    |      |
| Lock Out Tag Out Complete for each system  |            |                                    |      |
| Witness  |            |                                    |      |
| <b>All HVAC Exhaust Cut and Cap/ Isolation/ Make Safe activities are complete</b>      |            |                                    |      |
| <b>Fume Exhaust</b>  |            |                                    |      |
| Lock Out Tag Out Complete for each system  |            |                                    |      |
| Witness  |            |                                    |      |
| <b>All HVAC Fume Exhaust Cut and Cap/ Isolation/ Make Safe activities are complete</b> |            |                                    |      |
| <b>All HVAC Cut and Cap / Isolation/ Make Safe activities are complete</b>             |            |                                    |      |
| <b>BNB Quality Control</b>   |            |                                    |      |

|   |  |  |  |
|---|--|--|--|
| <p><b>ALL UTILITY LAYOUT/<br/>LABELING MUST BE<br/>COMPLETE</b></p> | <p><b>GREEN is GO</b><br/><b>(demo)</b></p> <p style="font-size: small; color: green;">Visible separation at walls and systems to remain<br/>Green markings are required every 15 feet</p> | <p><b>RED is STAY</b></p> <p style="font-size: small; color: red;">Use red danger tape to identify systems to remain<br/>Red Markings are required every 15 feet</p> |  |
|---|--|--|--|

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CC:      BNB File  
            Subcontractors

## Plumbing / Piping Demolition Work Plan

The steps below are required to perform Make Safe Activities for demolition:

1. Identify all plumbing/ piping systems feeding into or passing through the area / room – if any plumbing or piping cannot be identified, bring it to the attention of BNB/ CMC for further review.
2. Verify all piping has been cleaned and no hazardous chemicals are present
  - Obtain a written copy of proof from BNB
3. Identify all systems for Lock Out Tag Out (LOTO) noted on the demolition plan
4. Submit LOTO list to facilities (CMC)
5. Facilities (CMC) & plumbing/ piping contractor to LOTO all identified systems - (two locks)
6. Verify Zero Energy
  - Identify required PPE
  - Is line breaking involved? If so, follow CMC's Line breaking procedures
  - Drain systems
    - A Primary Authorized Person (PAP) (CMC) will verify drain down of each system
    - Fill out and sign BNB's LOTO portion of the Plumbing / Piping Demo Sign Off Check List
7. Once system is drained, mark/ label cut and cap and valve locations with Red Danger Tape
8. Continue through all remaining LOTO of systems, repeating steps 5, 6 and 7.
9. Perform cut and capping or valve installation activities.
10. If a Hot Work permit is needed:
  - Verify approval and obtain a hot work permit
  - Verify the fire alarm is on test
  - Using a dedicated fire watch (see BNB/CMC's Fire Watch requirements)
  - Use a 20 lb dedicated fire extinguisher
11. Label/ mark each end of the plumbing/ piping run to be demo'd - green for demo and red to stay.
12. Label/ mark plumbing/ piping to demo every 15' and at both sides of the wall as required per demo drawings
13. Make a 6" visual cut or separation at both sides of walls or equipment as required.
14. A **ring system** must be utilized for the demo of the plumbing and piping. The ring slides forward along the plumbing or piping as demo progresses. **Only the plumbing or piping with the ring may be cut.**
15. Once complete, fill out remaining portion of the BNB's Plumbing/ Piping Demo Sign off Check List and submit it to the superintendent.
16. Post Demo signs in area – **Green is Go (demo), Red is Stay, No label – STOP!**
17. Demo all green labeled plumbing and piping items.

**PLUMBING / PIPING DEMO SIGN OFF CHECK LIST**

PROJECT NAME:

ZONE - ROOM - NAME - LOCATION: \_\_\_\_\_

| DISCIPLINE:   | CONTRACTOR | RESPONSIBLE PERSON (Print Clearly) | DATE |
|---|------------|------------------------------------|------|
| <b>Plumbing</b>                                       |            |                                    |      |
| List all systems affected                             |            |                                    |      |
| Lock Out Tag Out Complete for each system             |            |                                    |      |
| Witness   |            |                                    |      |
| Verification of Zero Energy in the field              |            |                                    |      |
| Witness   |            |                                    |      |
| Miscellaneous   |            |                                    |      |
|   |            |                                    |      |
| <b>All Plumbing Make Safe activities are complete</b> |            |                                    |      |

|   |  |  |  |
|---|--|--|--|
| <b>Piping</b>                                       |  |  |  |
| List all systems affected                           |  |  |  |
| Lock Out Tag Out Complete                           |  |  |  |
| Witness   |  |  |  |
| Verification of Zero Energy in the field            |  |  |  |
| Witness   |  |  |  |
| Miscellaneous                                       |  |  |  |
|   |  |  |  |
| <b>All Piping Make Safe activities are complete</b> |  |  |  |
| BNB Quality Control                                 |  |  |  |

|  |   |  |  |
|--|---|--|--|
| <b>ALL UTILITY LAYOUT/<br/>LABELING MUST BE<br/>COMPLETE</b> | <b>GREEN is GO<br/>(demo)</b><br><br>Visible separation at walls<br>Green markings are required every 15 feet | <b>RED is STAY</b><br><br>Use red danger tape to identify systems to remain<br>Red Markings are required every 15 feet |  |
|--|---|--|--|

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## DETERMINATION OF CONFINED SPACE

Cod: Oper-9A

Rev.0

Apr-17

### CONFINED SPACE DETERMINATION

|   |  |     |    |
|---|--|-----|----|
| 1 | Is the space large enough and so configured to allow bodily entry? | Yes | No |
| 2 | Is it not designed for human occupancy?                            | Yes | No |
| 3 | Does the space have limited or restricted means of entry and exit? | Yes | No |

If the answer to ALL THREE questions above is YES, the space is considered a Confined Space.

**Proceed to next step**

### PERMIT REQUIRED CONFINED SPACE DETERMINATION

|   |   |     |    |
|---|---|-----|----|
| 4 | Does the space contain or have the potential to contain a hazardous atmosphere? | Yes | No |
| 5 | Does the space contain or have the potential for engulfment or entrapment?      | Yes | No |
| 6 | Does the space contain inwardly Converging Walls ?                              | Yes | No |
| 7 | Does the space contain ANY OTHER serious recognized safety and health hazard?   | Yes | No |
| 8 | Will the work being performed in the space introduce a safety or health hazard? | Yes | No |

If the answer to ANY ONE of the above is YES, the space is considered a Permit Required Confined Space.

|                         |  |      |  |
|-------------------------|--|------|--|
| Evaluation performed by |  | Date |  |
|-------------------------|--|------|--|





# DIG PERMIT

Code # Oper-12A

Rev. 0

Date Jun-2018

AUTHORIZATION DATE: \_\_\_/\_\_\_/\_\_\_ - \_\_\_/\_\_\_/\_\_\_ CONTRACTOR: \_\_\_\_\_

When any type of excavation including, trenching, concrete cutting or ground penetration of any kind, is planned for a jobsite a **Dig Permit** will be completed. The following information will be addressed and authorized by site **Superintendent and Project Manager** prior to any excavation.

## SECTION 1

Project: \_\_\_\_\_  
One Call (811) Ticket # \_\_\_\_\_ Date Called: \_\_\_/\_\_\_/20\_\_\_ Past 45 days? \_\_\_ Yes \_\_\_ No

Private locates and/or radar imaging (GPR) are **required** if dig/cut is located within property lines or building. Additional radar imaging required after concrete has been removed to ensure no utilities exist under slab location.

### Excavation Checklist

- Area of work is marked in white paint and marked on a copy of site Live Utility Map and dated **(Attached)**
- Area has been located by 811 and/or Private Locates (Private Locate Company/Contact: \_\_\_\_\_)
- Review area, Locates and mark-up with BNB Superintendent or Project Manager
- Review Live Utility Map posted in BNB Trailer
- JHA completed by subcontractor and reviewed by BNB supervision
- All employees involved in excavation have signed attached attendance sheet.
- If **NO** utilities are within 10' of proposed excavation proceed to section 3 below.

## SECTION 2

The additional requirements outlined below are required for any work operation taking place **within 10 feet of any live utility** (Electrical, Sprinkler Gas, Water Supply, Sanitary/Storm Sewer, Unknown, Etc.). This includes, but is not limited to trenching, excavating, and boring.

- Pot Hole / Hand Dig to Positively Find Utility
- YES**  **NO** Hole cover protection required? If YES, Describe Method of Protection: \_\_\_\_\_
- Spotter/Observer must be used if using mechanized digging equipment within Tolerance Zone (only after potholing)
- Identify location of shut offs for utilities, water, gas, etc. and marked on a copy of the site Live Utility Map. **(Attached)**
- JHA complete by subcontractor and reviewed by BNB supervision
- Affected crew reviewed locates/radar imaging, and JHA the day of proposed excavation with BNB Supervision.
- All employees involved in excavation have signed attached attendance sheet **(See page 2)**.

Activity Description: \_\_\_\_\_

Mitigation (How are you not going to hit or cause disruption?): \_\_\_\_\_

Phone numbers of utilities within 10' of excavating activities: \_\_\_\_\_

## SECTION 3

Activity Start Date/Time: \_\_\_\_\_ Schedule Completion Date/Time: \_\_\_\_\_

Purpose for dig: \_\_\_\_\_ Depth of dig: \_\_\_\_\_

- Locate on site Live Utility Map

Subcontractor and Competent Person Assigned to Task: \_\_\_\_\_

BNBuilders Representative (To be onsite during work): \_\_\_\_\_

**This Live Utility Awareness Work Authorization and associated JHA, Locates, Live Utility Map have been reviewed and authorized by:**

\_\_\_\_\_  
**Project Superintendent**

\_\_\_\_\_  
**Date**

\_\_\_\_\_  
**Project Manager**

\_\_\_\_\_  
**Date**





# BNB

## BNBuilders

### DRONE SURVEYING CHECKLIST

#### Mission Planning

- Check Airspace restrictions
- Check for TFR's
- Check weather forecast
- Obtain authority to fly over site
- Obtain BNB Drone Permit
- Check system for updates
- Create flight path
- Save flight path offline

#### Packing Checklist

- Aircraft
- Flight batteries (charged)
- Controller (charged)
- Tablet (charged)
- Memory cards
- Propellers
- Tablet cables
- Operation checklists

#### Site Prep

- Check site for obstructions  
(trees, power lines, elevation change)
- Check weather for suitability  
(wind speed, temperature, visibility)
- Verify Line of Sight(LOS) can be achieved
- Brief Forward Observer, maintain comms & eye communication
- Set ground control points
- Survey ground control points as needed

#### Preflight Inspection

- Check Airframe
- Check batteries for damage
- Propellers(bendable,not cracked)
- Motor area (clear?)
- Camera & Gimbal (cleaned & free)
- Controller (antenna extended)

#### Flight Prep

- Power on controller & aircraft
- Ensure SD card has enough space
- Check overall status (green Bar DJI App)
- Select autopilot mission (map Pilot App)
- Ensure altitude is right for terrain
- Upload mission and press start

#### After Flight

- Power down & stow all equipment
- Log flight information in flight logs
- Download data

### Dropped Object Prevention Evaluation

Complete this evaluation to ensure overhead work is safely conducted. Immediate concerns should be addressed on the spot and documented. For jobs under construction, but not yet above-grade, review this evaluation with the project team to plan ahead and eliminate risk from falling materials.

|                     |  |
|---------------------|--|
| Date of Evaluation: |  |
| Project Name:       |  |
| Name of Evaluator:  |  |

| <b><u>Critical Items</u></b>   | <b>Yes, No, N/A</b> |
|--|---------------------|
| Is overhead protection free of gaps to prevent falling objects?  |                     |
| Are Controlled Access Zones (CAZs) established below overhead work?  |                     |
| Are tools tethered when working at height near the exterior/leading edge of a structure, shaft stairway?   |                     |
| Do personnel working at leading edges only have the required tools in their tool belts, bags etc?  |                     |
| Are persons authorized to work in CAZs (i.e., dismantling a scaffold or concrete deck form) paying attention to what is going on above them and using spotters when needed?  |                     |
| Are materials hoisted over active work areas controlled? (i.e., loose pieces of material are secured, the workforce is warned via horn/whistle and they pay attention to the warning, operators avoid flying loads over personnel, etc). |                     |
| Do rigging/tag lines clear obstructions before operators are instructed to “take it away”?   |                     |
| Do ground-floor entrances in and out of buildings or setbacks have adequate overhead protection?   |                     |
| Are CAZs maintained with physical barriers and signage that identify who is controlling/restricting the area?  |                     |
| If danger tape is used for a CAZ, is it only put up while the area is restricted and then taken down when the risk is removed? Is a spotter used to enforce CAZ when danger tape barricade system is not being used?                     |                     |
| Is good housekeeping in effect to prevent loose materials within 8 feet of open edges? Perimeter deck landings kept clear at all times?  |                     |
| <b><u>Non-Critical Items</u></b>   | <b>Yes, No, N/A</b> |
| Are trades scheduling work to prevent working over one another?  |                     |
| During weekly toolbox meetings, is dropped object prevention addressed?  |                     |
| Are all employees on crew trained in   |                     |
| Are JHAs for subcontractors reviewed to ensure provisions for dropped-object protection?   |                     |
| Do PTPs address overhead protection/dropped object prevention? Is BNB staff reviewing these PTPs?  |                     |

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



## Equipment Use Agreement and Indemnification

Project Name ("Project"): \_\_\_\_\_  
Date: \_\_\_\_\_  
Company: \_\_\_\_\_

**WHEREAS**, the Parties to this Equipment and Use Agreement and Indemnification ("Agreement") hereby acknowledge that BNB Builders, Inc. ("BNB"), as General Contractor, will have, located on the Project site, various types of equipment to be used for the construction of the Project referenced above, including without limitation, tools, temporary structures, special cranes, hoists, forklifts, and lifts (together with any and all accessories, attachments, or similar items connected thereto, the "Equipment").

**WHEREAS**, the Parties to this Agreement hereby acknowledge that the Company stated above will, on occasion, use the Equipment provided by BNB. This Agreement supplements/supersedes any existing agreement between the parties with regard to Company's use of the Equipment.

### IT IS AGREED AS FOLLOWS:

#### Article 1 – Approval

- 1.1 Use of the Equipment will be permitted only with the specific and written prior approval of BNB's Project Superintendent.
- 1.2 If written approval is granted, Company agrees not to loan, assign, or allow any third-party to use any Equipment without the specific and written approval of BNB's Project Superintendent. In such instances, any such third-party shall release, defend, and indemnify BNB to the same extent and for the same duration as Company is required to release, defend, and indemnify BNB under the terms of this Agreement.
- 1.3 BNB reserves the right to remove any operator from the Equipment or take possession of the Equipment at any time and at its sole discretion.
- 1.4 BNB reserves the right to terminate this Agreement at any time and at its sole discretion.

#### Article 2 – Inspection

- 2.1 Upon signing this Agreement or using any Equipment, Company agrees to complete a full inspection of the Equipment by a qualified individual or individuals and will promptly report any problems or defects that it knows or reasonably should have known to BNB's Project Superintendent. Said report shall be in writing and signed by an authorized representative of Company.
- 2.2 At the moment Company, through any of its agents or employees, begins using any of the Equipment, it agrees that it has satisfied itself to the condition of the Equipment, accepts the Equipment "as is", and waives any and all rights to any claims or causes of action whatsoever as they may relate to defects or deficiencies with the Equipment.

#### Article 3 – Operation

- 3.1 Company shall: (i) use the Equipment solely in the conduct of its independent business activities; (ii) use and preserve the Equipment in a careful, proper, and lawful manner; (iii) at its own expense, keep the Equipment in good repair, condition, and working order; and (iv) not make any alterations to the Equipment.

- 3.2 Company agrees that the use of the Equipment will only be done by individuals that are employees of Company, have been trained in the use and operation of the particular piece of Equipment, and have been authorized to use the Equipment by BNB's Project Superintendent.
- 3.3 Company, through its agents and employees, agrees to abide by all of the safety rules, requirements, and instructions related to the Equipment being used.

#### **Article 4 – Damage or Repairs**

- 4.1 Company accepts responsibility for any damages or repair costs caused by the Company, its agents, employees, suppliers, or sub-company. Company shall bear the entire risk of loss, theft, damage or destruction of the Equipment from any cause whatsoever (a "Casualty Loss"), whether intentional or unintentional, during the term of this Agreement. In the event of a Casualty Loss, Company shall immediately notify BNB, and, at BNB's option: (i) repair or replace the Equipment with identical property in good condition with clear title thereto in BNB, at Company's sole expense; or (ii) pay to BNB the full value of the Equipment.
- 4.2 If damage to the Equipment or reconditioning costs are required for the Equipment and it is difficult to ascertain or assign to any specific user the cause of such Casualty Loss, then Company agrees to pay its pro-rata share of repair/reconditioning costs with any other users of the Equipment. The amount of the pro-rata share will be determined by BNB.

#### **Article 5 – Waiver / Limitation of Liability**

- 5.1 Company acknowledges that the Equipment subject to the terms of this Agreement is being provided at the Project site by BNB for the convenience of the Company. Company is not obligated in any way to use said Equipment. As such, Company agrees to waive any and all claims or causes of action whatsoever against the Owner or BNB that relate in any way to Company's use of Builder's' equipment.
- 5.2 In no event shall BNB be liable or responsible to Company or any other party for: (i) any loss, damage, or injury caused by, resulting from or in any way connected with the Equipment, its operation or its use, or (ii) any incidental, consequential, punitive, or special damages. Company acknowledges and assumes all risks inherent in the operation, use and possession of the Equipment from the time the Equipment is delivered to Company until the Equipment is returned to BNB and will take all necessary precautions to protect all persons and property from injury or damage from the Equipment.

#### **Article 6 – Indemnification**

- 6.1 **Washington State (the following provision shall apply in the State of Washington):** To the fullest extent permitted by law, Company shall release, defend, indemnify and hold harmless the Owner, its agents and employees, and BNB, its agents and employees, from, for, and against all claims, damages, losses, actions proceedings, taxes, penalties, injuries, deaths, liabilities, and expenses, direct or indirect (including but not limited to costs and attorney's fees incurred on such claims, whether or not suit is initiated, and in proving the right to indemnification) ("Loss"), arising out of or resulting from Company, its agents and employees and anyone directly or indirectly employed by them, using and/or operating and/or accessing in any way the Equipment. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist. For the purposes of the foregoing indemnification provision only and to the fullest extent allowed by applicable law, Borrower specifically waives immunity it may be granted under the Washington State Industrial Insurance Act, RCW Ch. 51.04 or other employee benefit acts. This indemnity shall survive the expiration, termination, or cancellation of this Agreement.
- 6.2 **Washington State (the following provision shall apply in the State of Washington):** To the extent a court of competent jurisdiction determines this indemnity provision is subject to RCW 4.24.130, then Company's obligation to defend and indemnify BNB shall be limited as follows: with regard to the indemnity and defense obligations under Section 6.1 arise out of bodily injury to persons or damage to property, such indemnity and defense obligations shall arise regardless of whether such Loss is caused in part by the concurrent or partial negligence of BNB; however, Company shall not be liable to BNB for that portion of any such Loss for bodily injury to persons or damage to property incurred by BNB to the extent of BNB's negligence.
- 6.3 **California State (the following provision shall apply in the State of California):** To the fullest extent permitted by law, Company shall release, defend, indemnify and hold harmless the Owner, its agents and employees, and BNB, its agents and employees (collectively, the "Indemnified Parties"), from, for, and against all claims, damages, losses, actions proceedings, taxes, penalties, injuries, deaths, liabilities, and expenses, direct or indirect (including but not

limited to costs and attorney's fees incurred on such claims, whether or not suit is initiated, and in proving the right to indemnification) ("Loss"), arising out of or resulting from Company, its agents and employees and anyone directly or indirectly employed by them, using and/or operating and/or accessing in any way BNB's Equipment. Such obligation shall arise regardless of whether such claim, damage, loss, or expense is caused in part by the concurrent or partial negligence of an Indemnified Party; provided, however, to the extent required by Civil Code section 2782.05, Company's obligations hereunder shall not apply to the extent the Loss arises out of, pertains to, or relates to the active negligence or willful misconduct of an Indemnified Party. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity which would otherwise exist. The defense and indemnity shall survive the expiration, termination, or cancellation of this Agreement.

**Article 7 – Miscellaneous**

- 7.1 **Assignment.** Without BNB's prior written consent, Company shall not: (i) assign, encumber, or in any way dispose of any interest in this Agreement or the Equipment, or (ii) allow the Equipment to be used by anyone other than agents or employees of Company in accordance with the terms of this Agreement.
- 7.2 **Ownership:** The Equipment is, and shall remain, personal property, owned by BNB, and Company has no rights in the Equipment except as set forth herein.
- 7.3 **Use in Independent Activities.** Nothing in this Agreement shall be construed to provide for retention by BNB of any right to control, direct, supervise, or otherwise oversee the manner or method by which Company is utilizing the Equipment in its independent business activities or responsibility for the means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the work and services provided by Company.
- 7.4 **Entire Agreement.** This Agreement (i) represents the entire agreement between Company and BNB with respect to the subject matter covered, (ii) supersedes any prior understandings with respect to that subject matter and (iii) may only be amended in a writing duly executed by both Company and BNB.

**Company:** \_\_\_\_\_

**BNBuilders, Inc.**

By: \_\_\_\_\_

By: \_\_\_\_\_

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_



## Site-Specific Fall Protection Work Plan Template

1. Fall protection plans shall be prepared by a qualified person and developed specifically for the site where the construction work is being performed.
2. The plan must be maintained up to date and any changes shall be approved by a qualified person.
3. A current copy of the fall protection plan shall be maintained at the job site.
4. The implementation of the fall protection plan shall be under the supervision of a competent person.
5. In the event of a fall or incident, a member of the BNB (enter site name) Project Team must be immediately notified. This plan must be adjusted as applicable.

**Date Plan Prepared:**

**BNB Project Name:**

**BNB Project Address:**

**Employer Company Name:**

**Description of Scope of Work:**

| Identification of Responsibilities for this Plan |                               |                          |   |      |
|--|-------------------------------|--------------------------|---|------|
| Role   | Name                          | Phone #                  | Signature                                     | Date |
| Qualified Person                                 |                               |                          |   |      |
| Competent Person                                 |                               |                          |   |      |
| Foreman  |                               |                          |   |      |
| OSHA 30 Trained Person                           |                               |                          |   |      |
| Other  |                               |                          |   |      |
| Other  |                               |                          |   |      |
| Potential fall hazard(s) in the work area        |                               |                          |   |      |
| Description (i.e., roof perimeters)              | Location (i.e., "building A") | Height of potential fall |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
| Conventional fall protection systems to be used  |                               |                          |   |      |
| Type of Equipment (i.e., harness)                | Manufacturer                  | Model                    | Fall hazard to be used for (from above table) |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |
|  |                               |                          |   |      |



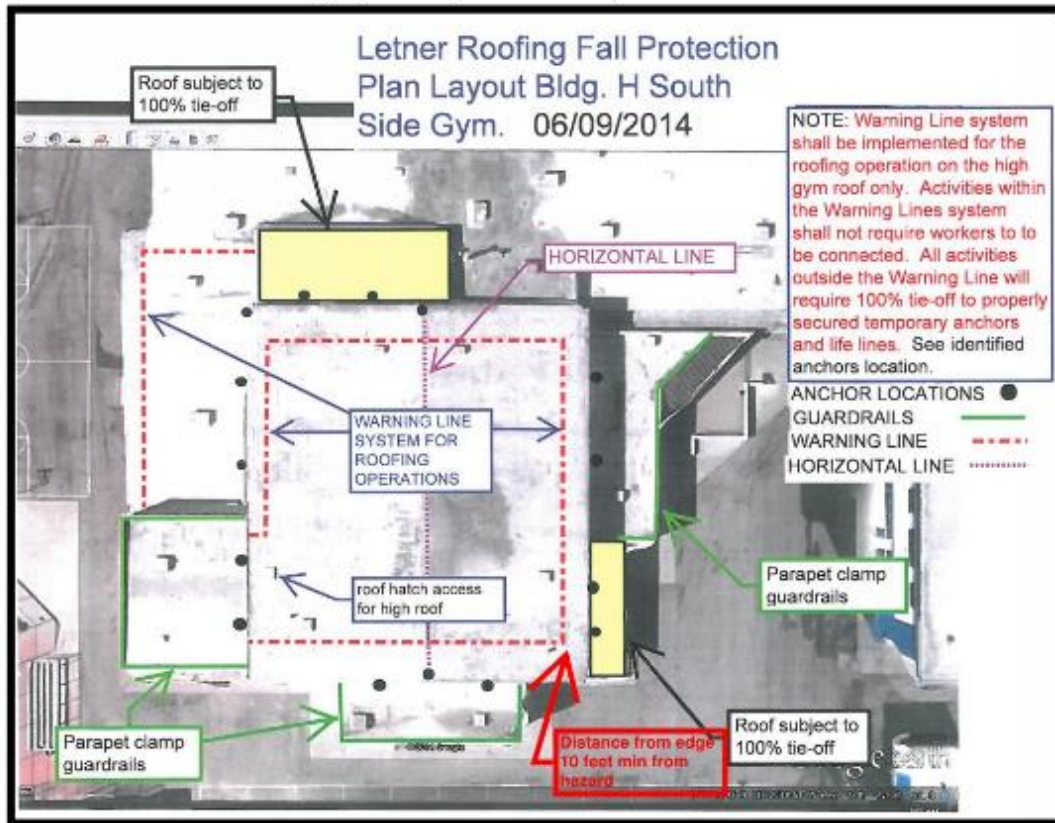
1. Description of methods for fall protection system(s)...
  - Assembly:
  
  - Disassembly:
  
  - Inspection and maintenance:
  
2. Description of procedures for tools, equipment, materials, etc...
  - Handling:
  
  - Storage:
  
  - Securing:
  
3. Description of methods for overhead protection for personnel and the public as applicable:
  
4. Other considerations:

| Rescue Plan and Equipment   |                              |
|---|------------------------------|
| Type and name of equipment to be used for rescuing fallen personnel | Location of rescue equipment |
|   |                              |
|   |                              |
|   |                              |
|   |                              |
|   |                              |
|   |                              |
|   |                              |



| Emergency/Incident Contact Information |      |         |
|--|------|---------|
| Role                                   | Name | Phone # |
| Emergency Medical Services             |      |         |
| On-Site CPR & First Aid Provider       |      |         |
| BNB Site Safety Manager                |      |         |
| BNB Superintendent                     |      |         |
| BNB Project Manager                    |      |         |

Diagram of fall hazards and staging of fall protection systems:



Sample Diagram (Please delete this one and place your diagram here)



## FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

### Safety Belt, Harness and Lanyard Inspection and Maintenance

- I. ANSI Classification:
  - Class I Body belts – used to restrain a person from falling. (High Voltage Electrical Only)
  - Class II Chest harness – used for restraint purposes (NOT for vertical free fall hazards).
  - Class III Full body harness – used for fall arrest purposes. Can also be used for fall restraint.
  - Class IV Suspension/position belt – used to suspend or support the worker. If a fall arrest hazard exists this must be supplemented by use of a safety harness.
  
- II. Inspection Guidelines:

To maintain their service life and high performance, all belts and harnesses must be inspected prior to each use for mildew, wear, damage and other deteriorations. Visual inspection before each use is just common sense. Periodic tests by a trained inspector for wear, damage or corrosion should be part of the safety program. Inspect your equipment daily and replace it if any of the defective conditions in this manual are found.

#### **Belt inspection: High Voltage Electrical ONLY**

1. Beginning at one end, holding the body side of the belt toward you, grasp the belt with your hands six to eight inches apart. Bend the belt in an inverted "U" . The resulting surface tension makes damaged fibers or cuts easier to see.
2. Follow this procedure the entire length of the belt or harness. Watch for frayed edges, broken fibers, pulled stitches, cuts, or chemical damage.
3. Special attention should be given to the attachment of buckles and Dee Rings to webbing. Note any unusual wear, frayed or cut fibers, or distortion of the buckles or Dees.
4. Inspect for frayed or broken strands. Broken webbing strands generally appear as tufts on the webbing surface. Any broken, cut, or burned stitches will be readily seen.
5. Rivets should be tight and immovable with fingers. Body side rivet base and outside rivet burr should be flat against the material. Bent rivets will fail under stress.  
  
Especially note condition of Dee Ring rivets and Dee Ring metal wear pads (if any). Discolored, pitted or cracked rivets indicate chemical corrosion.
6. The tongue, or billet, of the belt receives heavy wear from repeated buckling and unbuckling. Inspect for loose, distorted, or broken grommets. Belts using punched holes without grommets should be checked for torn or elongated holes, causing slippage of the buckle tongue.

## FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

### Safety Belt, Harness and Lanyard Inspection and Maintenance cont'd

7. Tongue Buckle:

Buckle tongues should be free of distortion in shape and motion. They should overlap the buckle frame and move freely back and forth in their socket. Roller should turn freely on frame. Check for distortion or sharp edges.

8. Friction Buckle:

Inspect the buckle for distortion. The outer bars and center bars must be straight. Pay special attention to corners and attachment to points of the center bar.

9. Sliding Bar Buckle:

Inspect buckle frame and sliding bar for cracks, distortions, or sharp edges.

Sliding bar should move freely. Knurled edge will slip if worn smooth. Pay special attention to corners and ends of sliding bar.

### **Lanyard inspection:**

When inspecting lanyards, begin at one end and work to the opposite end. Slowly rotate the lanyard so that the entire circumference is checked. Spliced ends require particular attention. Hardware should be examined under procedures also detailed below, i.e., Snaps, Dee Ring, and Thimbles.

1. Steel

While rotating the steel lanyard, watch for cuts, frayed areas, or unusual wearing patterns on the wire. Broken strands will separate from the body of the lanyards.

2. Webbing

While bending webbing over a pipe or mandrel, observe each side of the webbed lanyard. This will reveal any cuts or breaks. Swelling, discolorations, cracks, and charring are obvious signs of chemical or heat damage. Observe closely for any breaks in stitching.

3. Rope

Rotation of the rope lanyard while inspecting from end to end will bring to light any fuzzy, worn, broken, or cut fibers. Weakened areas from extreme loads will appear as a

noticeable change in original diameter. The rope diameter should be uniform throughout, following a short break-in-period.

## **FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES**

### **Fall Protection System Considerations**

Below are guidelines for worker protection where fall arrest or fall restraint systems are used. Some of this material may be suitable for adding to the written fall protection work plan specified in WAC 296-880-10020.

1. Selection and use considerations:

The kind of personal fall arrest system selected should match the particular work situation, and any possible free fall distance should be kept to a minimum. Consideration should be given to the particular work environment. For example, the presence of acids, dirt, moisture, oil, grease, etc., and their effect on the system, should be evaluated. Hot or cold environments may also have an adverse affect on the system. Wire rope should not be used where an electrical hazard is anticipated. As required by the Unified Safety Standards for Fall Protection WAC 296-880, the employer must plan to have means available to promptly rescue an employee should a fall occur, since the suspended employee may not be able to reach a work level independently.

Where lanyards, connectors, and lifelines are subject to damage by work operations such as welding, chemical cleaning, and sandblasting, the component should be protected, or other securing systems should be used. The employer should fully evaluate the work conditions and environment (including seasonal weather changes) before selecting the appropriate personal fall protection system. Once in use, the system's effectiveness should be monitored. In some cases, a program for cleaning and maintenance of the system may be necessary.

2. Testing considerations:

Before purchasing or putting into use a personal fall arrest system, an employer should obtain from the supplier information about the system based on its performance during testing so that the employer can know if the system meets this standard. Testing should be done using recognized test methods. WAC 296-880-510 Appendix C; contains test methods recognized for evaluating the performance of fall arrest systems. Not all systems may need to be individually tested; the performance of some systems may be based on data and calculations derived from testing of similar systems, provided that enough information is available to demonstrate similarity of function and design.

3. Component compatibility considerations:

Ideally, a personal fall arrest system is designed, tested, and supplied as a complete system. However, it is common practice for lanyards, connectors, lifelines, deceleration devices, and body harnesses to be interchanged since some components wear out before others. The employer and employee should realize that not all components are interchangeable. For instance, a lanyard should not be connected between a body harness and a deceleration device of the self-retracting type since this can result in additional free fall for which the system was not designed. Any substitution or change to a personal fall arrest system should





be fully evaluated or tested by a competent person to determine that it meets the standard, before the modified system is put in use.

## FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

### Fall Protection System Considerations cont'd

4. Employee training considerations:

Thorough employee training in the selection and use of personal fall arrest systems is imperative. As stated in the standard, before the equipment is used, employees must be trained in the recognition of hazards related to a fall and the procedures to minimize those hazards along with the safe use of the system. This should include the following: Application limits; proper anchoring and tie-off techniques; estimation of free fall distance, including determination of deceleration distance, and total fall distance to prevent striking a lower level; methods of use; and inspection and storage of the system. Careless or improper use of the equipment can result in serious injury or death. Employers and employees should become familiar with this material, as well as manufacturer's recommendations, before a system is used. Of uppermost importance is the reduction in strength caused by certain tie-offs (such as using knots, tying around sharp edges, etc.) and maximum permitted free fall distance. Also, to be stressed are the importance of inspections prior to use, the limitations of the equipment, and unique conditions at the worksite which may be important in determining the type of system to use.

5. Instruction considerations:

Employers should obtain comprehensive instructions from the supplier as to the system's proper use and application, including, where applicable:

- a. The force measured during the sample force test;
- b. The maximum elongation measured for lanyards during the force test;
- c. The deceleration distance measured for deceleration devices during the force test;
- d. Caution statements on critical use limitations;
- e. Application limits;
- f. Proper hook-up, anchoring and tie-off techniques, including the proper dee-ring or other attachment point to use on the body harness for fall arrest;
- g. Proper climbing techniques;
- h. Methods of inspection, use, cleaning, and storage; and
- i. Specific lifelines that may be used. This information should be provided to employees during training.

6. Inspection considerations:

Personal fall arrest systems must be regularly inspected. Any component with any significant defect, such as cuts, tears, abrasions, mold, or undue stretching; alterations or additions which might affect its efficiency; damage due to deterioration; contact with fire, acids, or other corrosives; distorted hooks or faulty hook springs; tongues unfitted to the shoulder of buckles; loose or damaged mountings; nonfunctioning parts; or wearing or internal deterioration in the ropes must be withdrawn from service immediately, and should be tagged or marked as unusable, or destroyed.

## FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

### Fall Protection System Considerations cont'd

7. Rescue considerations:

When personal fall arrest systems are used, the employer must assure that employees can be promptly rescued or can rescue themselves should a fall occur. The availability of rescue personnel, ladders or other rescue equipment should be evaluated. In some situations, equipment that allows employees to rescue themselves after the fall has been arrested may be desirable, such as devices that have descent capability.

8. Tie-off considerations:

- a. One of the most important aspects of personal fall protection systems is fully planning the system before it is put into use. Probably the most overlooked component is planning for suitable anchorage points. Such planning should ideally be done before the structure or building is constructed so that anchorage points can be incorporated during construction for use later for window cleaning or other building maintenance. If properly planned, these anchorage points may be used during construction, as well as afterwards.
- b. Employers and employees should at all times be aware that the strength of a personal fall arrest system is based on its being attached to an anchoring system which does not significantly reduce the strength of the system (such as a properly dimensioned eye-bolt/snap-hook anchorage). Therefore, if a means of attachment is used that will reduce the strength of the system, that component should be replaced by a stronger one, but one that will also maintain the appropriate maximum arrest force characteristics.
- c. Tie-off using a knot in a rope lanyard or lifeline (at any location) can reduce the lifeline or lanyard strength by 50 percent or more. Therefore, a stronger lanyard or lifeline should be used to compensate for the weakening effect of the knot, or the lanyard length should be reduced (or the tie-off location raised) to minimize free fall distance, or the lanyard or lifeline should be replaced by one which has an appropriately incorporated connector to eliminate the need for a knot.
- d. Tie-off of a rope lanyard or lifeline around an "H" or "I" beam or similar support can reduce its strength as much as 70 percent due to the cutting action of the beam edges. Therefore, wire core leading edge lifeline should be used around the beam; or the lanyard or lifeline should be protected from the edge with leading edge softeners; or free fall distance should be greatly minimized.

## FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

### Fall Protection System Considerations cont'd

- e. Tie-off where the line passes over or around rough or sharp surfaces reduces strength drastically. Such a tie-off should be avoided or an alternative tie-off rigging should be used. Such alternatives may include use of a snap-hook/dee-ring connection, wire rope tie-off, an effective padding of the surfaces, or an abrasion-resistance strap around or over the problem surface. Consider the leading edge lifelines for these applications.
  - f. Horizontal lifelines may, depending on their geometry and angle of sag, be subjected to greater loads than the impact load imposed by an attached component. When the angle of horizontal lifeline sag is less than 30 degrees, the impact force imparted to the lifeline by an attached lanyard is greatly amplified. For example, with a sag angle of 15 degrees, the force amplification is about 2:1 and at 5 degrees sag, it is about 6:1. Depending on the angle of sag, and the line's elasticity, the strength of the horizontal lifeline and the anchorages to which it is attached should be increased a number of times over that of the lanyard. Extreme care should be taken in considering a horizontal lifeline for multiple tie-offs. The reason for this is that in multiple tie-offs to a horizontal lifeline, if one employee falls, the movement of the falling employee and the horizontal lifeline during arrest of the fall may cause other employees to also fall. Horizontal lifeline and anchorage strength should be increased for each additional employee to be tied-off. For these and other reasons, the design of systems using horizontal lifelines must only be done by qualified persons. Testing of installed lifelines and anchors prior to use is recommended.
  - g. The strength of an eye-bolt is rated along the axis of the bolt and its strength is greatly reduced if the force is applied at an angle to this axis (in the direction of shear). Also, care should be exercised in selecting the proper diameter of the eye to avoid accidental disengagement of snap-hooks not designed to be compatible for the connection.
  - h. Due to the significant reduction in the strength of the lifeline/lanyard (in some cases, as much as a 70 percent reduction), the sliding hitch knot should not be used for lifeline/lanyard connections except in emergency situations where no other available system is practical. The "one-and-one" sliding hitch knot should never be used because it is unreliable in stopping a fall. The "two-and-two," or "three-and-three" knot (preferable), may be used in emergency situations; however, care should be taken to limit free fall distance to a minimum because of reduced lifeline/lanyard strength.
9. Vertical lifeline considerations.

As required by the standard, each employee must have a separate lifeline when the lifeline is vertical. The reason for this is that in multiple tie-offs to a single lifeline, if one employee falls, the movement of the lifeline during the arrest of the fall may pull other employees' lanyards, causing them to fall as well.

## FALL PROTECTION TRAINING GUIDE FOR EMPLOYEES

### Fall Protection System Considerations cont'd

10. Snap-hook considerations:

- a. Required by this standard for all connections, locking snap-hooks incorporate a positive locking mechanism in addition to the spring loaded keeper, which will not allow the keeper to open under moderate pressure without someone first releasing the mechanism. Such a feature, properly designed, effectively prevents roll-out from occurring.
- b. The following connections must be avoided (unless properly designed locking snap-hooks are used) because they are conditions which can result in roll-out when a nonlocking snap-hook is used:

- Direct connection of a snap-hook to a horizontal lifeline.
- Two (or more) snap-hooks connected to one dee-ring.
- Two snap-hooks connected to each other.
- A snap-hook connected back on its integral lanyard.
- A snap-hook connected to a webbing loop or webbing lanyard.

Improper dimensions of the dee-ring, rebar, or other connection point in relation to the snap-hook dimensions which would allow the snap-hook keeper to be depressed by a turning motion of the snap-hook.

11. Free fall considerations:

The employer and employee should at all times be aware that a system's maximum arresting force is evaluated under normal use conditions established by the manufacturer, and in no case using a free fall distance in excess of 6 feet (1.8 m). A few extra feet of free fall can significantly increase the arresting force on the employee, possibly to the point of causing injury. Because of this, the free fall distance should be kept at a minimum, and, as required by the standard, in no case greater than 6 feet (1.8 m). To help assure this, the tie-off attachment point to the lifeline or anchor should be located at or above the connection point of the fall arrest equipment to harness. (Since otherwise additional free fall distance is added to the length of the connecting means (i.e. lanyard).) Attaching to the working surface will often result in a free fall greater than 6 feet (1.8 m). For instance, if a 6-foot (1.8 m) lanyard is used, the total free fall distance will be the distance from the working level to the body harness attachment point plus the 6 feet (1.8 m) of lanyard length. Another important consideration is that the arresting force that the fall system must withstand also goes up with greater distances of free fall, possibly exceeding the strength of the system.



## FALL PROTECTION

### Fall Protection System Considerations

12. Elongation and deceleration distance:

Other factors involved in a proper fall arrest system are that in the event of a fall, a lanyard will experience a certain amount of elongation. A deceleration device will result in a certain stop distance. The stop distance must be within the device's instructions and must be sufficient to ensure that an employee is fully stopped. The stop distance must be the distance the deceleration device is attached to the lifeline. The stop distance due to its own elongation must be taken into account. Other factors must also be maintained to ensure that the system fully stops the employee before impact to impact before the system fully stops the employee. It must not be allowed below the securing point. The device must not prevent the device from sliding off the lifeline to the next working level below. These considerations must be taken past the end of the lifeline and have a sufficient safety margin.

13. Obstruction considerations:

The location of the tie-off should be such that it does not obstruct the employee. Tie-offs that minimize obstruction are preferred.

14. Other considerations:

Because of the design of some products, a proper tie-off may not be possible. For example, heavy equipment may be overhead in order to avoid the weight of the equipment. Retracting equipment is connected to the lifeline to prevent the device from sliding down. In all cases, manufacturer's instructions must be followed.



BN Builders, Inc.

# Forklift Pre-Use Inspection

Archive Document – DO NOT DISCARD

|          |  |                   |  |
|----------|--|-------------------|--|
| Model:   |  | Equipment Number: |  |
| Company: |  | Hour Meter:       |  |

| DATE:   |                         |     |     |     |     |     |     |
|---|-------------------------|-----|-----|-----|-----|-----|-----|
| Initials of person performing inspection:   |                         |     |     |     |     |     |     |
| Has the operator been instructed in the safe operation of this type of lift and are they certified? |                         | Y/N | Y/N | Y/N | Y/N | Y/N | Y/N |
| Inspection Item & Description (Pass / Fail)   |                         | P/F | P/F | P/F | P/F | P/F | P/F |
| <b>PRESTART</b>   |                         |     |     |     |     |     |     |
| 1   | Fork Assembly Structure |     |     |     |     |     |     |
| 2   | Mast/Boom               |     |     |     |     |     |     |
| 3   | Hydraulic Lines**       |     |     |     |     |     |     |
| 4   | Wheels/Tires**          |     |     |     |     |     |     |
| 5   | Axles/Under Carriage    |     |     |     |     |     |     |
| 6   | Placards (legible)      |     |     |     |     |     |     |
| 7   | Roll Cage – Structural  |     |     |     |     |     |     |
| 8   | Operator's Manual       |     |     |     |     |     |     |
| 9   | Engine Compartment      |     |     |     |     |     |     |
| 10  | All Fluid Levels        |     |     |     |     |     |     |
| 11  | Belts                   |     |     |     |     |     |     |
| 12  | Wiring                  |     |     |     |     |     |     |
| 13  | Leaks/Hoses**           |     |     |     |     |     |     |
| <b>START-UP</b>   |                         |     |     |     |     |     |     |
| 1   | Seat Belt**             |     |     |     |     |     |     |
| 2   | All Gauges              |     |     |     |     |     |     |
| 3   | Warning Signs/Placards  |     |     |     |     |     |     |
| 4   | Steering (loose)**      |     |     |     |     |     |     |
| 5   | Lever/Switches          |     |     |     |     |     |     |
| 6   | Lights/Backup Alarm**   |     |     |     |     |     |     |
| 7   | Horn**                  |     |     |     |     |     |     |
| <b>FUNCTION CHECK</b>   |                         |     |     |     |     |     |     |
| 1   | Lift up/down**          |     |     |     |     |     |     |
| 2   | Telescope in/out**      |     |     |     |     |     |     |
| 3   | Tilt in/out **          |     |     |     |     |     |     |
| 4   | Outriggers              |     |     |     |     |     |     |
| 5   | Brakes, Parking Brake** |     |     |     |     |     |     |

**\*\* If any item(s) are found to be missing or defective, the equipment is to be repaired/serviced prior to use.**

### Defects Reported

|  |                             |
|--|-----------------------------|
| To: _____  | Date: _____                 |
| Lift Taken Out of Service <input type="checkbox"/> Yes | <input type="checkbox"/> No |

### Repairs Made

|           |             |
|-----------|-------------|
| By: _____ | Date: _____ |
|-----------|-------------|

# WARNING!

**HOT WORK IN PROGRESS  
WATCH FOR FIRE!**

**IN CASE OF EMERGENCY CALL 911**

**INSTRUCTIONS:**

Hot Work Supervisor must verify precautions on check list  
Complete form and **return** to BNB for signature  
Permit is not valid until signed by authorized BNB Supervisor  
Approved Permit must be visibly posted in vicinity of hot work

**Hot Work Done By:**

Employee: \_\_\_\_\_  
Company: \_\_\_\_\_  
Date: \_\_\_\_\_  
Project: \_\_\_\_\_  
Location (bldg/fir): \_\_\_\_\_  
Work Description: \_\_\_\_\_

I verify that I have examined the above location and ensured all the precautions indicated on the Hot Work Permit have been taken to prevent fire

Hot Work Supervisor \_\_\_\_\_  
Signature \_\_\_\_\_

I have reviewed this Permit request and authorize the work to proceed for as long as permit is valid and the conditions stated in permit are maintained

BNB Supervisor \_\_\_\_\_  
Signature \_\_\_\_\_

**Permit Expires**      **Required Fire Watch Duration After Hot Work**  
Date \_\_\_\_\_      30 min      60 min      120 min  
Time: \_\_\_\_\_ AM/PM      Other \_\_\_\_\_



## HOT WORK PERMIT

Code: Oper-20A

Rev. 1      Date: Jun -19

**BEFORE INITIATING HOT WORK, CAN HOT WORK BE AVOIDED?**

This Hot Work Permit is required for any operation involving open flames or producing heat and/or sparks. This includes, but is not limited to: Brazing, Cutting, Grinding, Soldering, Thawing Pipe, Torch Applied Roofing & Welding, ss

**REQUIRED PRECAUTIONS CHECKLIST (Check boxes that apply)**

Available sprinklers, hose streams and extinguishers are serviced/operable.  
 Hotwork equipment inspected and in good condition.  
 Verify if local codes or client have stricter requirements

**REQUIREMENTS WITHIN 35FT OF WORK**

**Identify sprinkler/Gas lines in work area to PROTECT!**  
 Explosive atmosphere in area eliminated.  
 Floors swept clean. Trash picked up.  
 Combustible floors wet down, covered with damp sand or fire-resistant blankets.  
 Remove all combustible material if possible (wood, cardboard, etc)  
 Protect combustibles with fire-resistant tarps or metal shields.  
 All wall, floor, conduits and pipe openings are covered.  
 Fire-resistant tarps suspended beneath work.

**WORK ON WALL OR CEILINGS**

Construction is noncombustible and w/o combustible covering or insulation  
 Combustibles on other side of walls moved away.


**WORK ON ENCLOSED EQUIPMENT**

Enclosed equipment cleared of combustibles.  
 Containers purged of flammable, liquids/vapors.  
 Are respirators or ventilation required?

**FIRE WATCH/HOT WORK AREA MONITORING**

FW will be provided during and for the time specified after hotwork  
 FW Trained in use of extinguishing equip. and in sounding fire alarms.  
 FW Supplied with proper fire extinguishers, hoses, spray cans and equipment.

**Fire Watch Signoff**  
Work area was monitored for      30 min      60 min      120 min  
following hot work and found fire safe.      Signature: \_\_\_\_\_

|  <b>INCIDENT REPORT</b> |           |                            |                         |   |                         | Cod: INC-01B  |        |
|--|-----------|----------------------------|-------------------------|---|-------------------------|---|--------|
|  |           |                            |                         |   |                         | Rev. 1  | Sep-19 |
| <b>INCIDENT INFORMATION</b>  |           |                            |                         |   |                         |   |        |
| DATE   | 6/16/2020 | TIME                       |                         | AM  | PM                      | What was the employee doing just prior to the incident? |        |
| PROJECT  |           | SUPERINTENDENT             |                         |   |                         | Where did the incident occur?                           |        |
| <b>INCIDENT TYPE</b>   |           | Non-Recordable             | Near Miss               | Property Damage   | Onsite First aid        | Worker's comp   |        |
| Submit PTP and photos  |           | OSHA Recordable            | Medical Treatment       | Modified Work   | Lost time               | # Days:   |        |
| Any Emergency Services called? If yes, who (EMS, Police, etc.)?  |           |                            |                         | Was a post incident drug & alcohol test performed?  |                         |   |        |
| <b>PERSON INJURED OR INVOLVED IN INCIDENT</b>  |           |                            |                         |   |                         |   |        |
| Name   |           |                            | Employer                |   |                         | Supervisor Name   |        |
| Title  |           |                            | Time working on project |   |                         | Years of experience                                     |        |
| Damaged property (If applicable)   |           |                            |                         |   | Approx. cost of damages |   |        |
| <b>INCIDENT DESCRIPTION</b> Describe what happened, step by step. Be specific and detailed.              |           |                            |                         |   |                         |   |        |
|  |           |                            |                         |   |                         |   |        |
| <b>SPECIFIC PART(S) OF BODY INJURED</b> (include location- right, upper, etc.)                           |           |                            |                         |   |                         |   |        |
| N/A  |           |                            |                         |   |                         |   |        |
| <b>TYPE OF INJURY</b>  |           |                            |                         |   |                         |   |        |
| Laceration   |           | Fracture                   |                         | Contusion   |                         | Amputation  |        |
| Eye injury   |           | Strain                     |                         | Burns   |                         | Other   |        |
| <b>IMMEDIATE CAUSES</b> Check all that apply   |           |                            |                         |   |                         |   |        |
| Unsafe Acts  | Check     | Unsafe conditions          | Check                   | Related to Supervision / Organization   |                         | Yes/No  |        |
| By-passing safety devices  |           | Congested work area        |                         | Was the Employee performing an scheduled task?  |                         | N/A   |        |
| Drug or alcohol use  |           | Defective tools/equipment  |                         | Was a PTP completed for this task?  |                         | N/A   |        |
| Excess equipment speed   |           | Excessive noise            |                         | If PTP completed, did it accurately account for, and plan mitigation for, the hazards associated with the task? |                         | N/A   |        |
| Failure to warn or secure  |           | Fire/explosion hazard      |                         | Was appropriate training provided to accomplish this task?  |                         | N/A   |        |
| Fatigue  |           | Hazardous substances       |                         | Was there adequate staffing to perform the required task(s) or operation?                                       |                         | N/A   |        |
| Lack of focus  |           | Improper storage           |                         | Were there adequate policies, or other written instructions for the required task(s) or operation?              |                         | N/A   |        |
| Guards not used  |           | Improper tool/equipment    |                         | Has there been a Safety Audit of this work area   |                         | N/A   |        |
| Improper lifting / loading   |           | Inadequate fall protection |                         |   |                         |   |        |
| Improper loading   |           | Inadequate guarding        |                         |   |                         |   |        |
| Improper PPE or PPE not used   |           | Inadequate ventilation     |                         |   |                         |   |        |
| Improper work technique  |           | Insufficient lighting      |                         |   |                         |   |        |
| Operating without authorization  |           | Poor housekeeping/layout   |                         |   |                         |   |        |
| Safety rule violation  |           | Slippery conditions        |                         |   |                         |   |        |
| Unnecessary haste  |           | Weather conditions         |                         |   |                         |   |        |

Other: \_\_\_\_\_ within the past week? 1/1/2

**TYPE OF INCIDENT Describe details**

|                      |  |                                 |  |                                 |  |
|----------------------|--|---------------------------------|--|---------------------------------|--|
| Struck or Injured by |  | Striking Against or Stepping On |  | Cut, Puncture, Scrape Injury By |  |
| Strain or Injury By  |  | Caught In or Between            |  | Foreign body in eye             |  |
| Fall or Slip Injury  |  | Burn or Exposure to Heat/Cold   |  | Other: Vehicle incident         |  |

**POTENTIAL OUTCOME**

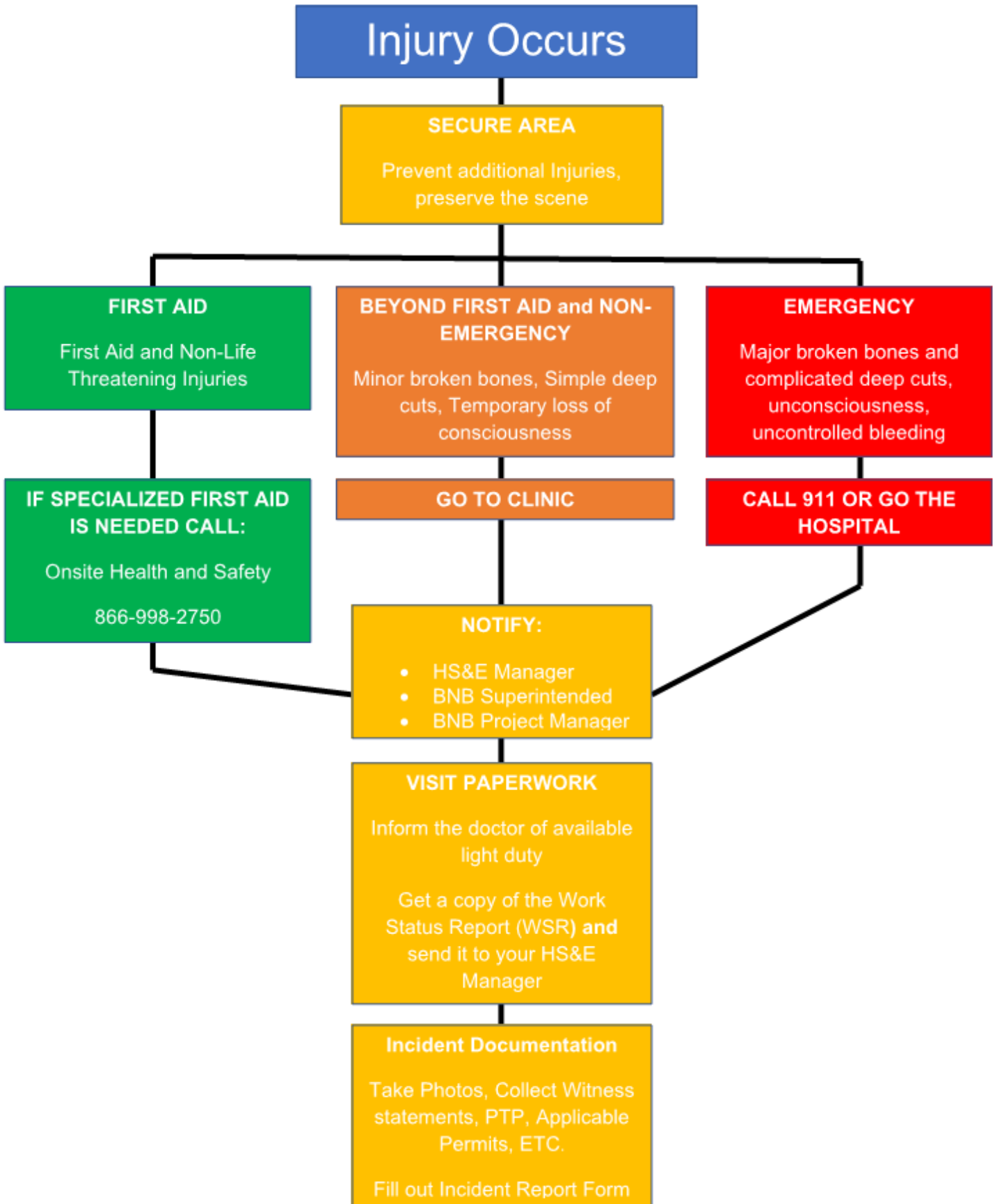
| SEVERITY<br><i>How bad could the accident have been?</i> | Choose between 1-5 | PROBABILITY<br><i>What is the chance of the accident happening again?</i> | Choose between 1-5 | Calculate Potential Outcome<br>Severity * Probability |
|--|--------------------|---|--------------------|---|
|  | 1                  |   | 4                  | MEDIUM  |

|   |                           | BNB SAFETY AND HEALTH RISK MATRIX |          |        |          |   |
|---|---------------------------|-----------------------------------|----------|--------|----------|---|
|   |                           | SEVERITY                          |          |        |          |   |
|   |                           | 1                                 | 2        | 3      | 4        | 5 |
| 1. Noticeable: Minor first aid. Property loss <\$5K                             | 1. Practically impossible |                                   |          |        |          |   |
| 2. Serious: Medical treatment. Property loss \$5K-\$50K                         | 2. Very unlikely          | MEDIUM                            | HIGH     |        | CRITICAL |   |
| 3. Very serious: Work restrictions ≤6 weeks. Property Loss \$50K-\$100K         | 3. Unusual but possible   | LOW                               | MEDIUM   | HIGH   | HIGH     |   |
| 4. Critical: Partial disability. Lost time >6 weeks. Property loss \$100K-\$1MM | 4. Quite possible         | VERY LOW                          | LOW      | MEDIUM |          |   |
| 5. Catastrophic: Total permanent disability. Death. Property loss >\$1MM        | 5. Almost certain         |                                   | VERY LOW | LOW    | MEDIUM   |   |

**PREVENTIVE ACTIONS to prevent the incident from occurring again**

| Details | Deadline | Responsible | Complete |
|---------|----------|-------------|----------|
|         |          |             |          |
|         |          |             |          |
|         |          |             |          |
|         |          |             |          |
|         |          |             |          |

Prepared by \_\_\_\_\_



# Job Hazard Analysis



|                             |  |                               |
|-----------------------------|--|-------------------------------|
| <b>ACTIVITY:</b>            |  | <b>DATE:</b>                  |
| <b>DESCRIPTION OF WORK:</b> |  | <b>PROJECT:</b>               |
|                             |  | <b>SITE SUPERVISOR:</b>       |
|                             |  | <b>REVIEWED BY:</b>           |
|                             |  | <b>REVIEW FOR LATEST USE:</b> |

| WORK ACTIVITY SEQUENCE | POTENTIAL HEALTH & SAFETY HAZARDS | HAZARD CONTROLS |
|------------------------|-----------------------------------|-----------------|
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |
|                        | *                                 | *               |

| WORK ACTIVITY SEQUENCE | POTENTIAL HEALTH & SAFETY HAZARDS | HAZARD CONTROLS       |
|------------------------|-----------------------------------|-----------------------|
|                        | *<br>*<br>*<br>*                  | *<br>*<br>*<br>*      |
|                        | *<br>*<br>*<br>*<br>*             | *<br>*<br>*<br>*<br>* |
|                        | *<br>*<br>*<br>*                  | *<br>*<br>*<br>*      |
|                        | *<br>*<br>*<br>*                  | *<br>*<br>*<br>*      |
|                        | *<br>*<br>*<br>*                  | *<br>*<br>*<br>*      |
|                        | *<br>*<br>*<br>*                  | *<br>*<br>*<br>*      |
|                        | *<br>*<br>*<br>*                  | *<br>*<br>*<br>*      |



EMPLOYEE PRINTED NAME

Blank lined area for employee printed name.

EMPLOYEE SIGNATURE

Blank lined area for employee signature.

DATE/TIME

Blank lined area for date and time.

SUPERVISOR'S PRINTED NAME

Blank lined area for supervisor printed name.

SUPERVISOR'S SIGNATURE

Blank lined area for supervisor signature.

DATE/TIME

Blank lined area for supervisor date and time.

SAFETY OFFICER'S PRINTED NAME

SAFETY OFFICER'S SIGNATURE

DATE/TIME



# NEAR MISS REPORT

Cod: Inc-1B

Rev. 0

May-18

This form should be completed by an employee who witnesses a near-miss incident, such as: falling objects from height, slip on a slippery surface, etc. The completed form should be turned in to the project supervision.  
*This is an incident without injury to person or damage to property.*

Date/Time:

Project:

Exact location:

## NEAR-MISS DESCRIPTION

*Describe what happened, step by step. Be specific and detailed.*

|  |
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|  |
|--|

|             |  |
|-------------|--|
| Root Causes |  |
|-------------|--|

## LESSONS LEARNED

*What could be done to prevent future occurrences*

|   |   |
|---|---|
| 1 | A |
| 2 |   |
| 3 |   |

|             |  |       |  |
|-------------|--|-------|--|
| Reported by |  | Title |  |
|-------------|--|-------|--|



## NOTICE OF SAFETY VIOLATION

### GENERAL INFORMATION

|                    |                        |                   |                      |
|--------------------|------------------------|-------------------|----------------------|
|                    | BNB employee           | Name              |                      |
|                    | Subcontractor employee | Employer          |                      |
| Date               |                        | Written Warning   |                      |
| Project            |                        | Removal from site | Days #               |
| Employee signature |                        |                   | Permanent            |
| Foreman signature  |                        | Termination       | (Only BNB employees) |

### Description

|  |
|--|
|  |
|--|

### Additional actions

|  |
|--|
|  |
|  |
|  |

Distribution of signed copies:  
Subcontractor: CC to PM for subcontractor  
BNB: CC to HR

|                |  |                      |  |             |  |        |        |
|----------------|--|----------------------|--|-------------|--|--------|--------|
| <b>Company</b> |  | <b>Project / Job</b> |  | <b>Date</b> |  | Rev. 0 | Jul-16 |
|----------------|--|----------------------|--|-------------|--|--------|--------|

| Hazards                           | Exist? |    | Hazards                         | Exist? |    |
|-----------------------------------|--------|----|---------------------------------|--------|----|
|                                   | Yes    | No |                                 | Yes    | No |
| <b>Falls</b>                      |        |    | <b>Noise</b>                    |        |    |
| From Height                       |        |    | <b>Vibration</b>                |        |    |
| On to hazard                      |        |    | <b>Fire</b>                     |        |    |
| Of objects                        |        |    | Flammables / Combustibles       |        |    |
| (Other)                           |        |    | Ignition Sources                |        |    |
| <b>Electric Shock</b>             |        |    | (Other)                         |        |    |
| Overhead, Buried, Hidden Lines    |        |    | <b>Chemicals</b>                |        |    |
| Cords / Leads                     |        |    | Dust                            |        |    |
| Power Sources                     |        |    | Fumes / Gases / Vapors          |        |    |
| (Other)                           |        |    | Toxic / Allergenic              |        |    |
| <b>Caught Between</b>             |        |    | Acid / Caustic                  |        |    |
| Swinging / Rotating Equipment     |        |    | Explosive / Reactive            |        |    |
| Pinch Points                      |        |    | (Other)                         |        |    |
| Materials                         |        |    | <b>Buildings / Systems</b>      |        |    |
| Cave in                           |        |    | Charged systems                 |        |    |
| (Other)                           |        |    | Hazardous Energy                |        |    |
| <b>Struck by</b>                  |        |    | Stored Energy                   |        |    |
| Dropped Objects / Loads           |        |    | Hazardous Materials / Chemicals |        |    |
| Flying Material / Debris          |        |    | Confined Spaces                 |        |    |
| Equipment / Traffic               |        |    | Structural                      |        |    |
| Unstable Materials                |        |    | (Other)                         |        |    |
| (Other)                           |        |    | <b>Location</b>                 |        |    |
| <b>Walking / Working Surfaces</b> |        |    | Occupied Space                  |        |    |
| Slips / Trips                     |        |    | Public at Risk                  |        |    |
| Holes / Uneven Surfaces           |        |    | Asbestos / Lead                 |        |    |
| Access / Egress                   |        |    | Mold                            |        |    |
| (Other)                           |        |    | Hazardous Waste                 |        |    |
| <b>Material Handling</b>          |        |    | Medical Waste                   |        |    |
| Overexertion / Strains            |        |    | (Other)                         |        |    |
| Cuts / Punctures                  |        |    | <b>Weather / Environment</b>    |        |    |
| Storage / Stacking                |        |    | Heat / Cold                     |        |    |
| Mechanical Equipment              |        |    | Lightning                       |        |    |
| Hoisting                          |        |    | Wind                            |        |    |
| Hauling / Road Transport          |        |    | Visibility                      |        |    |
| Floor Loading                     |        |    | (Other)                         |        |    |
| (Other)                           |        |    |                                 |        |    |

| PPE                 | Basic Required       | Additional (Circle)   |
|---------------------|----------------------|---|
| <b>Head</b>         | Hard Hat (Type I, G) | Type II Hat (side impact) / Class E (electrical)                      |
| <b>Eyes</b>         | Glasses (ANSI Z87)   | Chemical Goggles / Foam lined (dust) / Welding / Laser                |
| <b>Body / Arms</b>  | Shirt w/ 4" sleeve   | Fall Harness / High Viz / Fire / Chemical / Arc Flash / Cut resistant |
| <b>Knees / Legs</b> | Long Pants           | Knee Pads / Chaps / chemicals   |
| <b>Hands</b>        | Light Duty Gloves    | Heavy Duty Gloves / Cut Resistant / Chemical / Welding / Thermal      |
| <b>Feet</b>         | Sturdy Work Boots    | Rubber Boot / Steel Toe / Metatarsal / Electrical / Booties           |
| <b>Face</b>         |                      | Plastic Face Shield / Mesh Face Shield / Welding Mask                 |
| <b>Ear</b>          |                      | Plugs / Muffs / Double  |
| <b>Breathing</b>    |                      | Dust Mask / Filtering Respirator / Supplied Air                       |
| <b>Other</b>        |                      |   |

|                               |  |
|-------------------------------|--|
| <b>Job / Task Description</b> |  |
|-------------------------------|--|

| Basic Job Steps   | Hazards   | Controls / Work Practices  |
|---|---|--|
| Describe major tasks in order.<br>What will you be doing?<br>What equipment and tools are needed? | Identify the hazards of each step.<br>What could go wrong?<br>What could cause an accident? | Decide what controls are needed.<br>What safe work practices must be used for each hazard?<br>What training is required? |
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|---------------------|--|---------------------|--|
| <b>Prepared by:</b> |  | <b>Date / Time:</b> |  |
|---------------------|--|---------------------|--|

| Crew Member Signatures |  |  |
|------------------------|--|--|
|                        |  |  |
|                        |  |  |
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|                    |  |                 |  |              |  |        |        |
|--------------------|--|-----------------|--|--------------|--|--------|--------|
| <b>Contratista</b> |  | <b>Proyecto</b> |  | <b>Fecha</b> |  | Rev. 0 | Jul-16 |
|--------------------|--|-----------------|--|--------------|--|--------|--------|

| Riesgos                                  | Existe?               |   | Riesgos                          | Existe? |    |
|--|-----------------------|---|----------------------------------|---------|----|
|  | Sí                    | No  |                                  | Sí      | No |
| <b>Caídas</b>                            |                       |   | <b>Ruido</b>                     |         |    |
| De altura                                |                       |   | <b>Vibración</b>                 |         |    |
| A mismo nivel                            |                       |   | <b>Fuego</b>                     |         |    |
| De objetos                               |                       |   | Inflamables / Combustibles       |         |    |
| (Otra opción)                            |                       |   | Fuentes de ignición              |         |    |
| <b>Choque Eléctrico</b>                  |                       |   | (Otra opción)                    |         |    |
| Líneas aéreas / enterradas               |                       |   | <b>Químicos</b>                  |         |    |
| Cordones / Cables /Alambre               |                       |   | Polvo                            |         |    |
| Fuentes de energía                       |                       |   | Humos/Gases/Vapores              |         |    |
| (Otra opción)                            |                       |   | Tóxico / Alergénico              |         |    |
| <b>Atrapamiento entre</b>                |                       |   | Ácido / Cáustico                 |         |    |
| Equipo giratorio/rotatorio               |                       |   | Explosivo / Reactivo             |         |    |
| Puntos de atrapamiento                   |                       |   | (Otra opción)                    |         |    |
| Materiales                               |                       |   | <b>Edificios / Sistemas</b>      |         |    |
| Derrumbe                                 |                       |   | Sistemas cargados                |         |    |
| (Otra opción)                            |                       |   | Energía peligrosa                |         |    |
| <b>Golpeado por</b>                      |                       |   | Energía almacenada               |         |    |
| Caídas de objetos / Cargas               |                       |   | Materiales peligrosos / Químicos |         |    |
| Material suelto / Escombros              |                       |   | Espacios confinados              |         |    |
| Equipo / Tráfico                         |                       |   | Estructural                      |         |    |
| Material inestable                       |                       |   | (Otra opción)                    |         |    |
| (Otra opción)                            |                       |   | <b>Ubicación</b>                 |         |    |
| <b>Pasadizos/ Plataformas de trabajo</b> |                       |   | Espacio ocupado                  |         |    |
| Resbalones / Tropezos                    |                       |   | Riesgos para el público          |         |    |
| Huecos / Superficie desnivelada          |                       |   | Asbesto / Plomo                  |         |    |
| Acceso / Salida                          |                       |   | Moho                             |         |    |
| (Otra opción)                            |                       |   | Residuos peligrosos              |         |    |
| <b>Manejo de materiales</b>              |                       |   | Residuos médicos                 |         |    |
| Fatiga / Esguince muscular               |                       |   | (Otra opción)                    |         |    |
| Cortes / Pinchazos                       |                       |   | <b>Clima / Ambiente</b>          |         |    |
| Almacenamiento / Apilado                 |                       |   | Calor / Frío                     |         |    |
| Equipo mecánico                          |                       |   | Relámpago/Rayo                   |         |    |
| Levantamiento                            |                       |   | Viento                           |         |    |
| Transporte/ Transporte por carretera     |                       |   | Visibilidad                      |         |    |
| Carga sobre el suelo                     |                       |   | (Otra opción)                    |         |    |
| (Otra opción)                            |                       |   |                                  |         |    |
| <b>E.P.P</b>                             | <b>100% Requerido</b> | <b>Equipo adicional (Círculo uno)</b>   |                                  |         |    |
| <b>Cabeza</b>                            | Casco (Tipo I, G)     | Casco Tipo 2 (impacto lateral) / Tipo E (protección eléctrica)                      |                                  |         |    |
| <b>Ojos</b>                              | Lentes (ANSI Z87)     | Gafas químicas / Espuma forrada / Soldadura / Láser                                 |                                  |         |    |
| <b>Cuerpo / brazos</b>                   | Camisa de mangas 4"   | Arnés de seguridad /Chaleco / Fuego / Químico / Resistente al corte                 |                                  |         |    |
| <b>Rodillas / Piernas</b>                | Pantalones largos     | Rodilleras / Chaps / Químico  |                                  |         |    |
| <b>Manos</b>                             | Guantes ligeros       | Guantes gruesos / Resistente al corte / Químico / Soldadura / Protección térmica    |                                  |         |    |
| <b>Pies</b>                              | Botas de trabajo      | Botas de goma / Punta de acero / Metatarsiano / Eléctrica / Cubiertas del zapato    |                                  |         |    |
| <b>Cara</b>                              |                       | Protector facial plastico/ Protector facial de malla / Máscara soldadura            |                                  |         |    |
| <b>Orejas</b>                            |                       | Tapones / Orejeras / Ambos  |                                  |         |    |
| <b>Respiración</b>                       |                       | Máscara de polvo / Respirador purificador de aire / Respirador de aire suministrado |                                  |         |    |
| <b>Otra opción</b>                       |                       |   |                                  |         |    |








|   |                                 |        |              |
|---|---------------------------------|--------|--------------|
|  | <b>DAILY SCAFFOLD CHECKLIST</b> | Code # | Oper-27A     |
|   |                                 | Rev.   | 0            |
|   |                                 | Date   | October-2017 |

Company: \_\_\_\_\_  
Location: \_\_\_\_\_

Inspected By: \_\_\_\_\_  
Supervisor: \_\_\_\_\_

The following items should be visually checked prior to working from any scaffolding (daily).

|   | Yes | No | N/A |
|---|-----|----|-----|
| 1. Is the footing of the scaffolding sound and rigid, capable of supporting the weight. (Bricks or blocks are not acceptable)         |     |    |     |
| 2. Did a competent person erect, dismantle or move the scaffold?  |     |    |     |
| 3. Are all the scaffold components the same manufacturer and type?  |     |    |     |
| 4. Is a complete guardrail system in place? i.e. top rail (42"), midrail (22"), and toe boards (2x4 min.).                            |     |    |     |
| 5. Were damaged scaffold components repaired or replaced?   |     |    |     |
| 6. Is the maximum span for 2"x12" planks 8 ft.  |     |    |     |
| 7. Is all planking or platforms overlapped by a minimum of 12", and secured from movement?  |     |    |     |
| 8. Is there an access ladder, stairs or other safe means of access?   |     |    |     |
| 9. Do the scaffold planks extend over their end supports 6" but not more than 12"?  |     |    |     |
| 10. Is there overhead protection provided for people on scaffold exposed to overhead hazards?   |     |    |     |
| 11. Is fall protection feasible to use when erecting scaffold?  |     |    |     |
| 12. Are the poles, legs, or uprights of the scaffold, plumb and rigidly braced to prevent swaying and displacement?                   |     |    |     |
| 13. Is the scaffold properly braced by cross-bracing or diagonal braces, or both, for securing vertical timbers together?             |     |    |     |
| 14. Where uplift may occur, are vertical members locked together by pins or other equivalent suitable means?                          |     |    |     |
| 15. Is scaffold level and plumb?  |     |    |     |
| 16. Are sills properly placed and adequate size?  |     |    |     |
| 17. Have screw jacks been used to level and plumb scaffold, instead of unstable objects (concrete blocks, bricks, etc.)?              |     |    |     |
| 18. Are base plates and/or screw jacks secured to sills and frame?  |     |    |     |
| 19. Is the scaffold securely guyed or tied to a building or structure, when the height exceeds four times its minimum base dimension? |     |    |     |
| 20. Has scaffold been tied to structure at least every 30 feet in length and 26 feet in height?                                       |     |    |     |
| 21. Is each work deck fully planked?  |     |    |     |
| 20. Is handrail netting or covered walkway installed if workers pass through or under the scaffold?                                   |     |    |     |
| 21. Have workers on scaffold been trained on scaffold safety?   |     |    |     |

|   |                                |               |          |
|---|--------------------------------|---------------|----------|
|  | <b>SHAFT WORK ENTRY PERMIT</b> | Code #        | Oper-14B |
|   |                                | Rev.          | 0        |
|   |                                | Date          | Jan-2018 |
|   |                                | Original Date | Jan-2018 |

**NOTICE:** *Work in the Shaft Requires a JHA and Pre-Task Plan to be completed and all Hazards identified must be mitigated before any work begins. Please attach JHA and PTP to permit.*

Date: \_\_\_\_\_ Hours: \_\_\_\_\_ Project: \_\_\_\_\_

Company Performing Work: \_\_\_\_\_

Description of Work: \_\_\_\_\_

Supervisor of Crew in Shaft: \_\_\_\_\_ Trade: \_\_\_\_\_ Phone Number: \_\_\_\_\_

**Complete the below checklist:**

|   | Yes   | No    | NA    |
|---|-------|-------|-------|
| Is the Shaft a Permit Required Confined Space? If yes, please complete a confined space work permit.  | _____ | _____ | _____ |
| Tools, materials, and PPE are secured to prevent them from falling down the shaft.  | _____ | _____ | _____ |
| Is each working level with an exposed shaft opening protected by guardrails with installed toe boards, mid-rails and handrails? All Openings on all levels are closed and secured? Is vertical mesh installed at lobby edge to prevent falling materials? | _____ | _____ | _____ |
| Lower levels are delineated as necessary with a spotter and radio communication?  | _____ | _____ | _____ |
| Are other crews or trades working next to the exposed shaft opening on above floors? If yes, please coordinate work with the other crew before beginning. <b>Radio communication must be established between crews.</b><br>Comments: _____                | _____ | _____ | _____ |
| Is there adequate lighting to complete required task?   | _____ | _____ | _____ |
| Is Hot Work being performed? If yes, please complete a Hot Work Permit.   | _____ | _____ | _____ |
| Is there proper access and egress to work locations?  | _____ | _____ | _____ |

Comments: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



SHAFT WORK ENTRY PERMIT

|               |          |
|---------------|----------|
| Code #        | Oper-14B |
| Rev.          | 0        |
| Date          | Jan-2018 |
| Original Date | Jan-2018 |

**Authorized Participants: (Attach additional Authorized Participants on separate sheet if necessary)**

|            |           |         |
|------------|-----------|---------|
| Print Name | Signature | Company |
| Print Name | Signature | Company |
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| Print Name | Signature | Company |

This Shaft Entry Permit and associate JHA and Pre-Task Plans have been reviewed and authorized by:

**BNBuilders** Superintendent: \_\_\_\_\_
















**BNBuilders** Project Manager: \_\_\_\_\_

|   |                  |   |  |   |                            |                  |  |
|---|------------------|---|--|---|----------------------------|------------------|--|
| <b>Silica Exposure Control Plan</b>                               |                  | <b>Project:</b>                             |  | <b>Start Date:</b>                      |                            | Code #: Oper-31B |  |
| Prepared by (Work Supervisor):                                    |                  | Reviewed by (BNB Competent Person):         |  | Rev. 1                                  |                            | Date: Nov-2018   |  |
| Describe Task   | Duration (Hours) | Controls<br>(See reverse side for examples) |  | Respiratory Protection<br>(Per Table 1) | Inside/Outside Building    |                  |  |
|   |                  | Engineering                                 | Administrative                                 |   |                            |                  |  |
| <b>Examples:</b> Drilling 5/8" dowel holes with roto-hammer       |                  | 8 hours                                     | Shroud, hollow drill bits, dustless attachment | Body positioning                        | Respirator APF 10 required | Outside          |  |
| <b>Housekeeping Practices:</b><br>(See reverse side for examples) |                  |   |  |   |                            |                  |  |

| Engineering controls   | Administrative controls                        |
|--|--|
| Exhaust fan  | Barricades / Signs                             |
| LEV (Local Exhaust Ventilation – HEPA)   | Work Scheduling                                |
| Wetting  | Worker Rotation                                |
| Partial enclosure  | Body Positioning                               |
| Full enclosure   | Good Hygiene Practices                         |
| Shroud   | Employee Training                              |
| Barriers   | Other:   |
| Sweeping Compound  |  |
| Other:   |  |
| Respiratory Protection Guide   | Housekeeping and Hygiene                       |
| <p><b>APF 10</b> = Any half mask particulate respirator equipped with an N95, R95, or P95 filter, including filtering facepieces. N99, R99, P99, N100, R100, P100 filters may also be used.</p>                              | Protective Work Clothing                       |
| <p><b>APF 25</b> = Any powered, air-purifying respirator with a high-efficiency particulate filter, or<br/>Any supplied-air respirator operated in a continuous-flow mode</p>  | Handwashing before drinking, eating or smoking |
| <p><b>APF 50</b> = Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter, or<br/>Any powered, air-purifying respirator with a tight-fitting facepiece and a high-efficiency particulate filter</p> | Proper dust bag handling and disposal          |
| <p><b>APF 1000</b> = Any supplied-air respirator operated in pressure-demand or positive-pressure mode</p>   | Other:   |

# CONTROLLING SILICA EXPOSURE













Source: Laborers' Health & Safety Fund of North America, <https://www.lhsfna.org/index.cfm/controlling-silica-exposure/#fiber>

| EQUIPMENT OR TASK  | ENGINEERING AND WORK PRACTICE CONTROL METHODS  | RESPIRATOR REQUIREMENTS AND MINIMUM ASSIGNED PROTECTION FACTOR (APF) FOR <b>0-4 HOURS</b>                                  | RESPIRATOR REQUIREMENTS AND MINIMUM ASSIGNED PROTECTION FACTOR (APF) FOR <b>4+ HOURS</b>                                   |  |
|--|--|--|--|--|
| <b>Stationary masonry saws</b><br>  | <ul style="list-style-type: none"> <li>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>   | No additional protection required<br>   | No additional protection required<br>   |  |
| <b>Handheld power saws</b><br><i>*Any blade diameter</i><br>  | <ul style="list-style-type: none"> <li>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>   | <b>Indoors / in an enclosed area:</b>  | APF 10 required<br>                     | APF 10 required<br>   |
| <b>Handheld power saws for cutting fiber-cement board</b><br><i>*blade diameter of eight (8) inches or less</i><br> | For tasks performed outdoors only: <ul style="list-style-type: none"> <li>Use saw equipped with commercially available dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>Dust collector must provide the airflow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency.</li> </ul> | No additional protection required<br> | No additional protection required<br> |  |
| <b>Walk-behind saws</b><br>   | <ul style="list-style-type: none"> <li>Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>   | <b>Indoors / in an enclosed area:</b>  | APF 10 required<br>                   | APF 10 required<br> |
| <b>Rig-mounted core saws or drills</b><br>  | <ul style="list-style-type: none"> <li>Use tool equipped with integrated water delivery system that supplies water to cutting surface.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>  | No additional protection required<br> | No additional protection required<br> |  |












# CONTROLLING SILICA EXPOSURE

Source: Laborers' Health & Safety Fund of North America, <https://www.lhsfna.org/index.cfm/controlling-silica-exposure/#fiber>

| EQUIPMENT OR TASK  | ENGINEERING AND WORK PRACTICE CONTROL METHODS   | RESPIRATOR REQUIREMENTS AND MINIMUM ASSIGNED PROTECTION FACTOR (APF) FOR<br><b>0-4 HOURS</b>  | RESPIRATOR REQUIREMENTS AND MINIMUM ASSIGNED PROTECTION FACTOR (APF) FOR<br><b>4+ HOURS</b>                                    |
|--|---|---|--|
| <p><b>Handheld and stand-mounted drills</b> <i>*including impact, rotary hammer drills</i></p>  | <ul style="list-style-type: none"> <li>• Use drill equipped with commercially available shroud or cowling with dust collection system.</li> <li>• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>• Dust collector must provide the airflow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</li> <li>• Use a HEPA-filtered vacuum when cleaning holes.</li> </ul>   | <p>No additional protection required</p>                             | <p>No additional protection required</p>    |
| <p><b>Jackhammers and handheld powered chipping tools</b></p>                                  | <ul style="list-style-type: none"> <li>• Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.</li> <li>- OR -</li> <li>• Use tool equipped with commercially available shroud and dust collection system.</li> <li>• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>• Dust collector must provide the airflow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</li> </ul>  | <p><b>indoors / in an enclosed area:</b></p> <p>APF 10 required</p>  | <p>APF 10 required</p>                      |
| <p><b>Handheld grinders for mortar removal</b> <i>*for tuckpointing, etc.</i></p>             | <ul style="list-style-type: none"> <li>• Use grinder equipped with commercially available shroud and dust collection system.</li> <li>• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>• Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.</li> </ul>  | <p>APF 10 required</p>   | <p>APF 25 required</p>                    |
| <p><b>Walk-behind milling machines and floor grinders</b></p>                                 | <ul style="list-style-type: none"> <li>• Use machine equipped with integrated water delivery system that continuously feeds water to the cutting surface.</li> <li>• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>- OR -</li> <li>• Use machine equipped with dust collection system recommended by manufacturer.</li> <li>• Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>• Dust collector must provide airflow recommended by manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</li> <li>• When used indoors or in an enclosed area, use a HEPA-filtered vacuum to remove loose dust in between passes.</li> </ul> | <p>No additional protection required</p>                           | <p>No additional protection required</p>  |

# CONTROLLING SILICA EXPOSURE

Source: Laborers' Health & Safety Fund of North America, <https://www.lhsfna.org/index.cfm/controlling-silica-exposure/#fiber>

| EQUIPMENT OR TASK  | ENGINEERING AND WORK PRACTICE CONTROL METHODS  | RESPIRATOR REQUIREMENTS AND MINIMUM ASSIGNED PROTECTION FACTOR (APF) FOR<br><b>0-4 HOURS</b>                                   | RESPIRATOR REQUIREMENTS AND MINIMUM ASSIGNED PROTECTION FACTOR (APF) FOR<br><b>4+ HOURS</b>                                    |
|--|--|--|--|
| <p><b>Handheld grinders for uses other than mortar removal</b></p>    | <ul style="list-style-type: none"> <li>For tasks performed outdoors only:</li> <li>Use grinder equipped with integrated water delivery system that continuously feeds water to the grinding surface.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul> <p><b>indoors / in an enclosed area:</b></p> <ul style="list-style-type: none"> <li>Use grinder equipped with commercially available shroud and dust collection system.</li> <li>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul> <p><b>Outdoors:</b></p> <ul style="list-style-type: none"> <li>Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.</li> </ul> | <p>No additional protection required</p>    | <p>No additional protection required</p>    |
| <p><b>Heavy equipment and utility vehicles used to abrade or fracture silica-containing materials (e.g.: hoe-ramming, rock ripping) or used during demolition activities involving silica-containing materials</b></p>  | <ul style="list-style-type: none"> <li>Operate equipment from within an enclosed cab.</li> <li>When employees outside of the cab are engaged in the task, apply water and/or dust suppressants as necessary to minimize dust emissions.</li> </ul>   | <p>No additional protection required</p>  | <p>No additional protection required</p>  |
| <p><b>Heavy equipment and utility vehicles for tasks such as grading and excavating</b> <i>*Does not include: demolishing, abrading, or fracturing silica-containing materials</i></p>                                  | <ul style="list-style-type: none"> <li>Apply water and/or dust suppressants as necessary to minimize dust emissions.</li> </ul> <p style="text-align: center;">- OR -</p> <ul style="list-style-type: none"> <li>When the equipment operator is the only employee engaged in the task, operate equipment from within an enclosed cab.</li> </ul>   | <p>No additional protection required</p>  | <p>No additional protection required</p>  |









# CONTROLLING SILICA EXPOSURE

Source: Laborers' Health & Safety Fund of North America, <https://www.lhsfna.org/index.cfm/controlling-silica-exposure/#fiber>

| EQUIPMENT OR TASK  | ENGINEERING AND WORK PRACTICE CONTROL METHODS  | RESPIRATOR REQUIREMENTS AND MINIMUM ASSIGNED PROTECTION FACTOR (APF) FOR <b>0-4 HOURS</b>                                      | RESPIRATOR REQUIREMENTS AND MINIMUM ASSIGNED PROTECTION FACTOR (APF) FOR <b>4+ HOURS</b>                                       |
|--|--|--|--|
| <p><b>Dowel drilling rigs for concrete</b></p>                                    | <p>For tasks performed outdoors only:</p> <ul style="list-style-type: none"> <li>•Use shroud around drill bit with a dust collection system. Dust collector must have a filter with 99% or greater efficiency and a filter-cleaning mechanism.</li> <li>•Use a HEPA-filtered vacuum when cleaning holes.</li> </ul>  | <p>APF 10 required</p>                      | <p>APF 10 required</p>                      |
| <p><b>Vehicle-mounted drilling rigs for rock and concrete</b></p>                 | <ul style="list-style-type: none"> <li>•Use dust collection system with close capture hood or shroud around drill bit with a low-flow water spray to wet the dust at the discharge point from the dust collector.</li> </ul> <p style="text-align: center;">- OR -</p> <ul style="list-style-type: none"> <li>•Operate from within an enclosed cab and use water for dust suppression on drill bit.</li> </ul>   | <p>No additional protection required</p>    | <p>No additional protection required</p>    |
| <p><b>Small drivable milling machines</b><br/><i>*less than half-lane</i></p>    | <ul style="list-style-type: none"> <li>•Use a machine equipped with supplemental water sprays designed to suppress dust. Water must be combined with a surfactant.</li> <li>•Operate and maintain machine to minimize dust emissions.</li> </ul>   | <p>No additional protection required</p>  | <p>No additional protection required</p>  |
| <p><b>Large drivable milling machines</b><br/><i>*half-lane and larger</i></p>  | <ul style="list-style-type: none"> <li>•For cuts of any depth on asphalt only:</li> <li>•Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust.</li> <li>•Operate and maintain machine to minimize dust emissions.</li> <li>•For cuts of four inches in depth or less on any substrate:</li> <li>•Use machine equipped with exhaust ventilation on drum enclosure and supplemental water sprays designed to suppress dust.</li> <li>•Operate and maintain machine to minimize dust emissions.</li> </ul> <p style="text-align: center;">- OR -</p> <ul style="list-style-type: none"> <li>•Use a machine equipped with supplemental water spray designed to suppress dust. Water must be combined with a surfactant.</li> <li>•Operate and maintain machine to minimize dust emissions.</li> </ul> | <p>No additional protection required</p>  | <p>No additional protection required</p>  |

# CONTROLLING SILICA EXPOSURE

Source: Laborers' Health & Safety Fund of North America, <https://www.lhsfna.org/index.cfm/controlling-silica-exposure/#fiber>

| EQUIPMENT OR TASK   | ENGINEERING AND WORK PRACTICE CONTROL METHODS  | RESPIRATOR REQUIREMENTS AND MINIMUM ASSIGNED PROTECTION FACTOR (APF) FOR <b>0-4 HOURS</b>                                    | RESPIRATOR REQUIREMENTS AND MINIMUM ASSIGNED PROTECTION FACTOR (APF) FOR <b>4+ HOURS</b>                                     |
|---|--|--|--|
| <p><b>Crushing machines</b></p>  | <ul style="list-style-type: none"> <li>•Use equipment designed to deliver water spray or mist for dust suppression at crusher and other points where dust is generated (e.g., hoppers, conveyors, sieves/ sizing or vibrating components, and discharge points).</li> <li>•Operate and maintain machine in accordance with manufacturer's instructions to minimize dust emissions.</li> <li>•Use a ventilated booth that provides fresh, climate-controlled air to the operator, or a remote control station.</li> </ul> | <p>No additional protection required</p>  | <p>No additional protection required</p>  |
| <p><b>Drivable saws</b></p>      | <p>For tasks performed outdoors only:</p> <ul style="list-style-type: none"> <li>•Use saw equipped with integrated water delivery system that continuously feeds water to the blade.</li> <li>•Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</li> </ul>   | <p>No additional protection required</p>  | <p>No additional protection required</p>  |

|                      |  |                       |  |
|----------------------|--|-----------------------|--|
| Project Name         |  | Date                  |  |
| Tower Crane Model    |  | Mobile Crane Model    |  |
| Tower Crane Serial # |  | Mobile Crane Serial # |  |

### Tower Crane A/D Director

I have been designated to this position and have read and understood the erection/dismantle procedures specific to this tower crane.

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  | Date      |  |

### Tower Crane Lift Director

I have been designated to this position and have read and understood the erection/dismantle procedures specific to this tower crane.

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  | Date      |  |

### Qualified Person providing technical assistance to the Tower Crane A/D Director

I have been designated to this position and have read and understood the erection/dismantle procedures specific to this tower crane.

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  | Date      |  |

### Tower Crane Operator

I have been designated to this position and have read and understood the operating procedures specific to this tower crane.

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  | Date      |  |

### Mobile Crane A/D Director

I have been designated to this position and have read and understood the erection/dismantle procedures specific to this mobile crane.

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  | Date      |  |

### Mobile Crane Operator

I have been designated to this position and have read and understood the operating procedures specific to this mobile crane.

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  | Date      |  |

### BNB Site Supervisor

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  | Date      |  |

### BNB Alternate Site Supervisor

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  | Date      |  |

# **BNBuilders**

## Duties of Assigned Personnel

| BNB 3 <sup>rd</sup> Party Consultant |  |           |  |
|--------------------------------------|--|-----------|--|
| Name                                 |  | Company   |  |
| Title                                |  | Contact # |  |
| Signature                            |  | Date      |  |

## Duties of Assigned Personnel – Tower Crane Daily Operation

|                      |  |            |  |
|----------------------|--|------------|--|
| Project Name         |  | Start Date |  |
| Tower Crane Model    |  | Updated    |  |
| Tower Crane Serial # |  |            |  |

### Tower Crane Lift Director

I have been designated to this position and have read and understood the operational procedures specific to this tower crane.

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

### Backup LD's

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

### Tower Crane Operator

I have been designated to this position and have read and understood the operating procedures specific to this tower crane.

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

### BNB Site Supervisor

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

### BNB Alternate Site Supervisors

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

## Duties of Assigned Personnel – Multiple Crane Daily Operation Tower Crane & Mobile Crane

|                      |  |            |  |
|----------------------|--|------------|--|
| Project Name         |  | Start Date |  |
| Tower Crane Model    |  | Updated    |  |
| Tower Crane Serial # |  |            |  |

### Tower Crane Lift Director

I have been designated to this position and have read and understood the operational procedures specific to this tower crane.

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

### Backup LD's

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

### Tower Crane Operator

I have been designated to this position and have read and understood the operating procedures specific to this tower crane.

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

### Mobile Crane Operator

I have been designated to this position and have read and understood the operating procedures specific to this mobile crane.

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

### BNB Site Supervisor

|           |  |           |              |
|-----------|--|-----------|--------------|
| Name      |  | Company   | BNBuilders   |
| Title     |  | Contact # | 858-775-3291 |
| Signature |  |           |              |

### BNB Alternate Site Supervisors

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

### BNB Site Safety

|           |  |           |  |
|-----------|--|-----------|--|
| Name      |  | Company   |  |
| Title     |  | Contact # |  |
| Signature |  |           |  |

**Tower Crane Pre-Dismantle Checklist**

|                      |  |                    |  |                        |  |
|----------------------|--|--------------------|--|------------------------|--|
| Project Name         |  | Date               |  | Mobile Crane Operator  |  |
| Erection Date        |  | BNB Superintendent |  | Mobile Crane Model     |  |
| Tower Crane Model    |  | BNB Safety         |  | Mobile Crane Serial #  |  |
| Tower Crane Serial # |  | Lift Director      |  | Tower Crane Operator   |  |
| Jib Length           |  | A/D Director       |  | Tower Crane Technician |  |



## BNB

| Check | Task   | Notes |
|-------|--|-------|
|       | Apply for FAA Obstruction Evaluation / Airport Airspace Analysis (OE/AAA) ( <i>Note</i> : submit the evaluation request at least 45 days prior to any Tower Crane Erection or "Jump" in elevation) <a href="https://oeaaa.faa.gov/oeaaa/external/aisTools/crdsAction.jsp">https://oeaaa.faa.gov/oeaaa/external/aisTools/crdsAction.jsp</a> |       |
|       | Notify L&I Crane Management System via email (Towercranenotify@Lni.wa.gov). Notification must be sent at least two weeks before erecting.  |       |
|       | Complete the Duties of Assigned Personnel form. <b>All parties must sign the form at the start of each day before commencing work</b> ( <i>Note</i> : <i>Two-day erection operations require a separate form to be signed each day</i> ).  |       |
|       | Schedule Pre-Erection Safety Inspection to be conducted by a 3rd-party accredited crane certifier per <b>WAC 296-155-53206</b> .   |       |
|       | Verify underground utilities and structures based on mobile crane outrigger layout.  |       |
|       | Provide Site Specific Safety Orientation for Crane Supplier, Crane Erectors, and Mobile Crane Crewmembers.   |       |
|       | Schedule a pre-erection meeting with all involved parties, including but not limited to Crane Supplier, Crane Erectors, and Mobile Crane Crewmembers.  |       |
|       | Notify surrounding neighbors and businesses of crane erection operations.  |       |
|       | Identify overhead power lines, confirm Nominal Voltage with Utility provider, and establish Minimum Clearance Distance per <b>WAC 296-155-53408 - Table 4</b> .  |       |
|       | If applicable, Post "Danger - Overhead Powerlines" signs and implement protective measures per <b>WAC 296-155-53408</b> .  |       |
|       | Provide Live Utility Map to all subcontractors.  |       |
|       | Verify location of Tower Crane footing is located per the construction plan.   |       |
|       | Verify the Tower Crane footing concrete break strength prior to erection   |       |
|       | Verify a 10lb ABC Fire Extinguisher is available at the Tower Crane cab, base, and <b>outside of the base enclosure</b> .  |       |
|       | Notify the local Fire Department of the need for a High Rescue Team in case of an emergency.   |       |
|       | Ensure that completed Tower Crane Binder is located on the jobsite and readily available to A/D Director and Lift Director for the Erection process.   |       |
|       | Provide a temporary electrical distribution box at the base of the Tower Crane.  |       |
|       | Verify the BNB Tower Crane sign is designed and engineered to fit the specific model of Tower Crane per <b>WAC 296-155-53900(62)</b> .   |       |
|       | Determine need for overnight site security, e.g., two-day erection process.  |       |
|       | Determine if other crane operations, on-site or adjacent, will affect the crane dismantle. If so, a multi-crane communication plan is required. ( <i>Note</i> : <i>If applicable, the affected crane</i>   |       |



|  |  |  |
|--|--|--|
|  | <i>operators must attend the dismantle coordination meeting the morning of the dismantle, then report to duty in their assigned crane)</i>   |  |
|  | Schedule annual inspection of all turntable and tower bolts for proper condition and torque per WAC 296-155-53905                            |  |
|  | Identify and assign a full-time Lift Director to the project for daily Tower Crane activities.   |  |
|  | Ensure the Tower Crane is marked/illuminated in accordance with FAA AC 70/7460-1M - <b>Obstruction Marking and Lighting</b>                  |  |
|  | Obtain Tower Crane Operator contact information, including emergency contact information.  |  |
|  | Provide Tower Crane Operator with BNB project team contact information.  |  |
|  | Ensure daily Tower Crane inspection records are kept in the Tower Crane cab and provided to the BNB project team for the project's duration. |  |
|  | Set base template  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

## Tower Crane Provider

| Check   | Task  | Notes |
|---|---|-------|
|   | Submit Issued for Construction (IFC) Drawings.  |       |
|   | Identify Qualified Person providing technical assistance to the Tower Crane A/D Director.                           |       |
|   | Provide Tower Crane Manual to be stored in the crane cab.   |       |
|   | Schedule third-party electrical panel inspection prior to final L&I Crane Inspection.                               |       |
|   | Technician to set proximity alarms on the Tower Crane for power lines, multiple cranes, etc.                        |       |
|   | Submit trucking sequence (number of trucks, the arrival time of first truck, spacing timeframes, and staging area). |       |
|   | Schedule ETLI Conformity - Company will add sticker to the cab of the crane.  |       |
|   | Confirm correct phasing/rotation of motors after crane is energized   |       |
| <b>Tower Crane Erection &amp; Mobile Crane Provider</b> |   |       |
|   | Schedule mobile crane(s) for erection   |       |
|   | Submit Pick Plan(s) two-weeks before erection   |       |
|   | Submit Rigging Diagrams for Crane Pick Plan(s) specific to the Tower Crane model.                                   |       |
|   | Submit approved Traffic Control Plan  |       |
|   | Schedule traffic control flaggers and uniformed Police Officers   |       |
|   | Supply spotters for overhead power lines or other obstructions  |       |
|   | Paint out crane center pin and outrigger locations  |       |
|   | Supply road plates and crane pads as specified in Crane Pick Plan   |       |
|   | Assign A/D Director for Tower Crane Erection  |       |
|   | Assign Lift Director for Tower Crane Erection   |       |
|   |   |       |
|   |   |       |

**Electrical Subcontractor**

Provide electrician on site for erection

Secure power distribution cord running to tower crane cab

Confirm power and grounding requirements with the Tower Crane Provider.

Complete electrical equipment inspections and ensure electrical inspection tags are visible.

**Survey**

Survey Tower Crane Base after set and provide As-Built drawings

Survey Tower Crane Base after foundation is placed and provide As-Built drawings

BNB - In house survey: Layout crane foundation, Anchor Base Install and Tower Crane Base Inspection

Survey Tower Crane tower to verify within tolerances prior to setting slewing assembly/turntable

Survey to communicate to Lift Director crane tower tolerance prior to setting slewing assembly/turntable

**3<sup>rd</sup> Party Crane Inspector**

Complete Tower Crane pre-erection inspection and provide a report to BNBuilders.

Notify BNBuilders and Tower Crane Provider of any deficiencies identified during the inspection.

Provide BNBuilders with final inspection and crane certification for the Tower Crane.

**Tower Crane Pre-Erection Checklist**

|                      |  |                    |  |                        |  |
|----------------------|--|--------------------|--|------------------------|--|
| Project Name         |  | Date               |  | Mobile Crane Operator  |  |
| Erection Date        |  | BNB Superintendent |  | Mobile Crane Model     |  |
| Tower Crane Model    |  | BNB Safety         |  | Mobile Crane Serial #  |  |
| Tower Crane Serial # |  | Lift Director      |  | Tower Crane Operator   |  |
| Jib Length           |  | A/D Director       |  | Tower Crane Technician |  |

**BNB**

| Check | Task  | Notes |
|-------|---|-------|
|       | Apply for FAA Obstruction Evaluation / Airport Airspace Analysis (OE/AAA) ( <i>Note:</i> submit the evaluation request at least 45 days prior to any Tower Crane Erection or "Jump" in elevation) <a href="https://oeaaa.faa.gov/oeaaa/external/aisTools/aisAction.jsp">https://oeaaa.faa.gov/oeaaa/external/aisTools/aisAction.jsp</a> |       |
|       | Apply for Cal/OSHA mobile crane permit at the nearest Cal/Osha District Office. <b>Cal/OSHA Title 8 344.71 (b)</b><br><br>Cal/OSHA Crane Unit<br>2 MacArthur Place, Suite 700<br>Santa Ana, CA 92707<br>Phone:(714) 567-7142<br>Email:pyow@dir.ca.gov   |       |
|       | ( <i>Note:</i> Permit application may be completed by the tower crane provider.)<br>Application Instructions: <a href="https://www.dir.ca.gov/title8/344_71.html">https://www.dir.ca.gov/title8/344_71.html</a>   |       |
|       | Schedule Pre-Erection Safety Inspection to be conducted by a 3rd-party accredited crane certifier per <b>Cal/OSHA Title 8 344.71 (f)</b><br>( <i>Note:</i> Tower crane must be inspected twice a year, the initial permit inspection is considered one of two yearly inspections)   |       |
|       | Notify the Cal/OSHA district office from which the permit was obtained in writing or by telephone followed by written notification. Notification must be sent at least 24 before erecting and must include date and time of activity per <b>Cal/OSHA Title 8 344.71 (g)(2)</b>  |       |
|       | Complete the Duties of Assigned Personnel form. <b>All parties must sign the form at the start of each day before commencing work</b> ( <i>Note: Two-day erection operations require a separate form to be signed each day.</i> )   |       |
|       | Verify underground utilities and structures based on mobile crane outrigger layout.   |       |
|       | Provide Site Specific Safety Orientation for Crane Supplier, Crane Erectors, and Mobile Crane Crewmembers.  |       |
|       | Schedule a pre-erection meeting with all involved parties, including but not limited to Crane Supplier, Crane Erectors, and Mobile Crane Crewmembers.   |       |
|       | Notify surrounding neighbors and businesses of crane erection operations.   |       |
|       | Identify overhead power lines, confirm Nominal Voltage with Utility provider, and establish Minimum Clearance Distance per <b>Cal/OSHA Title 8 1612.1</b>   |       |
|       | If applicable, Post "Danger - Overhead Powerlines" signs and implement protective measures per <b>Cal/OSHA Title 8 1612.1 (b)</b>   |       |
|       | Provide Live Utility Map to all subcontractors.   |       |
|       | Verify location of Tower Crane footing is located per the construction plan.  |       |

|  |   |  |
|--|---|--|
|  | Verify the Tower Crane footing concrete break strength prior to erection  |  |
|  | Verify a 10lb ABC Fire Extinguisher is available at the Tower Crane cab, base, and outside of the base enclosure.   |  |
|  | Notify the local Fire Department of the need for a High Rescue Team in case of an emergency.  |  |
|  | Ensure that completed Tower Crane Binder is located on the jobsite and readily available to A/D Director and Lift Director for the Erection process.  |  |
|  | Provide a temporary electrical distribution box at the base of the Tower Crane.   |  |
|  | Verify the BNB Tower Crane sign is designed and engineered to fit the specific model of Tower Crane per Cal/OSHA Title 8 1619.1 (c)   |  |
|  | Determine need for overnight site security, e.g., two-day erection process.   |  |
|  | Determine if other crane operations, on-site or adjacent, will affect the crane dismantle. If so, a multi-crane communication plan is required. ( <i>Note: If applicable, the affected crane operators must attend the dismantle coordination meeting the morning of the dismantle, then report to duty in their assigned crane</i> ) |  |
|  | Schedule annual inspection of all turntable and tower bolts for proper condition and torque per Cal/OSHA Title 8 1619.1 (f) (5)   |  |
|  | Identify and assign a full-time Lift Director to the project for daily Tower Crane activities.  |  |
|  | Ensure the Tower Crane is marked/illuminated in accordance with FAA AC 70/7460-1M - Obstruction Marking and Lighting  |  |
|  | Obtain Tower Crane Operator contact information, including emergency contact information.   |  |
|  | Provide Tower Crane Operator with BNB project team contact information.   |  |
|  | Ensure daily Tower Crane inspection records are kept in the Tower Crane cab and provided to the BNB project team for the project's duration.  |  |
|  | Set base template   |  |
|  |   |  |
|  |   |  |
|  |   |  |
|  |   |  |

## Tower Crane Provider

| Check   | Task  | Notes |
|---|---|-------|
| X   | Submit Issued for Construction (IFC) Drawings.  |       |
| X   | Identify Qualified Person providing technical assistance to the Tower Crane A/D Director.                           |       |
| X   | Provide Tower Crane Manual to be stored in the crane cab.   |       |
| X   | Schedule third-party electrical panel inspection prior to final Cal OSHA Inspection.                                |       |
| X   | Technician to set proximity alarms on the Tower Crane for power lines, multiple cranes, etc.                        |       |
| X   | Submit trucking sequence (number of trucks, the arrival time of first truck, spacing timeframes, and staging area). |       |
| X   | Schedule ETI Conformity - Company will add sticker to the cab of the crane.   |       |
| X   | Confirm correct phasing/rotation of motors after crane is energized   |       |
| <b>Tower Crane Erection &amp; Mobile Crane Provider</b> |   |       |
|   | Schedule mobile crane(s) for erection   |       |
|   | Submit Pick Plan(s) two-weeks before erection   |       |
|   | Submit Rigging Diagrams for Crane Pick Plan(s) specific to the Tower Crane model.                                   |       |
|   | Submit approved Traffic Control Plan  |       |
|   | Schedule traffic control flaggers and uniformed Police Officers   |       |
|   | Supply spotters for overhead power lines or other obstructions  |       |
|   | Paint out crane center pin and outrigger locations  |       |
|   | Supply road plates and crane pads as specified in Crane Pick Plan   |       |
|   | Assign A/D Director for Tower Crane Erection  |       |
|   | Assign Lift Director for Tower Crane Erection   |       |
|   |   |       |
|   |   |       |



### Electrical Subcontractor

Provide electrician on site for erection

Secure power distribution cord running to tower crane cab

Confirm power and grounding requirements with the Tower Crane Provider.

Complete electrical equipment inspections and ensure electrical inspection tags are visible.

### Survey

Survey Tower Crane Base after set and provide As-Built drawings

Survey Tower Crane Base after foundation is placed and provide As-Built drawings

BNB - In house survey: Layout crane foundation, Anchor Base Install and Tower Crane Base Inspection

Survey Tower Crane tower to verify within tolerances prior to setting slewing assembly/turntable

Survey to communicate to Lift Director crane tower tolerance prior to setting slewing assembly/turntable

### 3<sup>rd</sup> Party Crane Inspector

Complete Tower Crane pre-erection inspection and provide a report to BNBuilders.

Notify BNBuilders and Tower Crane Provider of any deficiencies identified during the inspection.

Provide BNBuilders with final inspection and crane certification for the Tower Crane.

Cal OSHA Permit & Safety Inspection

Cal OSHA - Notify BNBuilders and Tower Crane Provider of any deficiencies identified during the inspection.

Cal OSHA - Provide BNBuilders with final inspection and crane certification for the Tower Crane.



## VOLUNTARY USE OF RESPIRATORS

“Information for Employees Using Respirators When Not Required Under the OSHA Standard.” A copy of this exhibit is to be provided to any employee who chooses to wear a filtering facepiece or tight-fitting negative pressure respirator on a voluntary basis:

“Respirators are an effective method of protection against designated hazards when properly selected and worn. Respirator use is encouraged, even when exposures are below the exposure limit, to provide an additional level of comfort and protection of workers. However, if a respirator is used improperly or not kept clean, the respirator itself can become a hazard to the worker. Sometimes, workers may wear respirators to avoid exposures to hazards, even if the amount of hazardous substance does not exceed the limits set by OSHA standards.”

If BNBuilders provides respirators for your voluntary use, or if you provide your own respirator, you need to take certain precautions to be sure that the respirator itself does not present a hazard.

### You should:

1. Read and heed all instructions provided by the manufacturer on use, maintenance, cleaning and care, and warnings regarding the respirators limitations. Training is required for all respirator use.
2. Choose the respirators certified for use to protect against the contaminant of concern. NIOSH, the National Institute for Occupational Safety and Health of the U.S. Department of Health and Human Services certifies respirators. A label of certification should appear on the respirator or packaging. It will tell you what the respirator is designed for and how much it will protect you.
3. Refer to the Chemical Safety Data Sheet (SDS) for additional information or ask your supervisor.
4. Do not wear your respirator into atmospheres containing contaminants for which your respirator is not designed to protect against. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.
5. Keep track of your respirator so that you do not mistakenly use someone else’s respirator.
6. You should have a medical clearance and fit test prior to wearing your own respirator.
7. Review L&I respirator guidelines at [www.lni.wa.gov](http://www.lni.wa.gov) WAC Chapter 296-842.

Name \_\_\_\_\_ Date \_\_\_\_\_

Signature \_\_\_\_\_ Company/Project \_\_\_\_\_

BNBuilders/Supervisor/Trainer \_\_\_\_\_

# BNB

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100% EMPLOYEE-OWNED

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