BNB

BNBuilders

HEALTH, SAFETY, AND ENVIRONMENTAL MANUAL

"Freedom From Danger"

BNBuilders

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, there practices and use the safety equipment provided.

Brad Bastian
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BNBuilders

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Revisions

The below changes have been made to the following Safety Programs and our Freedom from Danger Safety Policy from rev 1.12.2022 to rev 1.1.2023

Cranes (Policy Update)

The policy covers the criteria to operate cranes safely and in compliance with Fed, WA and CA Health and Safety Regulations

Re-organization, clean up and removal of duplicate requirements within the crane policy.

Clarification to the Roles and Responsibilities of the Lift Director and A/D Director as well as Clarification on meetings held prior to crane mobilization.

Updated Tower Crane Binder templates have been added as attachments

Scaffloding (Policy Update)

5.1.10.1 Verbiage changed to notate each contractor rather then subcontractors Inspection description have been consolidated and clarified (5.1.10.1. Scaffolds must be inspected by each Contractor's competent person; daily before each shift; or after any occurrence that might compromise its structural integrity.)

5.1.10.4 Guidance has been updated for yellow tagging scaffolds under construction or in the process of being modified (5.1.10.4. If the scaffold must be altered and/or is partially erected/incomplete a yellow tag may need to be used to identify the scaffold as under modification and not safe for use.)

5.1.10.5 requirements added for all scaffolds to be signed off prior to 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)).

5.1.11.9 requirement added for CAZ and spotter use around loading zones on scaffolds (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.)

5.3.1.3 compliance clarification added for using scaffolds near electrical lines (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 company, or electrical system operator, has been notified of the need to work closer and the utility company, or electrical system operator, has deenergized the lines, relocated the lines, or installed protective coverings to prevent accidental contact with the lines. Notification may need to be given to local authorities well in advance (several months)).

5.4.4 clarification given on required training for scaffold users (5.4.4. Lastly, all personnel who access and/or work from scaffolding must have been trained on scaffold user awareness.)

Fall Protection (Policy Update)

The Site-Specific Fall Protection Plan Attachment has been updated and broken into two separate documents. The first document is the plan template. This document is required for contractors working at height who are required to use traditional fall protection methods.

The second document is a training aid for individuals filling out a Site Specific Fall Protection Plan.

Subcontractors Requirements

1. Introduction

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.
- 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

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

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

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/m3 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

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/m3 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

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

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

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

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

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

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

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

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 contaminates (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

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

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

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

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

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 injures, 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

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

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

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

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

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

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

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 -30.2ºF.
5.2.1.3. Workers should wear gloves where fine manual dexterity is not required and the air temperature falls below 60.8ºF for sedentary, 39.2ºF for light, and 19.4ºF 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 19.4ºF. 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 2ºC (35.6ºF) 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

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

None

Concrete & Masonry

1. Purpose

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

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

3. Responsibility

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

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

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

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

7. Attachments

7.1. Coring & Saw Cutting Checklist
7.2. Silica Exposure Control Plan
7.3. Table 1 Attachment

Confined Space

1. Purpose

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

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

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

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 Electricalatt

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

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

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

7.1. Confined Space Entry Permit
7.2. Alternative Methods Confined Space Permit
7.3. Dig Permit

Cranes

1. Purpose

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

2. Scope

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

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 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; and
3.4.5.5.2. Review, discuss and revise plans as required with the Lift Director.

4. Definitions

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

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 closet 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, 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 certificating 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 certificating 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 certificating 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 manufacture 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

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

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

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

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

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

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

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

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
-

6. Specific Crisis Guidelines

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: Pull the pin; Aim at base of fire; Squeeze the handle; Sweep 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

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

(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: _____

_____

_____

_____

Follow-Up Promised _____

_____

_____

_____

9.0 Foreign Language Expertise

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

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

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

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

LOS ANGELES/ ORANGE COUNTY		
Ed Straub Ops Manager Work: 949-274-3874 Cell Phone: 949-274-3874	Brian Dague Project Executive Work: 714-989-7440 Cell Phone: 714-357-0477	Jim Charpentier Member (Communications) Work: 206-382-3433
Leary Jones Member (Safety) Work: 858-550-9433 Cell Phone: 619-572-8846	Matt Garcia Member (Safety) Work Phone: 714-989-7440 Cell Phone: 760-637-4839	
	Prema Krishnan Member (Human Resources) Work: 206-382-3443 Cell Phone: 425-877-5392	Roy Lundin Member (Communications) Work: 206-382-3443 Cell Phone: 206-930-4658
Alternative Team Members (If above members are unavailable)		
Blair Jones Member (Ops) Work: 714-989-7440 Cell Phone: 949-244-3429	Casey Blake Alternate (Ops) Work: 206-382-3443 Cell Phone: 206-718-4268	Jason Limp Work: 206-382-3443 Cell Phone: 206-719-6009
LA/OC Office Receptionist: 714-989-7440		

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

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

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

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

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

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

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

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

2.0 Scope

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

3.0 Responsibility

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

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. 3rd 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

FAA – Part 107 Summary (Unmanned Aircraft Systems Requirements)

7.0 Attachments

Drone Surveying Checklist

Dropped Object Prevention

1.0 Purpose

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

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

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

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

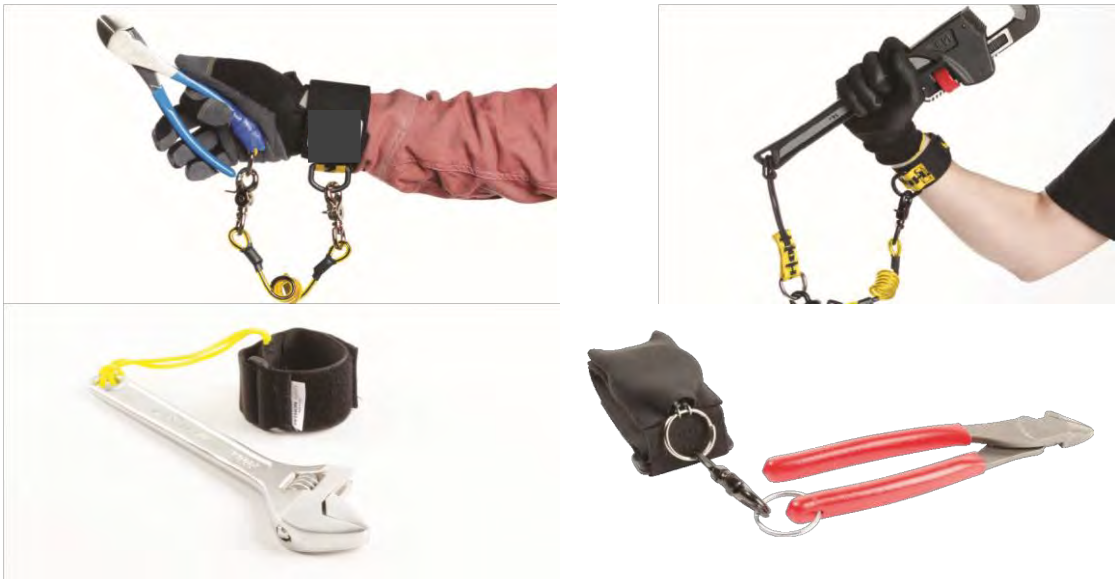
a tool connection point are a good option. Tool Belts designed with tether points are also a good option.

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

OSHA Dropped Object Protection – 1926.759

CAL/OSHA Protection from Dropped Objects

L&I Dropped Object Protection – 296-874-20066

7.0 Attachments

Shaft Work Entry Permit

Dropped Object Prevention Evaluation/ Checklist

Dropped Object Deflection Study

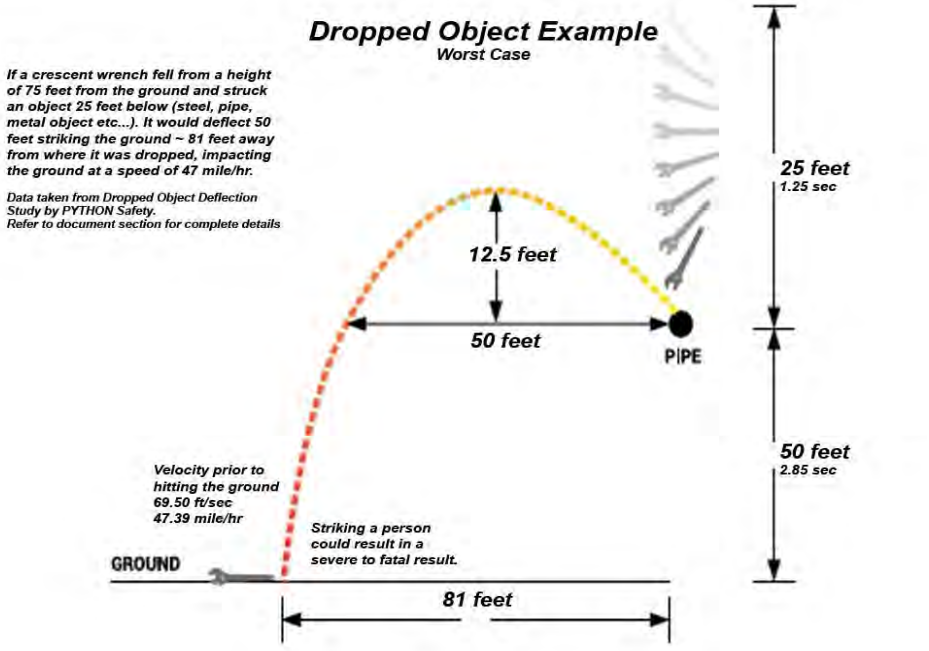


Image 1: This example serves as a reminder that deflection distances can be significant and must be taken into consideration when selecting the appropriate drop prevention / protection methods for at height activities. Image 1 shows a worst case scenario assuming a perfectly elastic collision, no air 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

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

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

3.0 Responsibility

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

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

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 properly 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 it 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

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

Notice of Safety Violation Form

Electrical

1.0 Purpose

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

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

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

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/cm2 (1.2 cal/cm2).

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 I 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/cm2)
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-amps - Circuit voltage [volts] multiplied by current [amperes].

5.0 Procedure

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 (GFC)I

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

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

Assured Grounding Policy

Electrical Demolition Work Plan

Environmental

1.0 Purpose

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

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

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 waddles 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

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

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 BNBuilders 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. The 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 closes 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 doubled-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. Note: 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

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

Silica Exposure Control Plan

Excavation

1.0 Purpose

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

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

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

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
Trench collapse	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. 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.
The presence of water	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. 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).

Nearby structures	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.
Presence of existing utilities	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.
Vehicle movements	Vehicle routes must be carefully planned to ensure plant does not approach the edge of a trench excavation. 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. 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.
Equipment selection	Equipment use must be planned to prevent serious injury to those working in or near a trench excavation. Plans for their selection should include: • ground conditions surrounding an excavation to minimize the risk of toppling • be used in accordance with appropriate standards and specifications • be appropriate to defined utility exclusion zones, where appropriate.
Falls and slips	Risk prevention measures such as guard rails and toe boards to prevent, falls, slips and small equipment falling must be planned. 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.
Risks to members of the public	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. Where pedestrian access ways are required these must include the necessary precautions e.g. edge protection.

Job/Activity Hazard Analysis must also cover the process and the controls to be followed for:

- permit and authorization processes to dig
- provision of clear guidance on when work shall and shall not continue
- 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
- any special controls needed to manage high risk activities which may not normally be required in trench excavation
- response arrangements for emergencies
- use of Personal Protective Equipment (PPE) where appropriate, e.g. flame retardant outer clothing when working alongside utilities.

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.

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 place 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

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

Dig Permit

Confined Space Entry Permit

Alternative Methods Permit

Coring & Saw Cutting Checklist

Fall Protection

1.0 Purpose

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

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

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

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 carabineer, 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

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

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

Fall Protection Work Plan

Fall Protection Training Guide for Employees

Determination of Confined Space

Demolition Permit