

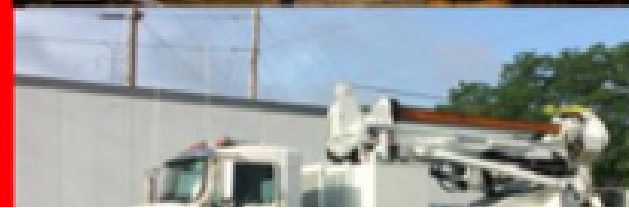
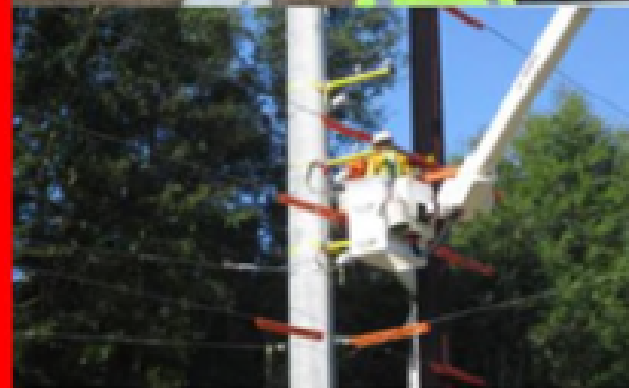
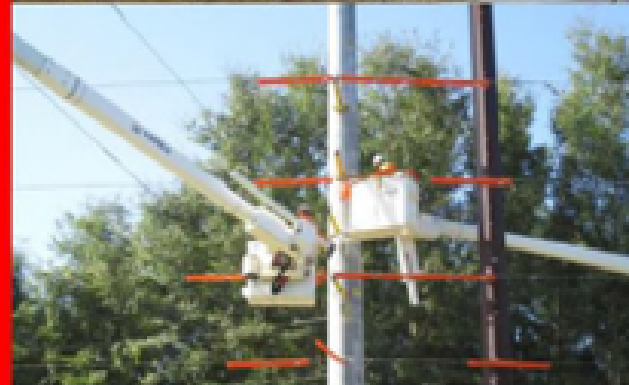


SAFETY MANUAL

12035 Palm Lake Drive
Jacksonville, FL 32218

PH: 904-751-6020

www.CCPowerLine.com



ACKNOWLEDGEMENT OF RECEIPT

I verify that I have been provided a copy of C&C Powerline Safety Manual on the date indicated below. I further understand that as a condition of my employment, I am to abide by the policies and procedures outlined in this manual and bring to the attention of my immediate supervisor any conditions that are not described herein.

Printed Name: _____

Signature: _____ Date: _____

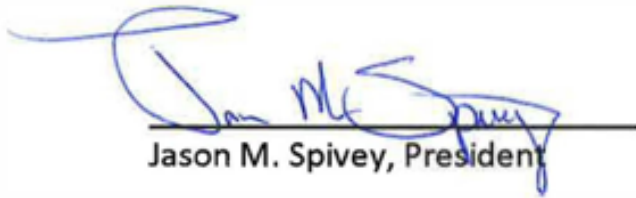
A Message from The President:

C&C Powerline, INC takes a proactive approach to safety. The top Core Value is communicating safety education to ensure regulatory compliance. Our ultimate goal is to provide an accident-free workplace for all employees.

We value employee input and safe working practices and encourage employee participation to achieve a controlled, safe, and profitable work environment.

C&C Powerline, INC makes every effort to identify and communicate hazardous conditions and limit all exposures to employees, the public, and property. We plan to achieve operations control through intelligent planning, performance, and loss control.

Safety training and personal awareness at all levels of our organization instill a genuine attitude of "Actively Caring for Safety".



Jason M. Spivey, President

SAFETY AND HEALTH POLICY

The objective of this Safety Manual is to help safeguard the LIVES AND PHYSICAL WELFARE of every employee connected with C&C Powerline, INC.

Every employee shall carefully study and be aware of those safety rules applicable to their assigned duties. Compliance with these safety rules is mandatory and is considered a requirement for employment. If there are any questions, contact your supervisor.

This manual has been designed to aid employees in identifying and correcting unsafe acts and conditions. It is everyone's responsibility to read and understand its contents, abide by the policies and notify supervision in the event a situation exists that is not covered by these policies.

Safety will not be compromised.

Table of Contents

1	GENERAL SAFETY REQUIREMENTS	15
1.1	Introduction	15
1.2	Employer Responsibility	16
1.3	Employee Responsibility	16
1.4	Supervisor Responsibility	17
1.5	Safety Meetings	17
1.6	Lighting	18
1.7	Clothing, Jewelry and Accessories	18
1.8	Housekeeping	19
1.9	Training	19
1.10	Ergonomics	19
1.11	Lifting and Carrying	20
1.12	Vehicle Operation	20
1.13	Reporting Hazards	21
1.14	Employee Injuries and Accidents	21
1.15	Working Over or Near Water	21
1.16	Working Adjacent to or Over Railways	22
1.17	Protection of the Public	22
1.18	Local, State, and Federal Regulations	23
1.19	Practical Jokes and Horse Play	23
1.20	Competent Persons	23
1.21	Machine Guarding	23
1.22	Warnings, Safety Barriers, and Tape	23
1.23	Working Alone	23
1.24	Lightning	24
2	INJURY/ILLNESS PREVENTION	24
2.1	Designated to Eliminate Unsafe Acts	24
2.2	Responsibilities	24
2.3	Site Safety Assessments	25
2.4	First Aid	25
2.5	Communication	25

3 INCIDENT REPORTING AND INVESTIGATION.....	26
3.1 Employee Injuries and Incidents	26
3.2 Accident Reporting Procedures	26
3.3 OSHA Recordkeeping Procedure.....	28
4 HAZARD COMMUNICATIONS (HAZCOM)	28
4.1 Purpose	28
4.2 Definitions	28
4.3 Responsibility	29
4.4 Compliance.....	30
4.5 Chemicals in Unlabeled Pipes	31
4.6 Maintenance Shop Items	31
4.7 Electrical Transformers	31
4.8 GHS Labeling Pictograms	32
4.9 NFPA Hazard Designator	32
4.10 Hazardous Material Identification System.....	33
4.11 DOT Placards	33
5 HAZARDOUS MATERIALS.....	35
5.1 Acetylene	35
5.2 Acids- General	35
5.3 Asbestos	36
5.4 Benzene.....	36
5.5 Caustics	36
5.6 Lead.....	36
5.7 NORM (Naturally Occurring Radioactive Materials)	37
5.8 Fuel/Flammable Liquids	37
5.9 Compressed Gases	37
5.10 Transporting Cylinders	38
5.11 Storing Cylinders	38
5.12 Hydrogen.....	39
5.13 Potassium.....	39
5.14 Quicklime (Calcium Oxide)	39
5.15 Soda Ash (Sodium Carbonate)	39
5.16 Sodium Chlorite.....	40

5.17	Solvents	40
5.18	Spray Finishing Operations	40
5.19	Sulfur Hexafluoride (SF6)	41
5.21	Cadmium Awareness	41
5.22	Hydrogen Sulfide Awareness	41
5.23	Chromium Awareness	42
6	DE-ENERGIZING LINES AND EQUIPMENT	42
6.1	Purpose	42
6.2	Definitions	43
6.3	Responsibility	43
6.4	Compliance.....	43
7	WORKING ON OR NEAR ENERGIZED LINES (For Live Line Barehand requirements see section 32).....	44
7.1	Purpose	44
7.2	Definitions	44
7.3	Responsibility	44
7.4	Compliance.....	45
7.5	Qualified Employees	45
7.6	Rubber Goods	46
7.7	Use of Rubber Gloves.....	47
7.8	Working on Energized Lines with Live-Line Tools	49
7.9	Working on De-Energized Lines and Equipment.....	50
7.10	Series Street Light Circuits	50
7.11	Transformers.....	50
7.12	Hoisting Cables –Conductive Material	51
7.13	Capacitors.....	51
7.14	Safety Devices	51
8	GROUNDING AND BONDING	55
8.1	Definitions	55
8.2	Purpose For Grounding	59
8.3	Pre-Grounding Requirements	59
8.3.1	Prior to performing a zero-energy check and installing grounds, a crew member must:	59
8.4	General Requirements of Personal Protective Grounding for Lines and Devices	60
8.5	Hazards of Induced Voltage	63

8.6	Installing Personal Protective Grounds on Lines	64
8.7	Substation Grounding	65
8.8	Underground Grounding	66
8.9	Minimum Approach Distances.....	66
9	PERSONAL PROTECTIVE EQUIPMENT (PPE)	67
9.1	General.....	67
9.2	Definitions	67
9.3	Training	67
9.4	Compliance.....	68
9.5	PPE Guidelines (General)	68
9.6	INSULATING PPE.....	80
10	FALL PROTECTION	80
10.1	Description	80
10.2	Definitions	81
10.3	Responsibility	81
10.4	Compliance.....	82
10.5	Climbing and Working on Poles	83
10.6	Inspection and Care	84
11	LOCKOUT/TAGOUT.....	86
11.1	Description	86
11.2	Definitions	86
11.3	Responsibility	86
11.4	Compliance.....	87
12	TOOL/EQUIPMENT INSPECTION.....	90
12.1	Purpose	90
12.2	Definitions	90
12.3	Responsibility	90
12.4	Compliance.....	90
13	MOBILE EQUIPMENT/VEHICLE INSPECTIONS/TRAINING	91
13.1	Purpose	91
13.2	Definitions	91
13.3	Responsibility	91
13.4	Compliance.....	92

13.5	Vehicle General Requirements	92
13.6	Drivers	93
13.7	Inspections	93
13.8	Trailers.....	94
13.9	Cell Phone Policy	95
13.10	Powered Industrial Trucks	95
14	WORK ZONE/TRAFFIC CONTROL	96
14.1	Purpose	96
14.2	Definitions	96
14.3	Responsibility	97
14.4	Compliance.....	97
14.5	Flaggers	98
15	AERIAL DEVICES	99
15.1	Description	99
15.2	Definitions	99
15.3	Responsibility	99
15.4	Compliance.....	100
16	EMERGENCY ACTION PLAN (EAP).....	101
16.1	Description	101
16.2	Definitions	101
16.3	Responsibility	102
16.4	Compliance.....	102
16.5	Facility Emergency Response Plan	103
17	HOUSEKEEPING	104
17.1	Description	104
17.2	Definitions	104
17.3	Responsibility	104
17.4	Compliance.....	104
18	CRANES, DERRICKS, AND HOISTING EQUIPMENT	106
18.1	Description	106
18.2	Definitions	106
18.3	Responsibility	106
18.4	Compliance.....	107

18.5	Crane Safety	108
18.6	Critical Lifts.....	109
18.7	Critical Lift Plan	109
18.8	Operator Qualification	110
19	RIGGING.....	110
19.1	Description	110
19.2	Responsibility	110
19.3	Compliance.....	111
19.4	Rebar Cage Rigging.....	112
19.5	Lifting Operations.....	112
20	POLE HANDLING AND INSPECTION	113
20.1	Description	113
20.2	Responsibility	113
20.3	Compliance.....	113
20.4	General.....	114
20.5	Climbing Requirements.....	114
20.6	Wood Pole Inspection	115
20.7	Determining Pole Setting Depth	115
20.8	Wood Pole Sounding.....	115
20.9	Probe/Prod Testing	116
20.10	Weathered and Aged Poles	118
20.11	Supplemental Methods of Support	118
20.12	Testing Poles Surrounded by Concrete or Asphalt	118
20.13	Testing Poles in Standing Water	119
20.14	Pole Top Extensions (PTX).....	119
20.15	Inspecting Concrete and Metal Poles and Structures.....	119
20.16	Marking Unsafe Wood Poles.....	119
20.17	Testing Wood Poles for Multiple-Day Projects	120
21	ENCLOSED AND CONFINED SPACES	121
21.1	Description	121
21.2	Definitions	121
21.3	Responsibility	121
21.4	Compliance.....	122

22 EXCAVATIONS.....	128
22.1 Purpose	128
22.2 Definitions	128
22.3 Responsibility	128
22.4 Compliance.....	128
22.5 Protective Systems.....	130
23 LADDERS/SCAFFOLDS.....	130
23.1 Description	130
23.2 Compliance.....	131
24 HAND AND POWER TOOLS.....	132
24.1 Purpose	132
24.2 Responsibility	132
24.3 Compliance.....	132
24.4 Service of Tools	133
24.5 Types of Tools	133
24.6 Welding, Burning and Chipping	135
25 ELECTRICAL SAFETY	135
25.1 General.....	135
25.2 Responsibility	135
25.3 Compliance.....	136
25.4 Emergency Procedures	136
26 FIRE PREVENTION/PROTECTION	137
26.1 Description	137
26.2 Definitions	137
26.3 Responsibility	137
26.4 Compliance.....	138
26.5 Classes of Fires	138
26.6 Training	139
26.7 Firefighting	139
26.8 Extinguisher Inspections and Maintenance	139
27 OFFICE/WAREHOUSE SAFETY.....	140
27.1 Slips, Trips and Falls	140
27.2 Strains/Sprains	140

27.3	Punctures/Lacerations/Cuts.....	140
27.4	Fire Prevention/Electrical.....	140
27.5	Ergonomic Issues.....	141
27.6	Warehouse Safety	142
28	SUBSTATIONS	142
28.1	Purpose	142
28.2	General.....	142
28.3	Working in Substations	143
28.4	Handling materials and tools	144
28.5	Back-feed situations.....	144
28.6	Transformers.....	145
28.7	Circuit breakers	145
28.8	Gas insulated substations and equipment.....	146
28.9	Static-induced voltages in substations.....	146
28.10	Oil pressing.....	146
29	ENVIRONMENTAL PROGRAM.....	147
29.1	Description	147
29.2	Definitions	147
29.3	Responsibilities	147
29.4	Compliance.....	147
29.5	Vehicles/Equipment.....	148
29.6	Hydraulic tools	148
29.7	Solvents/Paints/Other Chemicals	148
29.8	Wash facilities (sanitary)	148
29.9	Site spill prevention plans (if required).....	149
30	HELICOPTER WORK.....	149
30.1	Helicopter practices and procedures	149
30.2	OSHA 1926.551	150
30.3	Helicopter pre-flight checklist.....	152
31	SUBCONTRACTOR SAFETY REQUIREMENTS.....	153
31.1	Purpose	153
31.2	Scope.....	153
31.3	Responsibility	153

31.4	Procedures	153
31.5	Prequalification of Subcontractors	154
31.6	Safety program.....	154
31.7	Safety meetings.....	154
31.8	Safety inspections	155
31.9	Accident investigations	155
31.10	Hazardous energy	155
31.11	Hazardous communication/employee right-to-know	155
31.12	Fire protection	155
31.13	Safe work areas and housekeeping	155
31.14	Subcontractor equipment.....	156
32	LIVE LINE BARE HAND.....	157
32.1	Live Line Bare Hand Activities	157
32.2	OSHA requirements	159
32.3	MAD Table/Forms	161
33	BLOODBORNE PATHOGENS/EXPOSURE CONTROL	164
33.1	Purpose	164
33.2	Exposure Control Plan (ECP)	164
33.3	Post-exposure evaluation and follow-up	166
33.4	Exposure Event Evaluation.....	167
33.5	Training	167
33.6	Recordkeeping	168
34	DRUG AND ALCOHOL POLICY	169
34.1	Policy and scope.....	169
34.2	Federal Regulations.....	169
34.3	Criteria for drivers/employees.....	170
34.4	Definitions	170
34.5	Use of legal drugs.....	172
34.6	Illegal drugs and alcohol.....	173
34.7	Discipline	173
34.8	Removal from safety-sensitive function	173
34.9	Drug and alcohol testing of job applicants	173
34.10	Types of drug/alcohol testing	174

34.11	Appeal of drug screen result.....	175
34.12	Rehabilitation and Employee Assistance.....	175
34.13	Drug/alcohol inspections and searches	176
34.14	Confidentiality.....	176
35	DISCIPLINARY POLICY	177
35.1	Procedures	177
36	DOT CERTIFICATION AND MEDICAL CLEARANCE	178
36.1	CMVs	178
36.2	Policy	178
36.3	Driver records	179
36.4	License Suspension	174
36.5	NON-CMV's	179
37	NON ENGLISH SPEAKING PERSONNEL.....	179
38	WIRE STRINGING	179
38.1	Wire Stringing Plan	180
38.2	Line and Road Crossings	181
38.3	Induced Voltage	181
38.4	Grounding of wire stringing equipment	181

1 GENERAL SAFETY REQUIREMENTS

1.1 Introduction

- 1.1.1 Each employee shall be dedicated to the elimination of unsafe acts and/or practices.
- 1.1.2 It is the intent of C&C Powerline Inc(Hereinafter referred to as “C&C”) to provide a safe, sanitary, and healthy work environment for all employees and assure that employees have the knowledge, skills, and equipment to perform their jobs safely.
- 1.1.3 If an employee is called upon to perform work that could be considered hazardous and proper protection is not provided, the matter should be brought to the attention of the immediate supervisor or safety representative.
- 1.1.4 All employees have the right to refuse to perform unsafe work activities or activities that violate C&C, customer or Federal, State or Local safety requirements.
- 1.1.5 C&C shall not retaliate in any form or fashion against employees who have reported unsafe acts, unsafe conditions or have refused to perform work activities that place themselves, or their coworkers in an unsafe position or violates C&C, customer or Federal, State or Local safety requirements.
- 1.1.6 Each employee shall read and make themselves familiar with the contents of this manual. The rules and safe work practices in this manual shall be strictly adhered to. Negligence, carelessness, or unsafe work practices shall not be tolerated.
- 1.1.7 Any variance from policies and procedures must be approved by executive management, in writing, prior to the task being performed.
- 1.1.8 No work is ever to be considered so important or urgent that the necessary steps cannot be taken to do it safely.
- 1.1.9 All tasks will have a documented Task-Hazard Analysis (“THA”) completed prior to the commencement of work.
 - 1.1.9.1 Each employee shall assume responsibility for his or her own safety. Each employee shall be required to know and use the protection required for the job and shall be familiar with the tools and equipment required.
- 1.1.10 All employees are responsible for ensuring that all applicable safe work practices are followed in the performance of the job. Each employee has the additional responsibility of assisting in the safeguarding of others.
- 1.1.11 An employee shall not use intoxicants or drugs while on duty nor report for duty while under the influence of intoxicants or drugs. If an employee’s physician has prescribed drugs or medication that limit the employee’s ability to perform certain jobs, the employee shall inform the supervisor of that fact.

- 1.1.12 Each employee shall stop any carelessness or unsafe work practices and notify supervision. All workers have the right and obligation to stop any job or task when there are questions or concerns regarding the control of hazards or unsafe acts.
- 1.1.13 All accidents, incidents, and safety violations shall be immediately reported to supervision and the Safety Department.

1.2 Employer Responsibility

- 1.2.1 C&C shall not retaliate in any form or fashion against employees who have reported unsafe acts, unsafe conditions or have refused to perform work activities that place themselves, or their coworkers in an unsafe position or violates C&C, customer or Federal, State or Local safety requirements.
- 1.2.2 It shall be the duty of C&C to provide certain necessary safety equipment and to insist upon its use by all employees in accordance with this Safety Manual.
- 1.2.3 It shall be the duty of C&C to investigate all incidents and to take proper remedial steps to prevent occurrences of similar incidents.
- 1.2.4 It shall be the duty of C&C to notify all employees of existing unmitigated unsafe conditions that are reported to the company. C&C shall make every reasonable effort to properly mitigate the unsafe conditions.
- 1.2.4 It shall be the duty of C&C to appoint only competent persons to supervise other employees and those appointed shall be responsible for the safety of the employees under their supervision.
- 1.2.5 When client safety rules are different from C&C, the more stringent rules of the two shall be followed.

1.3 Employee Responsibility

- 1.3.1 Each employee is responsible for their own safety, the safety of their fellow employees, and the general public.
- 1.3.2 Every employee shall carefully study (not merely read) those safety rules applicable to their assigned duties. Compliance with these safety rules is mandatory and is considered a requirement and condition of employment.
- 1.3.3 Before starting a job, employees shall thoroughly understand the work to be done, their part in the work, and the safety rules that apply.
- 1.3.4 Employees shall become familiar with and use all the personal protective equipment and protective devices which are provided for their protection.
- 1.3.5 Employees shall report all unsafe equipment, unsafe tools, and hazardous conditions to their supervisor or safety representative immediately that come to their attention.
- 1.3.6 Employees shall always have proper identification with them. This includes the company-issued QR cards. QR cards are issued to all employees upon hire and must be presented upon request.

1.4 Supervisor Responsibility

- 1.4.1 Supervisors shall be responsible not only for their own safety but also for the safe work performance of other employees under their supervision. Before assigning work to an employee, the supervisor shall be sure the employee knows and understands the hazards associated with the work and the proper procedures to perform the work safely.
- 1.4.2 The supervisor shall not require an employee to attempt to perform work with faulty equipment or in violation of C&C safety rules.
- 1.4.3 Supervision will not retaliate against an employee who refuses to perform unsafe work practices, use damaged equipment, or report any unsafe condition on the job. Confirmed retaliation is subject to disciplinary action up to and including termination.
- 1.4.4 Supervisors at all levels shall accept, in a cooperative manner, all reports of hazards; and employees shall not be reprimanded or penalized for reporting hazards.
- 1.4.5 The supervisor shall be responsible for proper use and condition of all safety and protective devices provided by C&C.
- 1.4.6 The position of supervisor carries with it the responsibility and accountability for all activities on the job. The prevention of accidents is one of the duties of this position.

1.5 Safety Meetings

- 1.5.1 A Pre-Job Briefing (PJB) & Task Hazard Analysis (THA) is required to be performed at the start of each workday or resumption of each activity. A written report shall be sent to C&C headquarters.
- 1.5.2 It is the responsibility of the person in charge to conduct the THA:
 - 1.5.2.1 At the beginning of work shifts.
 - 1.5.2.2 At the start of the job.
 - 1.5.2.3 After a job has been interrupted for any reason.
 - 1.5.2.4 When personnel are added to or removed from the job.
- 1.5.3 The THA's shall include these topics:
 - 1.5.3.1 Site Safety Assessment.
 - 1.5.3.2 Work area protection set up.
 - 1.5.3.3 Individual responsibilities.
 - 1.5.3.4 Current utility locates.
 - 1.5.3.5 Cover-up.
 - 1.5.3.6 Check all PPE and fall arrest devices.
 - 1.5.3.7 Nominal voltage of circuit and identification of switches and protective devices if needed.
 - 1.5.3.8 Brief work description.
 - 1.5.3.9 Hazards associated with the job.

- 1.5.3.10 Things that could go wrong.
- 1.5.3.11 Preventative measures, special precautions.
- 1.5.3.12 Protective devices.
- 1.5.3.13 Emergency information.
- 1.5.3.14 Work location by cross street or GPS Coordinates.
- 1.5.3.15 Equipment.
- 1.5.3.16 Employees printed name and signature.
- 1.5.4 A designated employee must present the THA (Task Hazard Analysis) to anyone who may come onto the job site who did not attend the THA meeting. This means anyone, C&C personnel, clients, inspectors, service personnel, etc.
- 1.5.5 Weekly Safety Meetings shall be conducted by crew supervisors with their crews at each job site. Information reviewed will include but is not limited to C&C distributed safety materials, customer safety information, job site information supplied or from materials on hand such as discussions of near misses or incidents having occurred on the job.
- 1.5.6 Monthly Safety Meetings shall be conducted each month by divisional Safety personnel. Information reviewed will include but is not limited to C&C distributed safety materials, regulatory required topics, customer safety information, C&C distributed safety materials, regulatory required topics, customer safety information, C&C safety performance information, etc.
- 1.5.7 All safety meeting documentation shall be submitted to C&C headquarters.

1.6 Lighting

- 1.6.1 Where natural illumination is not adequate, artificial lighting shall be provided. Open flames shall not be used for purposes of illumination.
- 1.6.2 Temporary lighting shall be protected with approved guards.
- 1.6.3 In areas where flammable or combustible vapors, gases, liquids, dust, or fibers may be present, only equipment approved for the hazardous location shall be used.

1.7 Clothing, Jewelry and Accessories

- 1.7.1 Jewelry shall not be worn when performing or observing work while in the work zone.
- 1.7.1.1 Medic Alert necklaces and bracelets are not considered jewelry and should be worn under FR clothing or rubber protective gloves.
- 1.7.2 Flapping clothing such as unbuttoned cuffs shall not be worn when working around moving machinery or rotating parts. Shirttails shall be kept tucked in.
- 1.7.3 Employees shall wear clothing and footwear that is in good repair and proper fit.

- 1.7.4 Employees engaged in climbing poles or structures, or in work areas where there is danger of injury to the arms such as cuts, abrasions, thermal or chemical burns shall wear a long sleeve shirt, buttoned, and pulled down to the wrist.
- 1.7.5 When employees are working on or near energized lines or equipment, or in areas where arc flash potential exists, they shall wear approved arc rated clothing. Shirts shall be tucked into pants.

1.8 Housekeeping

- 1.8.1 Crew supervision shall be responsible for maintaining a clean and orderly workplace, including vehicles.
- 1.8.2 Tools and materials shall be placed so as not to create a tripping hazard. Aisles, passageways, and stairs shall be kept clear.
- 1.8.3 Scrap materials and debris shall be picked up and disposed of promptly.
- 1.8.4 Protruding nails shall be removed from boards, or the nails shall be bent over and flattened.
- 1.8.5 Trash shall not be permitted to accumulate in vehicles. Designated containers shall be provided and emptied regularly.
- 1.8.6 Trash and debris shall be placed only in approved containers.
- 1.8.7 Travel paths of equipment shall be kept clear of tools, equipment, and trash.

1.9 Training

- 1.9.1 Employees shall attend and complete C&C New-Hire Orientation Safety Core Element training.
- 1.9.2 Operators shall receive training specific to the equipment they are assigned to run and be updated as required by the manufacturer, OSHA, ANSI, or when there is a change in the operating requirements or whenever performance indicates a need for re-training.
- 1.9.3 Employees shall be trained and evaluated in order to perform assigned tasks.
- 1.9.4 Supervision shall ensure employees are competent to perform assigned tasks and not direct any employee to perform any task for which they are not competent.

1.10 Ergonomics

- 1.10.1 Arrange workstations and/or work areas to accommodate a full range of required movements.
- 1.10.2 Ensure that all machine controls are reachable and easily accessible prior to operation.
- 1.10.3 Ensure that adequate space is available to allow safe lifting of loads using both hands, while facing the load.
- 1.10.4 Arrange workspaces and areas to avoid the need for carrying objects overhead and for overreaching.
- 1.10.5 Vibration dampening products should be used on vibratory type tools and equipment where applicable.
- 1.10.6 Plan work activities to reduce or eliminate repeated manual lifting where possible.

1.11 Lifting and Carrying

- 1.11.1 When lifting, carrying, or lowering objects, approved methods shall be followed. Mechanical aids should be used whenever possible.
- 1.11.2 Approved methods include straight posture, lifting using leg muscles, good footing and avoiding over-extending and twisting.
- 1.11.3 Loads shall be carried in such a way as to permit a clear view of the path to be followed.
- 1.11.4 When two or more employees are required to lift or pull together as a team, their efforts shall be coordinated. One shall give the signal for the group.
- 1.11.5 When carrying pipes, conduit or other long objects, special care shall be used when rounding corners and entering doorways.
- 1.11.6 Team lifting shall be used when heavy (50 pounds or greater), bulky, unwieldy, or otherwise awkward loads are lifted.

1.12 Vehicle Operation

- 1.12.1 Employees operating C&C motor vehicles shall be properly licensed and approved by management.
- 1.12.2 Employees shall operate vehicles in accordance with C&C rules and principles of defensive driving.
- 1.12.3 Employees shall have a valid commercial driver's license when operating vehicles with:
 - 1.12.3.1 A GVWR of 26,001 pounds or more or
 - 1.12.3.2 Or vehicles designed to transport sixteen or more passengers including the driver,
 - 1.12.3.3 Or transporting placarded loads of hazardous materials,
 - 1.12.3.4 Or transporting any number of explosives,
 - 1.12.3.5 Or operating combination vehicle where the gross combination weight rating is 26,001 pounds or more.
- 1.12.4 An employee with a valid regular driver's license and a medical card can drive a vehicle or combination vehicle with a GVWR rating of over 10,001 pounds and up to 26,000 pounds.
- 1.12.5 Operators shall familiarize themselves with and shall obey all state and local traffic laws and ordinances.
- 1.12.6 Seat belts shall be worn by all occupants whenever a vehicle is in motion.
- 1.12.7 Spotters, whenever available, shall be used during backing in close or congested areas. When no spotter is available, the driver must perform a 360° walk around prior to backing.
- 1.12.8 Passengers shall ride only in the passenger compartment provided in vehicles for their transportation. Passengers also shall always wear seat belts whenever a vehicle is in motion.

- 1.12.9 Internal combustion engines shall not be operated within closed garages or other buildings where adequate ventilation is not provided.
- 1.12.10 Employees shall perform a pre-use inspection (DVIR) prior to operating any motor vehicle. Also, a post-use inspection must be made and the DVIR signed. Unsafe vehicles or equipment shall be removed from operation and reported to supervision and/or maintenance.
- 1.12.11 Any unusual loads or any necessary overload shall be handled in compliance with state and local laws or ordinances.
- 1.12.12 When loading vehicles, care shall be taken to balance or distribute and secure the load.
- 1.12.13 Vehicles should not be parked closer than eight feet to any railroad track.
- 1.12.14 Unless otherwise posted, the speed limit on C&C property and ROW roads is ten miles per hour.
- 1.12.15 Operators shall consider and be aware of overhead clearances.
- 1.12.16 Loads extending four feet or more beyond the body of the vehicle shall have a warning flag or working strobe light attached that meets and/ or exceeds local DOT requirements.
- 1.12.17 In the attaching of trailers, the safety latch on the hook shall be closed and locked. All locking pins shall be in place and used on all hitches.
- 1.12.18 Adequate advanced warning shall be given to all traffic before attempting to turn with a load that projects over five feet beyond the end of the truck or trailer.
- 1.12.19 Equipment and materials carried on or in trailers shall be properly secured and the weight evenly distributed.
- 1.12.20 Unattended vehicles will not be left running unless the engine is needed to power auxiliary equipment.
- 1.12.21 Operators should park or plan routes to avoid backing whenever practical.

1.13 Reporting Hazards

- 1.13.1 It is the duty as well as the privilege of every employee to report hazardous conditions.
- 1.13.2 Every employee should immediately report to the supervisor in a constructive manner any dangerous or defective equipment, materials, tools, or safety devices of the company which come to their attention.

1.14 Employee Injuries and Accidents

- 1.14.1 When an employee receives an injury, no matter how insignificant it may seem to be, it must be reported at once to the supervisor and to the Safety Department.

1.15 Working Over or Near Water

- 1.15.1 Whenever an employee may be pulled or pushed or may fall into water where the danger of drowning exists, the employee shall be provided with and shall use fall protection if appropriate and U. S. Coast Guard approved personal flotation devices.

- 1.15.2 Each personal flotation device shall be maintained in safe condition and shall be inspected frequently enough to ensure that it does not have rot, mildew, water saturation, and/or any other condition that could render the device unsuitable for use.
- 1.15.3 30" ring buoys with at least ninety feet of line shall be readily available for emergency rescue operations.
- 1.15.4 At least one lifesaving skiff shall be immediately available at locations where employees are working over or adjacent to water.
- 1.15.5 An employee may cross streams or other bodies of water only if a safe means of passage, such as a bridge or boat, is provided.
- 1.15.6 A risk assessment should be conducted prior to any work near or over water to determine the necessity and appropriate placement of lifesaving devices, including personal flotation devices, ring buoys, and skiffs.

1.16 Working Adjacent to or Over Railways

- 1.16.1 Confirm that the required permits are obtained.
- 1.16.2 Coordinate work plan with railway site representative and obtain a current copy of the railroad's safety rules.
- 1.16.3 Review crossing and/or adjacent area for possible unforeseen hazards.
- 1.16.4 Do not obstruct the track. No worker or machine is allowed within 4 ft. (1.22 m) of the track.
- 1.16.5 Conduct job briefing that shall include a review of the client and railway rules and regulations.
- 1.16.6 All personnel shall wear proper PPE including but not limited to reflective traffic vests, hard hats, and safety glasses.
- 1.16.7 Stop, look, and listen before crossing any track.
- 1.16.8 Expect the movement of trains, engines, cars, or other moveable equipment at any time, on any track, from either direction.
- 1.16.9 Cease work operations when approached by train or rail maintenance equipment.
- 1.16.10 Ensure any training that may be required by the client or railway is complete before starting work.
- 1.16.11 Follow all C&C safety rules that apply to the specific work being performed.

1.17 Protection of the Public

- 1.17.1 During the progress of any work, all necessary precautions shall be taken to protect people and property.
- 1.17.2 Warning signs and delineated safety zones shall be used to prevent access to the work area.
- 1.17.3 Any public injury or property damage should be immediately reported.
- 1.17.4 Safety Rules for the operation of mobile equipment shall also be followed.

1.18 Local, State, and Federal Regulations

- 1.18.1 In all C&C operations there must be due regard for and compliance with all Local, State, and Federal laws as well as with other regulations relative to methods of doing work.

1.19 Practical Jokes and Horse Play

- 1.19.1 Employees shall not engage in practical jokes or “horseplay”. The hazing of other employees will not be tolerated and is subject to disciplinary action up to and including termination.

1.20 Competent Persons

- 1.20.1 A competent person is one who can identify existing and predictable hazards in the surroundings or working conditions that are unsanitary, hazardous, or dangerous to employees and who has authorization to take prompt corrective measures to eliminate them.
- 1.20.2 Every project shall have at least one competent person on site, normally the Supervisor, trained in the areas of expertise required for the specific project.

1.21 Machine Guarding

- 1.21.1 No guard shall be removed from any machine or piece of equipment. Guards removed to perform maintenance operations shall be replaced immediately, and the machine shall not be operated while the guards are removed (except for maintenance certification).

1.22 Warnings, Safety Barriers, and Tape

- 1.22.1 Warning signs shall be heeded. Persons seen in a dangerous situation shall be warned without being startled. C&C employees and visitors not required to be near potentially dangerous places shall be kept away from them.
- 1.22.2 Handrails, toe boards, or suitable protection must be in place around work areas, where dropping of tools or materials may result in an injury.
- 1.22.3 Barriers around open floors or walls must be capable of sustaining a fall of a 200 lb. person against the barrier.
- 1.22.4 Rope off, or otherwise secure, the work area at locations where work is being done, as needed for safety. Use yellow and black tape, red tape, or rope/chains with tags or signs for barriers.
- 1.22.5 Tags must be attached to all unattended barricades erected, denoting the hazard and who is responsible for placing the barricade.
- 1.22.6 Red barricaded areas are considered dangerous areas and restricted to “authorized personnel only.” Permission must be obtained from the controlling supervisor before entry.

1.23 Working Alone

- 1.23.1 In the event an employee must work alone, a positive means of communication shall be provided such as a cell phone, satellite phone, radio, etc. Regular contact will be maintained at time frames conducive to the work being performed.

1.24 Lightning

1.24.1 Where applicable, use lightning detection to determine the distance of lightning strikes. Detection may be determined by:

- A. Government sources (Vaisala NLDN National Lightning Detection Network).
- B. Lightning detection application. (WeatherBug)
- C. Flash to bang calculation. Count the number of seconds from seeing a lightning strike to the time thunder is heard. Divide by 5. This is the approximate distance in miles.
- D. Prepare for suspension at 15 miles. Suspend work at 10 miles.
- E. Resume work activities when the storm has passed or 30 minutes after the last strike.

2 INJURY/ILLNESS PREVENTION

2.1 Designated to Eliminate Unsafe Acts

2.1.1 Definitions

- 2.1.1.1 **Employee** – person who is assigned tasks but does not oversee the performance of other employees.
- 2.1.1.2 **Supervision** – field-based employee who directly oversees tasks performed by employees.
- 2.1.1.3 **Management** – employee responsible for overseeing the work of groups of employees and charged with responsibility for safe, efficient completion of projects.

2.2 Responsibilities

- 2.2.1 Supervision shall be responsible for inspecting and evaluating tasks and locations, identifying hazardous - and potentially hazardous - situations and communicating applicable safety and health policies and procedures to all employees working under their direction.
- 2.2.2 Management shall provide adequate training to employees to allow for safe completion of assigned tasks.
- 2.2.3 Management will make available to employees' appropriate personal protective equipment.
- 2.2.4 Supervision, with the support of the safety department, shall evaluate all situations identified as potentially hazardous and provide necessary materials and/or procedures to ensure the safe completion of assigned tasks.
- 2.2.5 Employee shall evaluate the task at hand and their surroundings to identify hazards and potential hazards. The necessary steps shall be taken to eliminate or mitigate them.
- 2.2.6 Employee shall utilize and care for all provided PPE required by the company to perform required tasks.

2.3 Site Safety Assessments

- 2.3.1 All job sites shall be audited monthly, and that inspection shall be documented.
- 2.3.2 Safety Representatives, Field, Shop and Tool Room Managers conduct periodic hazard assessments.
- 2.3.3 When safety deficiencies are discovered, the process for getting the deficiencies corrected is to review the deficiencies with the appropriate Supervisor and then make the appropriate corrections.

2.4 First Aid

- 2.4.1 C&C shall ensure a minimum of two employees per crew have current First-Aid/CPR training through an accredited agency annually.
- 2.4.2 C&C field employees shall receive Heat/Cold Illness training.
 - 2.4.2.1 This training will stress signs and symptoms of heat and cold related illnesses and appropriate action to be taken in these situations.
- 2.4.3 First Aid kits should be readily available in all company pick-ups.
- 2.4.4 Safety personnel will verify the presence of first aid kits and if contents are depleted or expired, they will be restocked or replaced.
- 2.4.5 The 911 service is verified prior to job start up to see of its availability in that area.

2.5 Communication

- 2.5.1 C&C Safety Manuals will be distributed to employees and are available at the office.
- 2.5.2 All employees are to be notified of changes made to the Safety Manual or other safety-related policies via documented safety meetings.
- 2.5.3 Management will provide formal monthly safety meetings for employees that include but not limited to:
 - 2.5.3.1 Review of incidents from the previous month,
 - 2.5.3.2 Reinforcement of any recent policy changes,
 - 2.5.3.3 A training topic that ensures compliance with OSHA and C&C requirements for updated training and other pertinent information.
 - 2.5.3.4 Review of Good Catch, Near Miss, & Stop Work Authority occurrences of the previous month

3 INCIDENT REPORTING AND INVESTIGATION

3.1 Employee Injuries and Incidents

- 3.1.1 When an employee receives an injury, no matter how insignificant it may seem to be, it must be reported at once to the supervisor and to the Safety Department.

3.2 Accident Reporting Procedures

- 3.2.1 Managing the reporting and recording of any incident or injury is the key factor in detecting trends and establishing actions to prevent recurrence. It is imperative that all work-related injuries and illnesses be reported, recorded, and investigated. Each employee must report immediately to his or her supervisor and to the Safety Department all job-related injuries or illnesses, no matter how slight, that were sustained while working on the job. When reporting on-the-job injuries or illnesses, the employee must:

- 3.2.1.1 Report injuries and illnesses on the day they occur and before leaving the project site.
- 3.2.1.2 Cooperate fully and assist with the investigation of all incidents, injuries, illnesses, and near-misses.
- 3.2.1.3 Submit to a post-accident drug test and breathe alcohol test as required by the C&C Drug and Alcohol Policy. (*See Sec 34*)
- 3.2.1.4 Be responsible for all medical bills resulting from an injury or illness that is determined not to be job-related. Injuries or illnesses that are determined to be job-related are covered by C&C workers' compensation insurance.
- 3.2.1.5 Keep C&C informed of recovery status daily.
- 3.2.1.6 Obtain a Return-to-Work Form from the treating physician before returning to work after an injury.
- 3.2.1.7 Immediately report all accidents occurring to the property of others to the supervisor and the Safety Department.
- 3.2.1.8 Contact the Safety Department about all accidents involving C&C owned, leased, or rented vehicles, no matter how trivial.
- 3.2.1.9 Fulfill any additional customer or client reporting requirements.

When reporting incidents or injuries, the supervisors must:

- 3.2.1.10 Ensure that all employee injuries or illnesses, no matter how slight, receive immediate first aid and/or evaluation by a qualified, licensed healthcare provider.
- 3.2.1.11 Have the employee transported by ambulance in cases of emergency.
- 3.2.1.12 Log all recordable accidents or illnesses on the project site OSHA 300 log. The master OSHA 300 logs are maintained by the Department of Human Resources.
- 3.2.1.13 Provide light-duty work for injured or ill employees, where practical, that meets the treating physician's guidelines.

- 3.2.2 The Safety Representative shall ensure that during the incident investigation the following duties shall be performed:
 - 3.2.2.1 Conduct the accident investigation at the scene of the injury as soon after the accident as safely possible.
 - 3.2.2.2 Ask the employee involved in the accident and any witnesses, in separate interviews, to tell in their own words exactly what happened.
 - 3.2.2.3 Repeat the employee's version of the event back to him/her and allow the employee to make any corrections or additions.
 - 3.2.2.4 After the employee has given his/her description of the event, ask appropriate questions that focus on causes.
 - 3.2.2.5 When finished, remind the employee the investigation was to determine the cause and possible corrective action that can eliminate the cause(s) of the accident.
 - 3.2.2.6 Complete an accident investigation report with the employee and review data with the employee for accuracy.
 - 3.2.2.7 Obtain the Supervisor's Investigation Report.
- 3.2.3 Vehicle Accidents
 - 3.2.3.1 Take immediate action to prevent further damage or injury at the scene of the accident.
 - 3.2.3.2 Pull onto the shoulder or side of the road as soon as practical.
 - 3.2.3.3 Actuate the four-way flashers and place warning signals promptly and properly.
 - 3.2.3.4 Assist any injured persons, but do not move them unless they are in danger of further injury.
 - 3.2.3.5 Call the Police. If someone is injured, request medical assistance. The driver shall not discuss or argue the causes or results of an accident with other parties. Questions asked by proper authority shall be answered, but under no circumstances shall fault or negligence be admitted, or any statement signed by anyone except representatives of C&C.
 - 3.2.3.6 Should the other driver demand immediate action; a referral shall be made to the employee's supervisor.
 - 3.2.3.7 The driver shall give his/her name and address, and C&C's address. The driver shall secure the names and addresses of others involved in the accident and of witnesses to the accident. If possible, take a photograph of the others' driver's license and insurance card and e-mail it to the office. He/she shall also note the position of the vehicle after the collision in reference to the edge of the road, sidewalk line, center of intersection, etc.
 - 3.2.3.8 The driver or his/her supervisor shall call the Safety Department as soon as possible and send in a completed Equipment/Vehicle Accident Information report.

3.3 OSHA Recordkeeping Procedure

- 3.3.1 Incident Reporting: All incidents, including near misses regardless of severity, shall be reported to the supervisor and the Safety Department immediately.
- 3.3.2 Roles/Responsibilities of Written Documentation Flow:
 - 3.3.2.1 Supervisor(s) completes their part of the incident report and forwards it to the safety representative.
 - 3.3.2.2 The safety representative reviews the report, makes necessary revisions or additions, and emails to the Vice President of Safety.
 - 3.3.2.3 The Vice President of Safety and the Department of Human Resources shall complete the final report.
 - 3.3.2.4 The final report is sent to senior management for review.
- 3.3.3 OSHA 300A Log Posting:
 - 3.3.3.1 In accordance with OSHA record-keeping requirements C&C shall annually post OSHA 300A's at all divisional offices.
- 3.3.4 OSHA Log Retention:
 - 3.3.4.1 The Department of Human Resources shall maintain OSHA logs. The logs shall be in an electronic format and be retained for 5 years.

4 HAZARD COMMUNICATIONS (HAZCOM)

4.1 Purpose

- 4.1.1 The purpose of the hazard communications program is to ensure employees have all necessary information to allow the safe use, handling, and/or transport of hazardous substances in the workplace and provide insight into the identification of potentially hazardous situations brought on by the use, handling, storage and/or transport of hazardous substances.
- 4.1.2 Employees shall be trained in HAZCOM policies and procedures upon initial hire, and this training shall be updated when there are new hazardous substances introduced into the workplace, whenever there is a change in the procedures, and annually.
- 4.1.3 The elements of this program cover all work activities performed by C&C employees.
- 4.1.4 Subcontractors or other affected individuals where the potential for exposure to hazardous substances exists shall be briefed on specific hazards and policies.

4.2 Definitions

- 4.2.1 **Acute** – instant (or within 30 minutes) reaction to exposure to a hazardous substance (burns, irritations, etc.).
- 4.2.2 **Chronic** – long-term or delayed reaction to exposure to a hazardous substance (cancer, emphysema, etc.).
- 4.2.3 **Combustible Liquid** – liquid having a flashpoint between 100° F but below 200°F.

- 4.2.4 **Compressed Gas** – gas or mixture in a container having an absolute pressure of 40 psi at 70°F; a gas or mixture in a container having an absolute pressure of 70 psi at 130°F; or a liquid having a vapor pressure of 40 psi at 100°F.
- 4.2.5 **Explosive** – chemical that causes a sudden (almost instant) release of pressure, gas and heat when subjected to sudden shock, pressure, or high temperature.
- 4.2.6 **Flammable Gas** – a gas that, at ambient temperature and pressure, forms a flammable mixture with air at a concentration of 12 percent (or less) by volume.
- 4.2.7 **Flammable Liquid** – liquid having a flashpoint below 100°F.
- 4.2.8 **Flammable Solid** – solid material (other than a blasting agent or explosive) that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.
- 4.2.9 **Flashpoint** – minimum temperature at which a liquid gives off vapor in sufficient concentration to ignite.
- 4.2.10 **GHA** – Global Harmonized System is an international standard for communicating chemical hazards and providing guidance on how to protect people and the environment.
- 4.2.11 **Hazard Warning** – words, pictures, symbols, or a combination of those that indicate specific physical and/or health hazards associated with the substance identified.
- 4.2.12 **Hazardous Substance** – any substance which presents a physical or health hazard.
- 4.2.13 **Health Hazard** – potential effects of a hazardous substance that can produce acute or chronic reactions to an exposed employee (carcinogens, toxins, corrosives, irritants, etc.).
- 4.2.14 **Label** – GHS written, printed or graphic material affixed to, or displayed on, containers of hazardous substances.
- 4.2.15 **Safety Data Sheet (SDS)** – written or printed material provided by manufacturer or distributor that provides significant data and handling instructions for the substance.
- 4.2.16 **Physical Hazard** – potential effects of a hazardous substance that can produce illness or injury from the reaction of the substance to an outside source (flammables, explosives, water-reactive, etc.).
- 4.2.17 **Water-Reactive** – chemical that reacts with water to release a gas that is either flammable or creates a health hazard.

4.3 Responsibility

- 4.3.1 Management shall ensure an inventory of all hazardous substances located at the work location is available to employees and other affected personnel.
- 4.3.2 Management will ensure all employees who could be exposed to hazardous substances receive training (including annual refreshers) on the OSHA HAZCOM standard prior to starting work.
- 4.3.3 Site supervision shall ensure manufacturers and/or distributors supply an up-to-date SDS for hazardous substances and that all containers are clearly labeled GHS pictograms.
- 4.3.4 Current SDS shall be made available to employees by calling the services toll-free number.

- 4.3.5 Supervision will review each non-routine task with special regard to the hazardous chemicals which may be encountered and for any additional information, instruction and/or training which may be necessary.
- 4.3.6 Supervision shall ensure proper protective equipment (goggles, gloves, etc.) and/or facilities (eye wash, shower, etc.) are available prior to use of a hazardous substance.
- 4.3.7 Employees shall understand SDS prior to using a hazardous substance and adhere to the protective measures outlined in the document.

4.4 Compliance

- 4.4.1 Employees shall be made aware of all hazardous substances in their work area and be trained on:
 - 4.4.1.1 Physical and health hazards of hazardous substances.
 - 4.4.1.2 Determining the presence of hazardous substances in the workplace.
 - 4.4.1.3 Signs and symptoms of overexposure.
 - 4.4.1.4 Procedures to follow in the event of overexposure.
 - 4.4.1.5 Reading labels and SDS.
 - 4.4.1.6 Location of SDS and written HAZCOM program.
 - 4.4.1.7 Methods used to prevent exposures (work practices, PPE, etc.).
- 4.4.2 Management shall ensure, through routine inspections, that all primary containers of hazardous substances are clearly labeled to include:
 - 4.4.2.1 Contents.
 - 4.4.2.2 Appropriate hazard warnings.
 - 4.4.2.3 Manufacturer's name and address.
- 4.4.3 Secondary containers shall be labeled with GHS pictograms to communicate, at a minimum, contents, and appropriate hazard warnings.
- 4.4.4 Transfer containers shall be labeled except when:
 - 4.4.4.1 The container stays under control, always, of the employee who performed the transfer, AND
 - 4.4.4.2 The substance will be completely used within the same work shift.
- 4.4.5 Should a label be removed, damaged, or defaced, an employee will inform supervision, and a replacement will be applied.
- 4.4.6 Hazardous substances shall not be stored in or near areas designated for eating, washrooms, where untrained personnel have easy access or any area that creates potential for hazardous reaction to occur.
- 4.4.7 Incompatible materials will be stored separately, as designated on SDS.

4.5 Chemicals in Unlabeled Pipes

- 4.5.1 Prior to starting work in these areas, with chemicals in unlabeled pipes, the employee shall contact supervision to confirm:
 - 4.5.1.1 The chemical in the pipes
 - 4.5.1.2 Potential hazards
 - 4.5.1.3 Safety precautions which should be taken.
 - 4.5.1.4 Methods and observations to detect the release of a hazardous chemical, such as but not limited to odor, color, smell, liquid, solid, environmental air monitoring results, etc.
- 4.5.2 Should this information not be available; work will stop until confirmation can be made.

4.6 Maintenance Shop Items

- 4.6.1 Where motor oil must be handled, it must be placed in a suitable temporary container, labeled, and disposed of properly.
- 4.6.2 Spent hydraulic fluid, anti-freeze and other fluids shall be collected, stored in a labeled, approved container and disposed of as indicated on SDS.
- 4.6.3 Tires and batteries shall be disposed of in accordance with all local, state, and federal regulations.

4.7 Electrical Transformers

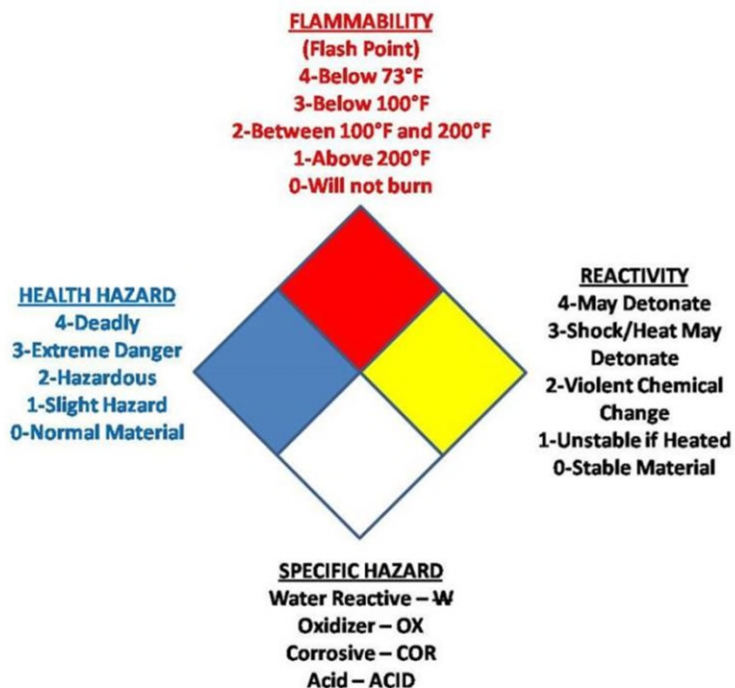
- 4.7.1 Electrical transformers shall be properly checked for PCBs prior to handling.
- 4.7.2 If the transformer is not tagged non-PCB, it will not be moved until a licensed transformer handler is employed to make the removal. Clients must be notified prior to removal and must approve the removal of the transformers that have not been checked and tagged.

4.8 GHS Labeling Pictograms



4.9 NFPA Hazard Designator

4.9.1 The NFPA hazard designator is an instrument used to display the intensity of the hazards posed by a particular substance. The colored boxes each represent a specific characteristic of the substance, and the hazard is rated on a zero-to-four scale, with four being most severe.



4.10 Hazardous Material Identification System

- 4.10.1 The Hazardous Material Identification System (HMIS) is like the NFPA hazard designator but also indicates personal protective equipment that is to be worn when using the substance. This will often be displayed on the label on the container the substance was shipped in and should be on all containers used for the substance downstream.

HEALTH		} Health, Flammability and Reactivity use the same 0-4 scale as the NFPA diamond.
FLAMMABILITY		
REACTIVITY		
PERSONAL PROTECTION		

EXAMPLES OF PERSONAL PROTECTION

A: Safety Glasses
B: Safety Glasses, Gloves
C: Safety Glasses, Gloves, Apron
D: Face Shield, Gloves, Apron
E: Safety Glasses, Gloves, Dust Mask
F: Safety Glasses, Gloves, Apron, Dust Mask
G: Safety Glasses, Respirator
H: Goggles, Gloves, Apron, Respirator
I: Safety Glasses, Gloves, Respirator
J: Goggles, Gloves, Apron, Respirator
K: Supplied Air, Gloves, Full Suit, Boots
L-Z: Custom PPE

4.11 DOT Placards

- 4.11.1 The Department of Transportation (DOT) uses placards to classify hazardous substances. These are used not only in transport, but in labeling and on SDS. The nine categories give employees an indicator as to the characteristics of the substance.



1-EXPLOSIVES: Cause harm by releasing quick, nearly instant heat or pressure.



2-GASES: May be flammable, non-flammable or toxic. All gases are hazardous simply because they are stored under pressure.



3-FLAMMABLE LIQUIDS: These substances release vapor in sufficient quantity to form a combustible mixture with air.



4-FLAMMABLE SOLIDS: These substances may ignite under certain conditions, including when exposed to water.



5-OXIDIZERS: Substances that may cause physical hazards due to the fact that they produce oxygen. Typically, these are highly reactive and must be stored and used with extreme care.



6-TOXIC: Common



hazardous substances that contain poisons found to inflict harm or cause

death. 7-RADIOACTIVES: Substances that can cause harm at a cellular level when radioactive energy penetrates a body. Effects of radiation overexposure generally are chronic.



8 – CORROSIVES: Common hazardous substances (soaps, acids) that will burn or severely irritate the bodies they contact.



9-MISCELLANEOUS: Substances that may cause harm but do not fit specifically into one of the previous categories (anesthetics).

5 HAZARDOUS MATERIALS

5.1 Acetylene

- 5.1.1 Acetylene cylinders shall be properly secured and always used, transported, or stored in a vertical position. Cylinders shall be protected from sparks, flames, and contact with energized electrical equipment.
- 5.1.2 An acetylene cylinder valve shall not be opened more than one and one-half turns of the spindle and preferably no more than three-fourths of a turn.
- 5.1.3 Employees shall not use acetylene in a free state at pressure higher than 15 psi.

5.2 Acids- General

- 5.2.1 Acids in any quantity shall be kept in an approved container, prominently labeled. These containers shall not be used for any other purpose.
- 5.2.2 Acids shall not be stored near heaters, steam pipes or other sources of heat.

- 5.2.3 Acid containers shall be securely stopped or covered.
- 5.2.4 Only approved methods, tools, and equipment shall be used to extract acids from a container.
- 5.2.5 Acid in railroad tank cars or tank trucks shall be unloaded in accordance with the Bulk Chemical Handling Procedure.
- 5.2.6 Open flames and smoking are prohibited when working with or near acid in metal containers, such as tanks, condensers, or boilers. Spark-proof tools shall always be used where there is a danger of accumulated hydrogen.

5.3 Asbestos

- 5.3.1 Employees should be aware that asbestos might still exist in some facilities. Should employees suspect asbestos is present, the job will be stopped, and the material tested.
- 5.3.2 Asbestos awareness training is required for workers whose work activities may contact Asbestos Containing Materials (ACM) or presumed asbestos containing material (PACM) but do not disturb the ACM or PACM during their work activities. The training will be provided before, or at the time of initial assignment and at least annually thereafter. The training program shall be done in a manner that the worker is able to understand and should include health effects associated with exposure to asbestos.
- 5.3.3 Employees shall not handle asbestos in any manner.

5.4 Benzene

- 5.4.1 Crude oil produced brine, condensate, and natural gas vapors may contain a small amount of benzene, which is recognized as a hazardous chemical and a suspected human carcinogen.
- 5.4.2 Prolonged contact with benzene causes de-fatting of the skin. Acute exposures by inhalation cause narcotic effects, including headache, giddiness, vertigo, and confusion. Chronic exposure has been shown to cause leukemia in animals and is a suspected human carcinogen.
- 5.4.3 Respiratory protection may be required for tasks having exposure to benzene.

5.5 Caustics

- 5.5.1 Caustics in any quantity shall be kept in an approved container, prominently labeled. These containers shall not be used for any other purpose.
- 5.5.2 Caustics shall not be stored near heaters, steam pipes or other sources of heat.
- 5.5.3 Caustics containers shall be securely stopped or covered.
- 5.5.4 Only approved methods, tools, and equipment shall be used to extract caustics from a container.
- 5.5.5 Caustic shall be dispensed in accordance with the Bulk Chemical Handling Procedure.

5.6 Lead

- 5.6.1 C&C employees shall not handle or dispose of lead.
- 5.6.2 Should employees suspect lead is present, the task shall be stopped, and the material tested by an approved testing facility.

5.7 NORM (Naturally Occurring Radioactive Materials)

- 5.7.1 C&C employees shall not handle or dispose of NORM.
- 5.7.2 Should employees suspect NORM are present, the task shall be stopped, and the material tested by an authorized testing facility.

5.8 Fuel/Flammable Liquids

- 5.8.1 Fuel shall be stored, handled, and transported only in approved OSHA/DOT containers. Plastic containers are prohibited.
- 5.8.2 Gasoline shall not be used as a solvent.
- 5.8.3 Smoking and open flames are prohibited within 25 feet of stored gasoline.
- 5.8.4 Bulk transfer of flammable liquids from one container to another shall be done only when containers are electrically interconnected (bonded) and grounded to prevent discharge sparks of static electricity.
- 5.8.5 Before filling portable containers, set the portable container on the ground, or ground the container.
- 5.8.6 Use only recommended cleaning solvents and never use any solvents in un-vented areas.
- 5.8.7 Carbon tetrachloride is a highly toxic solvent and shall not be used.

5.9 Compressed Gases

- 5.9.1 Valves, regulators, hoses, and other apparatus shall be kept free from oil or grease and shall not be handled with oily hands, oily gloves, or greasy equipment.
- 5.9.2 Before the regulator is removed, the cylinder valve shall be closed, and all pressure released from the regulator.
- 5.9.3 Leaking cylinders shall not be used.
- 5.9.4 Compressed gas cylinders shall be properly secured in an upright position.
- 5.9.5 Air hose couplings, such as Chicago Fittings, shall be attached to the hose by use of crimped bands.
- 5.9.6 Air hoses shall not be placed on ladders, steps, scaffolds, or walkways to create a tripping hazard.
- 5.9.7 Air pressure of more than 30 psi may be used for sandblasting, green-cutting concrete, removal of mill scales from steel, cleaning concrete forms, and similar cleaning operations including generator stators and motors if personal protective equipment and safe work procedures are used.
- 5.9.8 Caps shall not be used for lifting cylinders.

- 5.9.9 Compressed air shall not be used for cleaning purposes, except, where reduced to less than 30 psi or attached safety tip, and then only with effective chip guarding and personal protective equipment.
- 5.9.10 Compressed air shall not be used to blow dust, dirt, or any other materials from clothing or skin.
- 5.9.11 Conductive hose shall not be used near electrically energized equipment.
- 5.9.12 Cylinder valves shall be kept always closed except when the cylinder is in use.
- 5.9.13 Cylinders not having a legible label or marking identifying the contents shall not be used and shall be returned to the gas supplier.
- 5.9.14 Cylinders shall not be lifted with choke slings. If they must be lifted by mechanical means, they must be lifted in a cradle made for that specific purpose.
- 5.9.15 Cylinders shall not be used as rollers, as supports or for any purpose other than to contain contents as received.
- 5.9.16 Employees involved in handling, transporting and usage of compressed gas cylinders shall follow all federal, state and C&C rules as well as manufacturers recommendations.
- 5.9.17 Removable caps provided for valve protection shall be always kept on cylinders except when cylinders are connected to dispensing equipment and secured on a suitable cylinder truck.
- 5.9.18 The manufacturer's stated safe operating pressure for filters and other fittings shall not be exceeded.
- 5.9.19 Water hose clamps shall not be used.
- 5.9.20 Welding on or permitting a flame or excessive heat to encounter any part of a compressed gas cylinder is prohibited.

5.10 Transporting Cylinders

- 5.10.1 Cylinders shall not be transported without the protective valve cap properly installed.
- 5.10.2 Cylinders shall be transported in the upright position or suitable racks, or crates specifically designed for that purpose and be properly secured with chains or binders.

5.11 Storing Cylinders

- 5.11.1 Compressed gas cylinders shall be properly secured (chained) in an upright position when in storage.
- 5.11.2 Designated cylinder storage areas shall be posted with the name of the gases stored.
- 5.11.3 Acidic, alkaline, or toxic gases shall be stored outside or where ventilation is available.
- 5.11.4 Cylinders shall not be stored near readily ignitable substances or near corrosive chemicals.
- 5.11.5 Oxygen cylinders and/or toxic gases in storage shall be separated from flammable-gas cylinders or combustible materials a minimum distance of 20 feet or by a non-combustible barrier at least 5 feet high having a fire resistance rating of at least one-half hour.

- 5.11.6 The valve shall be closed, and the cylinder valve protection cap be replaced on empty cylinders. Empty cylinders shall be labeled or marked as empty and properly stored separately and away from full cylinders.
- 5.11.7 Defective compressed gas cylinders or valves shall be red tagged.

5.12 Hydrogen

- 5.12.1 Hydrogen is a flammable gas usually handled in compressed cylinders at high pressure. Hydrogen leaking from cylinders heats as it expands and may ignite spontaneously. The flame is virtually invisible under normal lighting.
- 5.12.2 Shut off any nearby sources or ignition, if possible, to do so without entering the gas.
- 5.12.3 DO NOT attempt to drive a vehicle or operate machinery in a vapor cloud.
- 5.12.4 Any attempt at repairs shall be made by trained personnel.
- 5.12.5 Be alert for pockets of gas which may accumulate in sumps, trenches, under culverts, and other low-lying areas.

5.13 Potassium

- 5.13.1 This material is reactive and can ignite readily oxidizable substances such as lubricants, carbon dust, and paper. Do not store it in open containers. Liquid solutions of this material are irritating at low concentrations, caustic at higher. PPE appropriate to protect skin, eyes, and clothing is mandatory when handling this material.

5.14 Quicklime (Calcium Oxide)

- 5.14.1 Use exhaust ventilation to minimize dust generation in the work area.
- 5.14.2 Pumps and transfer equipment should have splash shields.
- 5.14.3 Use exhaust ventilation to remove dust at unloading equipment, slakers, and other operations where dust is generated.
- 5.14.4 Showering after handling quicklime is recommended even if visible dust is absent.
- 5.14.5 Closely monitor the water supply to lime slakers, as an interruption of the supply while lime continues to feed may create explosive temperatures. The American Water Works Association recommends a dial thermometer or temperature sensitive warning device.
- 5.14.6 First Aid treatment is water. Flush continually exposed skin or eyes for 15 minutes. Consult physician if irritation persists or respiratory irritation is noted.

5.15 Soda Ash (Sodium Carbonate)

- 5.15.1 Soda ash absorbs water from the atmosphere, reacts and cakes. Soda ash is particularly irritating to the eyes and intensely irritating to the respiratory tract.

- 5.15.2 Prevent contact with soda ash dust or water solutions through appropriate personal protective equipment consisting of protective clothing, chemical goggles, and dust respirators.
- 5.15.3 Use exhaust ventilation to minimize dust generation in the work area.
- 5.15.4 Pumps and transfer equipment should have splash shields.
- 5.15.5 First aid treatment is water. Flush continually exposed skin or eyes for 15 minutes. Consult physician if irritation persists or respiratory irritation is noted.

5.16 Sodium Chlorite

- 5.16.1 This buff colored, flakey material is an oxidizer that must be shipped in special containers. It reacts with combustibles such as paper, wood, grease, alcohol, aldehydes, and clothing to form dangerously explosive, combustible materials.
- 5.16.2 Special work procedures and precautions are needed for the work and the area where sodium chlorites are used or stored. They must be written and understood by operations and maintenance personnel.

5.17 Solvents

- 5.17.1 There are many types of solvents used in the workplace. Specific precautions and handling should be guided by the Safety Data Sheet for the product.
- 5.17.2 Chemical gloves shall always be worn when handling solvents. Incidental contact should be immediately washed off with warm, soapy water.
- 5.17.3 When cleaning parts you should wear chemical goggles and gloves. Respiratory protection with organic vapor cartridges may be necessary if a solvent mist is generated or vapors exceed the Permissible Exposure Limit.
- 5.17.4 **Using of products containing Methylene Chloride and 1,1,1 trichloroethane is prohibited.** Use of methyl ethyl ketone (MEK) is to be avoided where acceptable substitutes are available.
- 5.17.5 Use of respirators is required when using MEK. Respiratory protection is always recommended by the manufacturers.

5.18 Spray Finishing Operations

- 5.18.1 Inhalation of vapors generated by spray finishing, painting, coating application, and related solvent use is to be always avoided. While most spray paint solvents have central nervous system effects, isocyanate-based paints such as urethanes can cause life threatening allergic reactions. The safety data sheet for each paint will need to be consulted for the appropriate protection.
- 5.18.2 When spraying in paint booths, enclosed areas, or during overhead applications, respiratory protection and goggles are to be worn. Standard safety glasses do not provide adequate protection against airborne mist.
- 5.18.3 Disposable suits are to be worn to minimize skin contact with coatings and reduce the need for solvent cleaning of skin areas.
- 5.18.4 No open flames or smoking are allowed around spray finishing operations.

- 5.18.5 Painters shall periodically check enclosed areas for flammable vapor limits (LEL) with a combustion meter to ensure that explosive or flammable atmospheres are not being produced.

5.19 Sulfur Hexafluoride (SF6)

- 5.19.1 This material is a halogen gas which decomposes under high temperature and electrical arcing to form toxic and corrosive compounds. The following procedure is necessary: Once sulfur hexafluoride is removed from the equipment to a gas recovery cart, the SF6 containment vessel shall be purged with atmospheric air for a minimum of 15 minutes prior to monitoring for breathable atmosphere. Oxygen concentration must read between 19.5 to 23.5%.
- 5.19.2 By-products caused by arcing of SF6 gas are identifiable by the white powder residue left inside the containment vessel. The residue must be vacuumed and disposed of properly.
- 5.19.3 Respirator or dust mask shall be worn while working inside SF6 containment vessel, to prevent exposure to the dust particles of the byproduct.
- 5.19.4 Protective clothing shall be worn to prevent toxic residue from contacting the skin (PCB suits or similar covering, gloves and boots are required to be worn).
- 5.19.5 Smoking is prohibited as residue and its decomposition products on the paper would be inhaled.

5.20 Drum Handling

- 5.20.1 To loosen or tighten a bung, always use a proper type of bung wrench with a long handle.
- 5.20.2 If a drum contains acid, caustic, or any other injurious chemicals, consult SDS for appropriate PPE.
- 5.20.3 Consult SDS for transporting and handling procedures for the substance contained.

5.21 Cadmium Awareness

- 5.21.1 Cadmium is a toxic metal used in industry. It is a byproduct of zinc, lead, and copper refining. Effective engineering controls are used to keep workers below permissible exposure limits set forth by OSHA. C&C ensures that no employee is exposed to a level at or above these limits.
- 5.21.2 Should management become aware of potential exposure to cadmium, a written site-specific control plan will be developed which will provide PPE and respiratory equipment at no charge to each potentially exposed employee.

5.22 Hydrogen Sulfide Awareness

- 5.22.1 Hydrogen Sulfide (H₂S) is a colorless, flammable gas that is found in natural gas and oil and as a product of the decomposition of organic matter. H₂S can be found in pumping stations, refineries, and sewers.
- 5.22.2 Employees should not come into direct contact with H₂S. Should management become aware of the presence of H₂S, a written site-specific control plan will be developed which will provide PPE and respiratory equipment at no charge to each potentially exposed employee.
- 5.22.3 Characteristics

- 5.22.3.1 **Toxicity**- Loss of consciousness and probable death at 600-700 ppm for a short-term exposure (2-15 minutes) if not rescued.
- 5.22.3.2 **Odor of rotten eggs**- Loss of smell can occur at a level of 100 ppm thus creating the inability to detect H₂S by smell.
- 5.22.3.3 **Heavier than air**- Tends to accumulate in low places such as trenches and pits.
- 5.22.3.4 **Soluble in liquids**- Heavy concentrations can be present in pools of water or at the bottom of tanks/vessels. If the liquid is heated, the H₂S can be released.
- 5.22.3.5 **Flammable**- When H₂S is burned it forms sulfur dioxide which is a toxic, colorless, odorless gas with a pungent smell.
- 5.22.4 Guidelines for area suspected to have H₂S present:
 - 5.22.4.1 Do not enter suspected area.
 - 5.22.4.2 Area must be tested to verify if H₂S is present.
 - 5.22.4.3 Area must be continuously ventilated and tested to verify no H₂S is present before entry can occur.
- 5.22.5 Treatment for Exposure
 - 5.22.5.1 If someone is overcome by H₂S, move them to fresh air if it does not put the rescuer in danger. If the person stops breathing start artificial resuscitation.
 - 5.22.5.2 If exposure occurs, the person must be treated and cleared by a medical professional before returning to work.

5.23 Chromium Awareness

- 5.23.1 Chromium can be found in natural or industrial sources. Metals, dyes, pesticides, welding rods and wood preservatives can contain Chromium. Effective engineering controls are used to keep workers below permissible exposure limits set forth by OSHA. C&C ensures that no employee is exposed to a level at or above these limits.
- 5.23.2 Should management become aware of potential exposure to Chromium, a written site-specific control plan will be developed which will provide PPE and respiratory equipment at no charge to each potentially exposed employee.

6 DE-ENERGIZING LINES AND EQUIPMENT

6.1 Purpose

- 6.1.1 This program has been devised to provide guidelines for the de-energizing of lines and equipment that could cause harm or death to employees. All conductors and equipment shall be treated as energized until isolated, tested with an approved voltage tester, and properly grounded.

6.2 Definitions

- 6.2.1 **Clearance** – Documentation process received from system operator indicating that the lines, equipment, or other potentially live items have been isolated from energy sources and are de-energized via open switches, jumpers, or other connecting devices that create a visible open point between the line/equipment and energy sources.
- 6.2.2 **Client/System Operator** – Representative of utility, co-op or other group that controls energy sources and/or connections of the system.
- 6.2.3 **De-Energized** – Situation where the flow of electricity has been interrupted, allowing maintenance or construction work to be performed in an area.
- 6.2.4 **Switching** – Process of connecting/disconnecting a section of line or piece of equipment to/from an energy source.
- 6.2.5 **Tagging** – Application of a physical tag to a switch or other connecting device indicating work is being performed on the circuit and the switch/device is to remain disconnected.

6.3 Responsibility

- 6.3.1 Supervision shall contact the client/system operator and ensure all sources of energy are opened, tagged, and rendered inoperable and receive clearance from the client/system operator prior to any work being performed. This shall be noted on the THA (Task Hazard Analysis).
- 6.3.2 Supervision shall ensure all clearance boundaries have been verified open and tagged.
- 6.3.3 Supervision shall ensure lines and equipment are properly grounded. Additionally, supervisors shall ensure guards or barriers are installed as necessary to prevent contact with adjacent energized parts.
- 6.3.4 Supervision shall ensure all grounds are installed to prevent lines, equipment, or other parts from being energized by an outside source and protected by guards or barriers to prevent contact with adjacent parts.
- 6.3.5 Employees shall treat all lines, equipment or other parts as energized until clearance has been received, testing performed, and grounds installed.
- 6.3.6 Supervision (through the THA) shall communicate all controls in place to protect employees from contact with live parts or equipment. Acknowledgement of this communication shall be documented on the THA.

6.4 Compliance

- 6.4.1 Persons working on or near energized equipment shall be trained and demonstrate competency in skills and techniques to meet the following standards required to be considered a “Qualified Person:”
 - 6.4.1.1 Distinguish exposed live parts from other parts of electrical equipment,
 - 6.4.1.2 Determine nominal voltage of exposed live parts,
 - 6.4.1.3 Know minimum approach distances and

- 6.4.1.4 Employ special precautionary techniques, personal protective equipment, insulating and shielding materials and insulated tools.
- 6.4.2 All tags placed on switches or other disconnecting devices shall be clearly marked to indicate items/processes de-energized by the tagging and be comprised of material sufficient to withstand the conditions present in the area.
- 6.4.3 All employees affected by the de-energizing process shall be notified of status (live or deenergized) of lines, equipment and other parts in their work area and the method of protection employed for all previously energized items.
- 6.4.4 Only persons competent in the workings of the system being de-energized may perform or authorize an energy control process.
- 6.4.5 Prior to the system being energized, supervision shall inspect the work area and remove all tools, materials, debris, or other items that may have accumulated during the work which are not essential to the operation.

7 WORKING ON OR NEAR ENERGIZED LINES (For Live Line Barehand requirements see section 32)

7.1 Purpose

- 7.1.1 This has been established to define roles and requirements for employees working on or near energized lines.

7.2 Definitions

- 7.2.1 **Qualified Employee** – employee who, through training, experience and/or education can recognize electrical hazards, and the skills/techniques to control or avoid these hazards.
- 7.2.2 **Reaching Distance** – (aka “extended reach”) distance employee can reach, plus any conductive work equipment.

7.3 Responsibility

- 7.3.1 Management:
 - 7.3.1.1 Provide training for employees to become qualified personnel and audit performance to ensure compliance.
- 7.3.2 Supervision:
 - 7.3.2.1 Evaluate tasks and determine hazards to which employees may be exposed and implement control measures to eliminate those hazards.
 - 7.3.2.2 Shall only allow qualified personnel in areas where exposure to live lines or parts is possible.
 - 7.3.2.3 Audit tasks to ensure only qualified personnel are performing these tasks.
- 7.3.3 Employees:

- 7.3.3.1 Identify energized lines and parts.
- 7.3.3.2 Shall not work on lines or parts for which they have not been trained.
- 7.3.3.3 If non-qualified, employees shall maintain at least 10 feet clearance from energized lines.
- 7.3.3.4 Positive control must be maintained to raise, lower, or relocate items from any aerial position at or above energized adjacent parts.

7.4 Compliance

7.4.1 General:

- 7.4.1.1 The automatic re-closing feature of circuit interrupting devices shall be made inoperative before work begins if possible. If a non-reclose or hotline tag cannot be issued, management must be contacted to approve the proposed tasks. Fused disconnects should not be considered the equivalent of a Hot line tag.
- 7.4.1.2 Only qualified employees and trainees working under their direct supervision may work on or with exposed energized lines or parts of equipment.
- 7.4.1.3 Only qualified employees and trainees working under their direct supervision may work in areas containing unguarded, un-insulated energized lines or parts of equipment operating at 600 volts or more.
- 7.4.1.4 When employees are performing work on or associated with exposed lines or equipment energized at 600 volts or more, persons trained in First Aid and Cardiopulmonary Resuscitation (CPR) shall be available as follows:
 - 7.4.1.4.1 For fieldwork involving two or more employees at a work location, at least two trained persons shall be available.
- 7.4.1.5 At least two employees will be present while the following types of work are being performed:
 - 7.4.1.5.1 Installation, repair, or removal of de-energized lines if any employee is exposed to contact with other parts which are energized at more than 600 volts.
 - 7.4.1.5.2 Installation, repair, or removal of lines energized at more than 600 volts.
 - 7.4.1.5.3 Installation, repair, or removal of equipment such as transformers, capacitors, and regulators, if an employee is exposed to contact with parts energized at more than 600 volts.
 - 7.4.1.5.4 Work involving the use of mechanical equipment, other than insulated aerial lifts, near parts energized at more than 600 volts.
 - 7.4.1.5.5 Any other work that exposes an employee to electrical hazards greater than or equal to those listed above.

7.5 Qualified Employees

- 7.5.1 When two or more employees are working on the same line section, they shall only work on or contact one conductor at the same time.

- 7.5.2 No employee may approach or take any conductive object without an insulating handle closer to exposed energized parts than the clearances set forth in Section 8.8, Table 1.
- 7.5.3 Employees may not work on equipment or lines in any position from which a shock or slip will tend to bring the body toward exposed parts that are at a potential different from the employee's body.
- 7.5.4 Employees shall not wear jewelry of any type while performing assigned tasks.

7.6 Rubber Goods

7.6.1 Employees shall not touch or work on any exposed energized lines or apparatus except when wearing protective equipment approved for the voltage to be contacted.

- 7.6.2 When work is to be done on or near energized lines, all energized and grounded conductors or guy wires within reach of any part of the body shall be covered with protective equipment, except that part of the conductor on which the employee is to work.
 - 7.6.2.1 After completion of the initial cover-up, crews will perform a "2-minute drill" at ground level to confirm that all cover has been installed properly and review the work task.
- 7.6.3 When working on energized lines or apparatus, work should be done from below, if possible.
- 7.6.4 In applying flexible protective equipment, an employee shall always protect the nearest and lowest wires first, protecting themselves as they progress. The protective equipment shall extend beyond the extended reach of the employee's anticipated work position. In removing rubber protective equipment, the reverse order shall be maintained.
- 7.6.5 Flexible blankets shall not be used on the ground or any walking surface.
- 7.6.6 Protective equipment shall be put on before entering the work area within which energized lines or apparatus may be reached and shall not be removed until the employee is completely out of reach of the area.
- 7.6.7 When not in use, rubber protective equipment shall be protected from mechanical and chemical damage and be stored in the containers provided and nothing else placed therein.
- 7.6.8 Rubber goods are designed for temporary use. Rubber protective equipment shall not be allowed to remain in place on energized lines or apparatus overnight or for more than one shift unless approved by supervision.
- 7.6.9 Line hose, blankets, line guards, etc., shall be visually inspected before each job before each use and immediately following any incident that can reasonably be expected of having caused damage.
- 7.6.10 Flexible protective devices shall be stored in designated compartments on trucks and elsewhere so that they will not be damaged by tools or other equipment.
- 7.6.11 Blankets, gloves, and sleeves shall be marked with the appropriate class, type, and test date.
- 7.6.12 Electrical protective equipment shall be given periodic testing as described below:
 - 7.6.12.1 Equipment Test Intervals:

Type of Equipment	When to Test
Rubber insulating line hose	No testing required.
Rubber insulating covers	No testing required.
Rubber insulating blankets	Before first issue and every 12 months thereafter; ¹ upon indication that insulating value is suspect; and after repair.
Rubber insulating gloves	Before first issue and every 6 months thereafter; ¹ upon indication that insulating value is suspect; and after repair.
Rubber insulating sleeves	Before first issue and every 12 months thereafter; ¹ upon indication that insulating value is suspect; and after repair.
Hot Sticks	Before first issue and every 24 months thereafter; ¹ upon indication that insulating value is suspect; and after repair.
Grounds	Before first issue and every 12 months thereafter; ¹ upon indication that insulating value is suspect; and after repair.

¹If the insulating equipment has been electrically tested but not issued for service, the insulating equipment may not be placed into service unless it has been electrically tested within the previous 12 months.

- 7.6.12.2 Equipment shall be free from harmful physical irregularities that can be detected by the tests or inspections required under this section.
- 7.6.12.3 Insulating equipment shall be inspected for damage prior to use, and immediately following any incident that can reasonably be suspected of having caused damage.
- 7.6.13 Class 4 rubber goods are rated for a maximum voltage of 36 KV. Work on parts energized above 36 KV must utilize approved high-voltage work methods such as insulated hot sticks and/or Live Line Barehand.

7.7 Use of Rubber Gloves

- 7.7.1 The use of rubber gloves shall be in accordance with the following:
 - 7.7.1.1 Class 0: 1,000 volts
 - 7.7.1.2 Class 1: 7,500 volts
 - 7.7.1.3 Class 2: 17,000 volts
 - 7.7.1.4 Class 3: 26,500 volts
 - 7.7.1.5 Class 4: 36,000 volts
- 7.7.2 Rated voltage shall be considered phase-to-phase voltage unless all conductors except one being worked are insulated (with protective devices) or isolated so that physical contact cannot be made with any energized part. In that case, phase-to-ground voltage will determine maximum use voltage.

- 7.7.3 Rubber gloves and sleeves shall be worn while working on any pole or structure on which energized lines or equipment are located, on which lines and equipment that could be energized are located or that are located close to energized lines or equipment where an employee could make contact.
- 7.7.4 Gloves and sleeves shall be donned before the employee raises an aerial device off the ground or device's cradle when performing distribution work activities energized at 36kv or less. These items shall remain on until the employee returns to ground or aerial device returns to cradle.
 - 7.7.4.1 When employees are working on energized circuits or equipment using the rubber glove method, rubber protective-insulating gloves and sleeves rated for the exposure of the highest nominal voltage shall be worn cradle-to-cradle when working from an aerial platform that has been tested and approved for energized work.
 - 7.7.4.2 When employees are working on energized circuits or equipment using the rubber glove method, rubber protective-insulating gloves and sleeves rated for the exposure of the highest nominal voltage shall be worn from the time they leave the ground until they return to the ground when climbing wood poles.
 - 7.7.4.3 The term "effective cover up" is used to describe the installation of phase-to-phase rated insulating protective cover on energized conductors and/or equipment of different potentials when the lineman is within reaching distance or in areas extended by handling conductive objects.
 - 7.7.4.4 The term "extended reach" is used to describe being able to extend past insulating PPE and contact an energized line or part.
 - 7.7.4.5 Electrical class rating of the insulating rubber sleeves shall meet or exceed the electrical class rating of the insulating rubber gloves when working on primary conductors.
- 7.7.5 Alternative work methods ensuring worker safety shall be identified, communicated to all affected workers, implemented, and documented as part of the THA (Task Hazard Analysis) should the above conditions not be met.
- 7.7.6 In addition, rubber gloves shall be worn during the following conditions:
 - 7.7.6.1 Working on or within falling or reaching distance of conductors, electrical equipment, or metal surface (cross arms, cross arm braces, or transformer cases), which are not effectively grounded, and which may be or may become energized.
 - 7.7.6.2 While removing lead sheath and sleeves from cables and joints and opening or cutting cables (until they have been proven to be de-energized at the work location by positive tests).
 - 7.7.6.3 Operating manually controlled air-break switches.
 - 7.7.6.4 Opening and closing manually operated oil circuit breakers.
 - 7.7.6.5 Working on or near series street-lighting circuits, even though they are disconnected from the source of power.
 - 7.7.6.6 Repairing series fixtures or attachments, the circuit of which is exposed to energized conductors, except where the fixtures are disconnected from the line.

- 7.7.6.7 Pulling in wires or handling other conducting materials near circuits, apparatus, or equipment that is or may become energized. For example, final bonding attachment to pole grounds.
- 7.7.6.8 Working on or near telephone or other circuits that are subject to induced voltages from energized high voltage circuits unless such circuits to be worked are adequately grounded.
- 7.7.7 When working with rubber protective equipment on energized circuits or apparatus, the following minimum conditions shall be met in addition to all other rules governing the use of protective equipment:
 - 7.7.7.1 Rubber gloves and rubber sleeves shall be used.
 - 7.7.7.2 Employees shall not make physical contact with protective devices installed on energized primary conductors without rubber gloves and rubber sleeves.
 - 7.7.7.3 When two or more employees are working on the same structure and are within reach of each other, they shall only work on or contact one conductor at the same time.
- 7.7.8 Rubber gloves shall never be worn inside out. They shall be exchanged any time they become damaged when an inspecting employee believes they are inadequate. Leather protection shall be worn over insulating gloves.
- 7.7.9 Leather protectors (designed for use with the glove) or over-gloves shall not be worn except over rubber gloves.
- 7.7.10 Rubber gloves shall be inspected for damage and given an air test once each day while in use, prior to beginning of the work period, and at any other time when their condition is in doubt.
- 7.7.11 Gloves, when not in use, shall be kept in canvas bags or other approved containers and stored where they will not become damaged from sharp objects or exposed to direct sunlight.
- 7.7.12 They shall never be folded while stored.
- 7.7.13 No other objects may be placed on rubber gloves while in storage.
- 7.7.14 Rubber gloves shall be stored in the glove bag with the cuffs down to permit drainage and better ventilation and to reduce the possibility of damage.

7.8 Working on Energized Lines with Live-Line Tools

- 7.8.1 When working with insulated live line tools (hot sticks), the fiberglass portion of the stick between the workers' hand position and the "hot" end of the stick shall be equal to or greater than the minimum approach distance for the voltage and circuit being worked.
- 7.8.2 Rubber gloves are not required in conjunction with live line tools (hot sticks) unless otherwise required for 36 KV and below applications in section 7.7.
- 7.8.3 All live-line tools shall be inspected daily, prior to work and removed from service should a defect be found.
- 7.8.4 Only tools of proper design and construction shall be approved by management for use in live-line maintenance work.

- 7.8.5 An inspection of the condition of the structure and lines at the point of the work shall be conducted prior to any task. Adjacent spans and structures also shall be inspected for defects in conductors, tie wires, insulators, and other equipment.
- 7.8.6 Blocks or hoists shall be used on the live-line tools to provide a mechanical advantage when moving heavy conductors.
- 7.8.7 Insulated Link sticks shall be used in conjunction with rope blocks and “hot” hoists when moving live lines. Nylon webbing of slings or hoists shall not be considered as insulation.
- 7.8.7 While live-line work is in progress, no other work of any nature shall be performed on the same pole or structure.
- 7.8.8 All live-line tools, when not in use, shall be kept in designated containers, and such containers shall be stored in a dry location out of direct sunlight. Hot sticks should be limited to one per bag.
- 7.8.9 Live-line tools shall never be laid directly on the ground or against sharp objects.

7.9 Working on De-Energized Lines and Equipment

- 7.9.1 All conductors and equipment shall be treated as energized until tested or otherwise determined to be de-energized and grounded.
- 7.9.2 New lines or equipment may be considered de-energized and worked as such under the following conditions:
 - 7.9.2.1 The lines or equipment are grounded,
 - 7.9.2.2 The hazard of induced voltages is not present, and
 - 7.9.2.3 Adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment.
- 7.9.3 Before a series of street-lighting circuit is opened and work is performed, one of the following procedures shall be performed:
 - 7.9.3.1 Bare-wire communication conductors on power poles or structures shall be treated as energized lines unless protected by insulating materials.

7.10 Series Street Light Circuits

- 7.10.1 Before a series of street-lighting circuit is opened and work is performed, one of the following procedures shall be performed:
 - 7.10.1.1 Circuit shall be disconnected from the source of supply by opening and physically rendering inoperative disconnecting switches or other absolute cutouts. Dependence shall not be placed on time switches or other automatic devices.
 - 7.10.1.2 Circuit shall be properly jumped to avoid an open circuit condition.

7.11 Transformers

- 7.11.1 The primary leads of a distribution transformer shall be considered energized at full voltage until the primary and secondary leads have been disconnected, or it has been determined that the secondary circuit to which it is attached is grounded.

- 7.11.2 The cases of all transformers connected to a source of supply shall be considered as being energized at the full primary voltage unless they are adequately grounded.
- 7.11.3 Employees shall not stand on or otherwise contact transformer cases while working on or near energized circuits.

7.12 Hoisting Cables –Conductive Material

- 7.12.1 Wire rope or other conductive material shall not be used to raise transformers, poles, or any other material within the minimum distance near energized high-voltage lines, except when the wire rope and any conductive material being raised are adequately protected by insulating covering and such energized wire are properly covered.
- 7.12.2 Use of wire rope as a hoist line shall be discontinued when it becomes worn, deteriorated, or damaged or when the tag is illegible or missing.
- 7.12.3 Metallic slings (chain or cable) shall not be used within the minimum approach distance of energized equipment.
- 7.12.4 Positive control of wire rope shall be at all times maintained.
- 7.12.5 Synthetic hoisting and pulling lines and ropes shall not be considered as non-conductive.

7.13 Capacitors

- 7.13.1 Line capacitors shall be considered at full voltage until they have been removed from the line and the terminals short-circuited and discharged to ground by an approved method. The terminals shall not be short-circuited until the capacitors have been de-energized for at least 15 minutes.
- 7.13.2 Employees shall not come in contact with an ungrounded capacitor case until the capacitor has been disconnected from the circuit and the terminals shorted.
- 7.13.3 The terminals of used capacitors in storage shall be shorted.

7.14 Safety Devices

- 7.14.1 Report all safety device malfunctions to supervision immediately and red tag the device.
- 7.14.2 No guard shall be removed from any machine or piece of equipment except to perform required maintenance and proper lockout/tagout procedures have been completed.

7.15 Arc Flash Safety

7.15.1 Arc flash hazards should be avoided by de-energizing and grounding lines and equipment whenever feasible. When de-energizing is not possible and live parts are energized at 50 volts or more, arc flash hazards shall be mitigated in accordance with NFPA 70E requirements. Host utility arc flash guidelines shall be followed if available.

7.15.2 Energized overhead transmission work shall utilize Minimum Approach Distance Table 8.8 to determine the arc flash limited approach boundary. Due to the nature of the work, live line barehand work is excluded from arc flash requirements.

7.15.3 An arc flash assessment must be conducted to determine the workers' exposure to arc flash energy, the risk category, approach boundaries, and minimum arc thermal protective values. This information should be provided by the host utility upon request. Additionally, refer to arc flash warning/danger labels on pad mount transformers, underground enclosures, etc... for arc flash safety requirements.

7.15.4 The greatest risk for arc flash injuries exists on low/secondary voltages and while working in confined spaces such as enclosures that channel electric arcs. When working in a confined or enclosed space that contains exposed live parts, protective shields, barriers, or insulating materials are required.

7.15.5 Follow lock out/tag out, hotline work permit, and electrical barrier/guard requirements as determined by OSHA 1910.269 and NFPA 70e. Electrical barriers, guards, and insulating devices shall be visually inspected before use and stored in accordance with manufacturer's specifications.

7.15.6 No conductive articles of jewelry and clothing shall be worn where they present an electrical contact hazard.

7.15.7 In addition to specialized arc flash protective garments, standard company issued 8 calorie fire retardant uniforms shall be worn with front buttoned, sleeves rolled down and buttoned, and shirt tails tucked into pants.

7.15.8 Personal protective clothing and equipment are required based upon the arc flash risk category. Employees shall comply with the following NFPA 70e chart to determine arc flash PPE requirements (in addition to standard PPE):

NFPA 70e PPE Arc Flash Requirements

Arc Flash Hazard Risk Category	Typical Flame-Resistant (FR) Clothing at this level	Min. ATPV – cal/cm ² (Arc Thermal Protective Value)
0	Non-melting clothing materials, face shields and safety glasses, leather over rubber arc flash gloves	< 2 cal / cm ²
1	FR shirt and pants, face shield and safety glasses, leather over rubber arc flash gloves, leather work boots	4 cal / cm ²
2	2-3 layers of FR shirt and pants, cotton under garments, face shields and safety glasses, leather over rubber arc flash gloves, leather work boots	8 cal / cm ²
3	3-4 layers of FR clothing, cotton under garments, face shield and safety glasses, leather over rubber arc flash gloves, leather work boots	25 cal / cm ²
4	FR shirt and pants, multi-layer arc flash coveralls, cotton under garments, face shield and safety glasses, leather over rubber arc flash gloves, leather work boots	40 cal/cm ²

7.15.9 Non-qualified employees must remain outside the limited approach boundary. Only qualified employees may enter the restricted approach boundary area. Refer to the following chart for approach boundaries by voltage class:

(1) Nominal System Voltage Range, Phase to Phase	(2) Limited Approach Boundary – Exposed Movable Conductor	(3) Limited Approach Boundary – Exposed Fixed Circuit Part	(4) Restricted Approach Boundary – Includes Inadvertent Movement Adder
Less than 50	Not Specified	Not Specified	Not Specified
50 to 150	10 ft 0 in.	3 ft 6 in.	Avoid Contact
151 to 750	10 ft 0 in.	3 ft 6 in.	1 ft 0 in.
751 to 15kV	10 ft 0 in.	5 ft 0 in.	2 ft 2 in.
15.1 kV to 36 kV	10 ft 0 in.	6 ft 0 in.	2 ft 7 in.
36.1 kV to 46 kV	10 ft 0 in.	8 ft 0 in.	2 ft 9 in.
46.1 kV to 72.5 kV	10 ft 0 in.	8 ft 0 in.	3 ft 3 in.
72.6 kV to 121 kV	10 ft 8 in.	8 ft 0 in.	3 ft 4 in.
138 kV to 145 kV	11 ft 0 in.	10 ft 0 in.	3 ft 10 in.
161 kV to 169 kV	11 ft 8 in.	11 ft 8 in.	4 ft 3 in.
230 kV to 242 kV	13 ft 0 in.	13 ft 0 in.	5 ft 8 in.
345 kV to 362 kV	15 ft 4 in.	15 ft 4 in.	9 ft 2 in.
500 kV to 550 kV	19 ft 0 in.	19 ft 0 in.	11 ft 10 in.
765 kV to 800 kV	23 ft 9 in.	23 ft 9 in.	15 ft 11 in.

7.15.10 All arc flash equipment must be inspected, used, maintained, and stored according to the manufacturer's specifications.

8 GROUNDING AND BONDING

8.1 Definitions

- 8.1.1 **Ground** – Earth or a conductive body of relatively large extent that serves in place of earth. Ground normally refers to zero volts (V), or no voltage, for electrical circuits. Electrical current seeks to go to ground. Under fault conditions, the ground potential may increase to a level above zero volts near an intentional or accidental connection of an electrical circuit to ground.
- 8.1.2 **Grounded** – A means of connecting an electrical circuit or electrical equipment to ground (See **Ground**) whether intentional or accidental.
- 8.1.3 **Grounding** – An intentional connection of an electrical circuit or apparatus to a ground source for the protection and safety of personnel and equipment. Grounding seeks to neutralize current by shunting it to ground.
- 8.1.4 **Bond** – The mechanical interconnections between two or more parts to maintain a common electrical potential.
- 8.1.5 **Bonding** – making of an electrical connection from one conductive element to another for the purpose of minimizing potential differences or providing suitable conductivity for fault current or for mitigation of leakage current and electrolytic action.
- 8.1.6 **Difference between a bond and a ground** – a bond distributes an electrical charge; a ground neutralizes it.
- 8.1.7 **Voltage** – electrical pressure from a source; measured in volts. Voltage pushes current. In human terms, voltage alone does not kill. However, a difference in voltage between two points pushes a current, which can be fatal.
- 8.1.8 **Current** – flow of electrons measured in amps. The component of an electrical circuit which does work. Current is also what causes injury. Current flow of .1 amp across a human heart for two seconds can result in fatality.
- 8.1.9 **Resistance** – physical property of an electrical circuit which resists the flow of electrons; measured in ohms. In grounding terms, grounding and bonding jumpers/clamps should offer the least possible resistance for the protection of the worker.
- 8.1.10 **Impedance** – total opposition to current flow. Resistance is a form of impedance.
- 8.1.11 **Electrical circuit** – a path for current flow from a source to a load (or ground).
- 8.1.12 **Potential** – Another name for voltage (electrical pressure).
- 8.1.13 **Series circuit** – a type of electrical circuit where current only has one path upon which to flow. Electrical workers must avoid placing their body “in series”, completing a circuit. “Bonding” is the method most often used to protect electrical workers’ body from completing a circuit. Bonding provides an alternative parallel, low resistive path for current flow and ensures the potentials on both sides of an open point are effectively the same.
- 8.1.14 **Parallel circuit** – a parallel circuit offers multiple paths for current to flow. The laws of parallel circuits state that the same voltage is applied to each parallel circuit, and current flow in each parallel circuit will vary based on the amount of resistance in the leg

- 8.1.15 **Isolated** – In terms of electrical work, a worker is considered isolated when his/her entire body is at the same potential as the energized part, and he/she is not completing a circuit with the body. An example of this safe condition is a “bird on a wire” or live line barehand” work from an insulated platform.
- 8.1.16 **Insulated** – In terms of electrical work, a worker is considered insulated when his/her body is adequately separated from an energized part by an approved, insulated object or cover. Examples of insulation include fiberglass booms/buckets, hot sticks, rubber gloves/sleeves, rubber or hard plastic line guards, rubber blankets, etc... which may be used alone or in conjunction to safety allow work on energized parts.
- 8.1.17 **Equal potential** – A safe state where a worker is in contact with and isolated at the same voltage, or potential, of the electrical component being worked.
- 8.1.18 **Equipotential Zone** – Created by personal protective grounds which provide a workspace where all materials and hardware within the worker’s reach is energized at the same potential if the lines become energized. This limits current flow across the worker’s body.
- 8.1.19 **Difference of potential** – When a difference in potential (voltage) from one component to another exists and an electrical path is created between the two, a circuit is completed resulting in the difference in potential (voltage) pushing a current along that circuit. Electrical burns result when an electrical worker allows any portion of his/her body to complete the circuit between two electrical potentials. Proper grounding and bonding will mitigate this significant hazard.
- 8.1.20 **Touch potential** – voltage difference between two points on a conductive object when a person touches them simultaneously. When a worker’s body touches two different voltages (any quantity from zero and above) at the same time, current flows across his/her body between those two points.
- 8.1.21 **Step potential** - Similar to touch potential but exists when a worker’s feet are at two different potentials. This often occurs when the current is traveling to ground in proximity to a worker standing nearby. As current goes to ground, it dissipates in a gradient creating the difference of potential between the feet.
- 8.1.22 **Temporary Protective Grounding Equipment** – A system of ground jumpers, ferrules, wire clamps, and cluster bars designed to operate system protective devices, create equal potential work zones, and carry current to ground.
- 8.1.23 **Minimum Approach Distance (MAD)** – The closest distance a qualified electrical line worker may approach an energized conductor or object. Relative to personal protective grounding, MAD must be maintained by personnel until the line or piece of equipment is properly tested and grounded.
- 8.1.24 **Master Grounds** - Often referred to as “working” or “bracket grounds”. Temporary protective grounding equipment installed from system neutral, static wire, or ground to all phase conductors on both sides of the worksite. Master grounds should be as close as possible to the work location and no more than one mile away.
- 8.1.25 **Personal Grounds** –A single or set of ground jumpers installed between the structure and the phase conductor(s) or wire(s) being worked. The intent is to ensure an equal potential between all components within reach of the electrical worker. On wood structures the ground connection

requires a grounding cluster bracket connected to the pole ground and/or system neutral or static wire.

- 8.1.26 **Personal Protective Grounding** – Combines master grounds and personal grounds in a way that reduces the potential voltage difference (voltage across the worker) at the worksite to a safe level.
- 8.1.27 **Zero Energy Check** – Verification process to confirm a line or piece of equipment is de-energized. A zero-energy check is performed with an approved voltage detector attached to a hot stick of appropriate length to maintain minimum approach distance for the voltage of the line or device.
- 8.1.28 **Live-Dead-Live Test** – Required by the manufacturer, this is a test of a voltage detector before and after a zero-energy check utilizing a known voltage source. Handheld auxiliary power supply modules are recommended for this task. If an energized line is utilized, ensure a hotline tag is in effect.
- 8.1.29 **System Grounds** – Established, low impedance connections for electrical system components (transformers, circuit breakers, support structures, etc...) to earth ground which protect components of the power system from damage due to excess, fault, and stray currents. System grounds may include pole grounds, neutral wires, static wires, ground rods, bonded steel poles/towers, grounding grids, or counterpoise wires.
- 8.1.30 **Grounding Elbow** – A device used to ground distribution bushing of transformers, junction boxes, cables, and other electrical components in an underground distribution application.
- 8.1.31 **Cable Isolation** – Isolating cable from accidental energization by disconnecting the cable and its concentric neutral from all ground sources, including other concentric neutrals, grounding cables, and ground loops. Jacketed cable can be considered isolated if bare concentric neutral ends of the cable are isolated from all ground sources.
- 8.1.32 **Neutral Bonding Jumper** – In underground distribution applications, a jumper installed on the concentric neutral bridging a location on the cable that is to be cut. The neutral bonding jumper ensures that the concentric neutral (common neutral) is not opened.
- 8.1.33 **Insulated Aerial Manlifts** – Mechanical equipment employing insulated booms, tested for the voltage involved, that are used to position workers in an elevated position.
- 8.1.34 **Utility Vehicles** – Mechanical equipment including uninsulated manlifts, diggers or derricks, boom trucks, pulling and tensioning equipment used in stringing conductors, cable pulling equipment, and so on.
- 8.1.35 **Grounding Source** – A known ground point for which to connect vehicle/equipment grounds and person protective grounds. Grounding sources should be capable of carrying the maximum amount of available fault current and selected based on the following priority:
 - 8.1.35.1 An established system ground (permanent ground rod or ground grid, pole ground that is bonded to the system neutral wire or static wire, or a steel pole/tower that is bonded to a permanent ground rod, system neutral or static wire).
 - 8.1.35.2 Temporary ground rod. NOTE: Results of tests by the industry have shown that temporary ground rods typically provide inadequate protection to workers. Temporary

ground rods may be used only when no established ground source is available. Utility vehicles grounded to temporary ground rods must be barricaded.

- 8.1.35.3 Screw type temporary ground rods are not recommended due to limited rod surface contact with the soil.
- 8.1.35.4 Note: While system neutrals on Y-configured distribution are often the best ground source, direct connection to an aerial neutral wire may introduce additional electrical hazards and should be avoided.
- 8.1.36 **Insulated Barrier** – An insulating device designed and rated for the voltage involved (line hose, plastic cover-up, etc....).
- 8.1.37 **Equipment Safety Zone** – A physical barrier around a truck or piece of equipment warning personnel not to approach, reducing the risk of step/touch potential. Special precautions must be taken to protect the public and to ensure that the ground clamp is not removed from the ground rod.
- 8.1.38 **De-Energized** – free from any electrical connection to a source of potential difference and from electrical charges.
- 8.1.39 **Effectively Grounded** – intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of voltages which may result in undue hazard to connected equipment or to persons.
- 8.1.40 **Equipment** – general term which includes fitting, devices, appliances, fixtures, apparatus, and the like, used as part of, or in connection with, an electrical power transmission and distribution system, or communication systems.
- 8.1.41 **Hot Tools/ Sticks** – insulated tools which are specially designed for work on energized high voltage lines and equipment. Insulated aerial equipment specially designed for work on energized high voltage lines and equipment shall be included here.
- 8.1.42 **Qualified Worker** – a person who, by reason of experience or training, is familiar with the operation to be performed and the hazards involved.
- 8.1.43 **Tag** – system or method of identifying circuits, systems, or equipment for the purpose of alerting persons that the circuit, system, or equipment is being worked on.
- 8.1.44 **Grounding Log** – A living document for recording line clearance information, all master ground locations, date, and time of installation and removal. This document must be completed in real-time as master grounds are installed and removed. The Grounding Log must be consulted prior to releasing a clearance to verify all master grounds have been removed. PCA offers an electronic (Safety Culture) and paper version of this document. The Safety Culture version requires an ALL STOP and management review/approval prior to a line clearance being released back to the utility. The Safety Culture version of this document is required unless otherwise directed by the host utility.

8.2 Purpose For Grounding

8.2.1 Personal protective grounds are applied to previously energized or newly constructed lines and equipment to protect workers from electrical energy. Effectively grounded lines and equipment protect workers from:

- 8.2.1 Re-energization from a generated source
 - 8.2.1.1 Human errors in switching or sabotage may result in a clearance boundary (open switch) being closed, re-energizing a line or piece of equipment.
 - 8.2.1.2 Mechanical failure may occur which could cause a clearance boundary (open switch) to fail and close.
 - 8.2.1.3 Structure or wire failure could cause an energized line to contact the de-energized line.
- 8.2.2 Lightning: Lightning striking a conductor can potentially produce an extremely high voltage which can travel great distances on power lines.
- 8.2.3 Induced Voltage: Induced voltage is a voltage source created through electromagnetic induction. Induced voltage is generated on any conductor within the invisible expanding and contracting electromagnetic field of a nearby energized AC circuit. In this manner, an energized power line will generate an induced voltage on adjacent power lines. In highly induced environments such as multiple parallel energized circuits or inside energized substations, induced voltage levels could be as high as several thousand volts AC. Induced voltage is the number one cause of fatalities of transmission line workers.
- 8.2.4 Static Electricity: Stationary electrical charge typically produced by friction. Relative to power lines, static electricity is a voltage source generated from environmental conditions such as wind.
- 8.2.5 Capacitive Charge: Similar to a battery, capacitance is the ability to store an electrical voltage. Due to their physical properties, electric lines and equipment can store voltage. The source of the stored voltage could be from a previously generated source, induced voltage, and/or static.

8.3 Pre-Grounding Requirements

- 8.3.1 Prior to performing a zero-energy check and installing grounds, a crew member must:
 - 8.3.1.1 Receive a clearance from the controlling authority
 - 8.3.1.2 All clearance boundary switch points should be visually verified open and tagged
- 8.3.2 Perform a zero-energy check using an approved voltage detector (LIVE/DEAD/LIVE method):
 - 8.3.2.1 Test voltage detector on a known energized voltage source (LIVE TEST). Battery powered auxiliary power supply should be used for the “live” test.
 - 8.3.2.2 Use voltage detector to perform a zero-energy check of the line or piece of equipment to be grounded (DEAD TEST)
 - 8.3.2.3 Test voltage detector again on known energized voltage source (LIVE TEST)

8.4 General Requirements of Personal Protective Grounding for Lines and Devices

- 8.4.1 A tailgate safety meeting must be held and documented with all workers involved before beginning any job to discuss the potential hazards. When the work includes the grounding of lines and devices, the specific location of grounds and development of the equipotential zone **must** be discussed and understood by everyone involved with the work.
- 8.4.2 Only qualified and authorized employees are permitted to install grounds.
- 8.4.3 When a conductor or device that is energized or may be energized at over 600V is removed from service for operation, maintenance, or construction, it **must** be considered energized until it is **identified, isolated, tested, and grounded** as specified in this section. Protective grounding equipment shall have an ampacity greater than or equal to that of 2/0 copper.
- 8.4.4 To make the work area safer around overhead transmission systems, create an equipotential zone by using temporary protective grounding equipment. Workers are best protected when personal protective grounding is installed at the work site.
- 8.4.5 When grounding is impractical or more hazardous than working on the lines or devices without grounds, the grounds may be omitted, provided that all work is done as if the line or device is energized. The minimum approach distances specified in Section 8.9, Table 1, must be maintained.
- 8.4.6 The lines or equipment to be worked on must be de-energized, tested for voltage using an approved test device, and properly grounded. If the line or equipment is not grounded properly, it cannot be considered de-energized.
- 8.4.7 If phase conductors have been moved from their normal position and are lying or hanging near the ground, working grounds must be installed as close to the work site as possible. Workers in contact with the conductors must stand on conductive mats connected to the conductors or work out of approved insulated manlifts. If the phase conductors are broken, personal protective grounds must be installed on **both sides** of the work location and a bonding jumper installed with approved insulated tool for the voltage being worked; and ground mats or approved insulated manlifts must be used.
- 8.4.8 When work is done out of an approved insulated aerial manlift, the lines and devices must be grounded using personal protective grounds. If work is done out of an uninsulated aerial manlift, the lines and devices must be grounded using personal protective grounds, and the manlift work platform must be connected to the conductors with an approved bonding jumper. **Important: Only approved, tested temporary protective ground equipment may be used as a bond.**
- 8.4.9 Protective grounding equipment shall be capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault.
- 8.4.10 The minimum approved ground jumper size is 2/0 copper. In some cases, bundling 2/0 copper ground jumpers or 4/0 copper jumpers may be required. This will be determined after obtaining fault currents on each line being worked from the client/customer. IEEE Standard 1048 requires that the current capacity of a grounding cable be reduced by 20% when using parallel jumpers.

- 8.4.11 Temporary protective grounding equipment **must** be visually inspected each day before use. This inspection must include visually checking grounding jumpers for broken or loose fittings and chafed or cut insulation. The grounding clamp jaws must be clean, and the cable ferrules must be tightened each day. Grounds must be tested annually. A sticker must be placed on the ground showing the last test date.
- 8.4.12 The grounding clamp jaws should be wire brushed before each use. If any damage is found, the equipment must be replaced.
- 8.4.13 Personal protective grounds should be installed as short, straight, and direct as practical. Grounds should be installed so that the grounding conductor does not contact the pole, steel structure, arm, hardware, or equipment. Grounding jumpers can make violent whipping actions if energized with fault current.
- 8.4.14 Ground jumpers shall be installed using hot sticks. Workers should avoid making direct contact with ground jumpers during installation/removal, while grounds are in place.
- 8.4.15 Workers on the ground may be exposed to step and touch potentials when personal protective grounding is used. Delineated drop zones around structures and barricades around ground rods and equipment should be utilized. While work is in progress, ground personnel should stay clear of the base of the pole, ground rods and equipment. A greater distance may be required relative to the voltage encountered on the system.
- 8.4.16 If it's not grounded, it's not dead and minimum approach distance (MAD) must be maintained. Employees must maintain the minimum approach distance from all ungrounded parts that may be of a different electrical potential. Where necessary, an insulated measuring device may be used to determine that MAD is maintained.
- 8.4.17 A zero energy check with an approved voltage detector must be performed on lines and equipment prior to installing protective grounds. Voltage detectors must themselves be tested on a known voltage source before and after usage according to manufacturer's specifications (live-dead-live test).
- 8.4.18 Determine a suitable grounding source. It is imperative to inspect and ensure the grounding source selected has a sound electrical continuity path all the way to earth ground. Grounding sources should be selected in the following order of priority:
 - 8.4.18.1 An established system ground (permanent ground rod or ground grid, pole ground that is bonded to the system neutral wire or static wire, or a steel pole/tower that is bonded to a permanent ground rod, system neutral or static wire).
 - 8.4.18.2 Temporary ground rod. NOTE: Results of tests by the industry have shown that temporary ground rods typically provide inadequate protection to workers. Temporary ground rods may be used only when no established ground source is available. Utility vehicles grounded to temporary ground rods must be barricaded.
 - 8.4.18.3 Screw type temporary ground rods are not recommended due to limited rod surface contact with the soil.
 - 8.4.18.4 Note: While system neutrals on Y-configured distribution are often the best ground source, direct connection to an aerial neutral wire may introduce additional electrical hazards and should be avoided.

- 8.4.19 Before installing grounds, the surface of the material to which the grounding clamp is to be attached must be cleaned by use of a wire brush attached to an approved live line tool. **NOTE: Do not wire brush galvanized or copper clad surfaces.**
- 8.4.20 Only approved and “in date” protective grounding devices shall be used. Ground jumpers must be tested annually.
- 8.4.21 Before installing a grounding device, an employee must determine by inspection that the device is in satisfactory condition.
- 8.4.22 Use the appropriate grounding clamp for the application. Flat jaw tower clamps should be used on any flat surface, and round jaw clamps of the appropriate size must be used for rounded surfaces such as wire, ground rods, etc....
- 8.4.23 Ground shall only be installed and removed with an approved insulated hot stick. **Using leather or rubber gloved hand is prohibited.** Insulated hot sticks utilized in the process of performing a zero-energy check and installing/removing grounds must be of adequate length for the worker to maintain minimum approach distance (MAD) from his closest body part to ungrounded parts.
- 8.4.24 The connection to ground must always be the first connection made when installing grounds and the last connection removed when removing grounds.
- 8.4.25 A grounding log must be completed recording the number/location/Install date of each set of master grounds. This grounding log must be consulted to ensure all grounds have been removed prior to releasing the clearance.
- 8.4.26 Protective grounds must not be removed until the work has been completed and all persons and equipment involved are at a safe distance (outside of minimum approach) from the circuit and the person holding the clearance gives permission.
- 8.4.27 When electrical testing requires that circuits or equipment be ungrounded, any protective grounds shall be removed using an insulated live-line tool. Grounds must be replaced after the test.
- 8.4.27 When possible, ground sets should be installed in short circuit fashion (ground to nearest phase, then phase to phase to phase and should include system neutral or overhead static wire). This allows for the fastest clearing time in case the line is accidentally re-energized.
 - 8.4.28.1 Begin by making the first connection of the first grounding jumper to a suitable grounding source.
 - 8.4.28.2 The second end of the first grounding jumper shall be connected to the closest phase conductor.
 - 8.4.28.3 Subsequent grounding jumpers shall be connected from grounded phase to the closest ungrounded phase in short circuit fashion.
- 8.4.29 Grounds shall be removed in reverse order as they were installed with the connection to the ground source removed last. While removing grounds, minimum approach distance to ungrounded parts must be maintained.
- 8.4.30 Use of guy wire and anchors as ground sources should be avoided.
- 8.4.31 When grounding bundled conductors, each conductor in the bundle must be grounded.

- 8.4.32 Protective grounding equipment shall be appropriately sized and capable of conducting the maximum fault current that could flow at the point of grounding for the time necessary to clear the fault. Maximum fault current is line/location-specific and should be provided by the host utility upon request.
- 8.4.33 High visibility flags shall be attached to each set of master jumpers and at the base of the structure where master or personal grounds are applied. Aerial ground flags should be orange hi-visibility. The flags placed at the base of the structure should be green hi-visibility.
- 8.4.34 Locations of grounds must be discussed during the pre-job brief/THA.
- 8.4.35 The grounding procedure mandated in this document consists of a minimum of two sets of master grounds: one set on either side of the work location, and personal grounds at the work location. If a host utility mandates a different method of grounding, consult with PCA Safety Leadership for an acceptable alternative.

8.5 Hazards of Induced Voltage

- 8.5.1 Induced voltage presents one of the greatest hazards to electrical workers performing work on de-energized circuits due to several factors:
 - 8.5.1.1 Often power lines are constructed in multi-line corridors with several lines paralleling each other.
 - 8.5.1.2 Induced voltage values can be several thousand volts AC. Electromagnetic induction values are directly proportional to the distance between energized and de-energized lines, how far they parallel each other, and the current flow on the energized line.
 - 8.5.1.3 Induced voltage is an ever-present hazard throughout the duration of the work. Essentially, it creates a low current, live circuit. Induced voltage is the voltage source which pushes current to a load, which in this case is the ground source. It cannot be dissipated once like a voltage generated from capacitance. As long as factors causing electromagnetic induction exists, the induced voltage will remain present. The value will fluctuate, but it is critical to understand that the induced voltage will continue to push current to earth ground through the installed personal protective grounds until the grounds are removed.
- 8.5.2 To protect workers from these potentially hazardous conditions, proper grounding must be in place. Proper grounding may include system grounds, personal protective grounds, or combinations that must be determined when conducting the Task Hazard Analysis (THA) prior to the start of the job.
- 8.5.3 Static wires on transmission circuits are usually bonded to system grounds and are often considered the least resistive ground path. Often the static wire is the best ground source on a structure. However, they are also subjected to induced voltage and may be a current path. The following precautions should be taken when working with transmission static wires:
 - 8.5.3.1 Static wires should always be included in the personal protective grounding array.
 - 8.5.3.2 While static wires are normally bonded to system/structure grounds, be aware that static wires may be insulated from the structure. If the static wire is supported from the structure by an

insulator, this is a hazard that should be noted on the THA and special precautions must be taken. Consider an insulated static wire as current carrying conductor similar to a distribution neutral.

8.5.3.3 If static wire continuity must be broken, personnel must avoid placing any part of their body in a position that would complete the electrical circuit. Never make body contact across an electrical open point. A bonding jumper shall be utilized to maintain electrical continuity across the open point.

8.5.3.4 Communications wires - Bare wire communication conductors such as OPGW fiber optic lines on utility structures shall be treated similarly to static wires. When installing grounds on bare wire communication conductors, care must be taken to avoid damage to the fiber inside from overtightening ground clamps.

8.6 Installing Personal Protective Grounds on Lines

- 8.6.1 The grounding method described in the following procedure includes installing master grounds on both sides of the work location, and personal grounds at the work location. This method of protective grounding provides an equipotential zone at the work site:
- 8.6.2 Obtain a clearance.
- 8.6.3 Open points that establish all clearance boundaries should be visually verified, opened and tagged.
- 8.6.4 Determine locations for both sets of master grounds. Master grounds should be as close as possible and no greater than one mile. Master ground sets may be installed within reach of either side of the structure being worked.
- 8.6.5 Perform a "LIVE/DEAD/LIVE" test for voltage to verify that the line is de-energized.
- 8.6.6 Determine a suitable grounding point on the structure. Often the neutral or static wire is considered the best ground location. If working from an aerial device where MAD can be maintained from ungrounded phase conductors, the static wire may be the best ground point from which to start. Otherwise, a grounding cluster bar connected to a pole ground or a connection directly to tower steel may be utilized as a suitable grounding point. On wood poles, the presence of a grounding chain binder and pole ground is critical to ensure an equal potential work zone.
- 8.6.7 Utilize a wire brush to clean grounding clamps and connection point surfaces (use a hot stick on all previously energized parts). Do not brush copper-clad or galvanized parts.
- 8.5.8 Install personal protective grounds from the grounding source to the closest phase conductor using hot-line tools and jumper to other phases, working from the nearest to the farthest away. The preferred order is: Grounding source to phase, then phase to phase in short circuit configuration. Ensure the static wire(s) are included in the grounding array.
- 8.6.9 If structure or work conditions prevent the short circuit application of grounds, personal protective grounds may also be installed from the grounding point to phase, for each phase of the circuit.

- 8.6.10 **NOTE:** Results of tests by the industry have shown that temporary driven ground rods may provide little or no protection to workers. Temporary ground rods must be used only when no other ground source is available. A better alternative to temporary ground rods is to install a permanent ground rod stack.
- 8.6.11 Repeat previous steps to install the second set of master grounds on the opposite side of the structure being worked. Each set of master grounds shall have a high viz flag attached, both in the air and at the base of the structure.
- 8.6.12 Complete a grounding log, recording the location, time, and date of each set of master grounds installed.
- 8.6.13 Install personal ground(s) at the work location. The purpose of the personal ground is to ensure everything the worker may contact in the aerial work zone is at the same potential. Using a hot stick, install personal ground(s) from the closest grounded point on the structure to the wire being worked at that time. A grounding cluster bar connected to pole ground or a connection directly to tower steel may be utilized as a suitable grounding point. On wood poles, the presence of a grounding chain binder and pole ground is critical to ensure an equal potential work zone. The personal ground must be relocated each time the worker changes work locations to a different wire. If multiple poles are in the immediate work area (as is often the case when performing maintenance pole replacements), each pole must be bonded together with the personal ground to maintain an equal potential work zone.
- 8.6.14 Personal grounds should be removed after use. If personal grounds are left in place, they must be added to the grounding log.
- 8.6.15 After completing all work between master ground sets, remove master grounds in reverse order as installed.
- 8.6.16 Complete the grounding log by recording the removal of each ground. Ensure that all grounds recorded on the grounding log have been removed.
- 8.6.17. Prior to releasing the line clearance or reporting construction is complete, the line section should be inspected from end to end to ensure all grounds have been removed, jumpers have been made up, all construction materials and equipment have been removed, and verify the line is ready to be placed back into service.

8.7 Substation Grounding

- 8.7.1 Substation work shall follow the same clearance, open point verification, testing, and grounding installation/removal procedures as previously outlined with one exception. Personal grounds are not required for substation work. Personal Bonds are required when working from uninsulated aerial lifts.
- 8.7.2 Substation buses and equipment de-energized for repairs or changes shall be grounded on both sides of the work area when possible. The ground connection shall be the substation grounding grid, usually composed of 4/0 or larger copper, and phase connections should be made in short circuit fashion.

- 8.7.3 When working adjacent to a clearance boundary, conditions may not allow the grounding of both sides of the work area. In this case, grounding of one side and visual verification of open points on both sides is permitted.

8.8 Underground Grounding

- 8.8.1 All existing installations of underground cables and equipment shall be always considered energized unless properly disconnected from all sources of potential, tested for potential, and then properly grounded using approved grounding clamps and grounding cables or, if applicable, a grounding switch.
- 8.8.2 Grounds may be removed from the remote terminal(s) if a dangerous potential will develop at the work site should a fault develop in another cable. Grounds also may be removed for terminator and/or cable replacement and for testing purposes.

8.9 Minimum Approach Distances

Table 1 THE DISTANCES SHOWN IN TABLE 1 BELOW TAKE INTO CONSIDERATION THE HIGHEST SWITCHING SURGE AN EMPLOYEE WILL BE EXPOSED TO ON ANY SYSTEM, WITH AIR AS THE INSULATING MEDIUM AND WITH THE MAXIMUM VOLTAGES SHOWN. THE CLEAR LIVE-LINE TOOL DISTANCE SHALL EQUAL OR EXCEED THE VALUES FOR THE INDICATED RANGE.		
Nominal Voltage Phase-to-Phase	DISTANCE	
	Phase-to-Ground Exposure (feet)	Phase-to-Phase Exposure (Feet)
50 to 300 volts	Avoid contact	Avoid contact
301 to 750 volts	1 ft. 1 in.	1 ft. 1 in.
751 volts to 5.0 kV	2 ft. 1 in.	2 ft. 1 in.
5.1 to 15.0 kV	2 ft. 2 in.	2 ft. 2 in.
15.1 to 36.0 kV	2 ft. 7 in.	2 ft. 11 in.
36.1 to 46.0 kV	2 ft. 10 in.	3 ft. 3 in.
46.1 to 72.5 kV	3 ft. 4 in.	4 ft.
72.6 to 121.0 kV	3 ft. 9 in.	4 ft. 8 in.
121.1 to 145.0 kV	4 ft. 4 in.	5 ft. 5 in.
145.1 to 169.0 kV	4 ft. 10 in.	6 ft. 5 in.
169.1 to 242.0 kV	6 ft. 7 in.	10 ft. 2 in.
242.1 to 362.0 kV	11 ft. 3 in.	18 ft. 2 in.
362.1 to 420.0 kV	14 ft.	22 ft. 4 in.
420.1 to 550.0 kV	16 ft. 8 in.	27 ft. 1 in.
550.1 to 800.0 kV	22 ft. 7 in.	37 ft. 4 in.

8.9.1 System and voltage specific MAD distances calculated and provided by the host utility may be observed at the discretion of management in lieu of the table above.

9 PERSONAL PROTECTIVE EQUIPMENT (PPE)

9.1 General

- 9.1.1 The personal protective equipment (PPE) program is designed to provide employees with guidelines in the use, care, inspection, and limitations of PPE and other lifesaving equipment.
- 9.1.2 The PPE program governs employees in jobsite locations, including shops and warehouses that expose employees to hazards that may injure, cause illness, or otherwise harm through absorption, inhalation, or physical contact.

9.2 Definitions

- 9.2.1 **Administrative Control** – method of protection that limits employee exposure through scheduling or other methods.
- 9.2.2 **ANSI** – American National Standards Institute; group of professionals that determine standards which must be met by specific PPE items.
- 9.2.3 **Engineering Control** – method of protection that eliminates hazards by placing a physical barrier between it and employees.
- 9.2.4 **Insulating PPE** – equipment designed specifically to be used on energized equipment to protect employees from potential electric shock.
- 9.2.5 **Personal Protective Equipment (PPE)** – items worn by employees to provide a “last resort” of protection.

9.3 Training

- 9.3.1 During new-employee orientation all employees will be trained in:
 - 9.3.1.1 Recognizing when PPE is required.
 - 9.3.1.2 How to inspect specific PPE.
 - 9.3.1.3 How to use items effectively.
 - 9.3.1.4 Knowing when PPE is unfit for service.
 - 9.3.1.5 Proper storage and maintenance of PPE.
 - 9.3.1.6 Understanding the limitations of PPE.
 - 9.3.1.7 Understanding what PPE is required to perform the task.
- 9.3.2 Employees shall receive training for each specific item of PPE issued to them prior to using it under working conditions.

- 9.3.3 Employees will receive annual refresher training in PPE.
- 9.3.4 All training will be documented and placed in the employee file.

9.4 Compliance

- 9.4.1 All employees entering a job site shall continuously wear, at a minimum:
 - 9.4.1.1 Hard hat.
 - 9.4.1.2 Safety glasses with side shields.
 - 9.4.1.3 Protective-toed footwear. Employees shall ensure that footwear has appropriate tread for site conditions.
 - 9.4.1.4 Long pants.
 - 9.4.1.5 Shirts, with a sleeve that extends a minimum of four inches from the shoulder.
 - 9.4.1.6 The majority of the material worn on the upper portion of the body shall be high visibility. When visibility is limited a minimum of Class 2 vest, shirt, or jacket shall be worn. When working within fifty feet of the DOT Right of Way the high visibility requirements shall meet or exceed local DOT requirements. Vests, shirts, or jackets that have lost their high visibility due to natural wear and tear do not meet the requirements.
- 9.4.2 A PPE assessment shall be included in the PJB (Pre-Job Briefing), and all required PPE will be listed on the PJB and communicated to all affected employees.
- 9.4.3 Employees shall conduct daily, prior to work, inspections of all PPE used.
- 9.4.4 Damaged otherwise unfit for duty PPE is to be reported to supervision upon discovery.
- 9.4.5 Supervision shall ensure all PPE is used by all affected employees.
- 9.4.6 PPE shall be used in accordance with the manufacturer's recommendations and requirements.

9.5 PPE Guidelines (General)

- 9.5.1 Head protection (hard hat):
 - 9.5.1.1 Hard hats shall comply with ANSI Z89.1-1986.
 - 9.5.1.2 C&C employees shall use Class E/G hard hats supplied by the company, which offer greater protection from electric shock.
- 9.5.2 Eye protection (safety glasses):
 - 9.5.2.1 Eye protection (safety glasses) shall comply with ANSI Z87.1-1989 or MIL-PRF-32432A ballistic equivalent as allowed by host utility agreements.
 - 9.5.2.2 Safety glasses shall have side shields or be of a wrap-around style that offers side protection.
 - 9.5.2.3 Employees who require prescription eyewear may use over-glasses that meet the ANSI Z87.1-1989 standard, or purchase prescription safety glasses.
 - 9.5.2.4 Goggles, if required, must meet ANSI Z87.1-1989 requirements.

9.5.3 Face protection (face shields, welding shields):

9.5.3.1 If the shield does not meet ANSI Z87.1-1989, safety glasses must be worn in conjunction with the shield.

9.5.3.2 Face protection must be used whenever potential for injury from flying debris, spray or radiant energy exists, including, but not limited to:

9.5.3.2.1 Grinding.

9.5.3.2.2 Welding (appropriately shaded for the task).

9.5.3.2.3 Pressure washing or spraying with water in excess of 30 psi.

9.5.3.2.4 Spraying with air in excess of 30 psi.

9.5.3.2.5 Weed eating with a motorized unit.

9.5.3.2.6 Changing batteries in vehicles/equipment.

9.5.3.2.7 Opening radiators or other normally pressurized systems.

9.5.3.2.8 When operating chain saws.

9.5.3.3 Face shields shall only be considered "in use" when in the fully down position.

9.5.4 Steel or Composite-toed footwear:

9.5.4.1 All protective-toed footwear shall comply with ANSI Z41-1983 or comply with ASTM standards.

9.5.4.2 Protective-toed footwear shall be made of leather, or equivalent non-porous material, extend above the ankle and have a defined heel.

9.5.5 Hand protection (gloves):

9.5.5.1 The type of gloves shall be determined on the THA which will be supplied by C&C

9.5.5.2 Employees shall don gloves appropriate for the task and hazards presented in its completion.

9.5.6 Hearing Conservation Program:

9.5.6.1 The company sets forth the following to limit and protect employees from occupational noise and hearing loss.

9.5.6.2 Protection against the effects of noise exposure shall be provided when the sound levels meet or exceed an 8-hour time weighted average (TWA) sound level of ninety decibels (dB) as measured on a sound level meter at slow response.

9.5.6.3 Monitoring:

9.5.6.3.1 Shall be performed by company personnel or a third-party consultant when necessary.

9.5.6.3.2 Due to the high mobility of our workforce, representative personal sampling shall be utilized.

9.5.6.3.3 Monitoring equipment shall be calibrated for accuracy

- 9.5.6.3.4 Monitoring shall be repeated whenever a change or increase in level of noise.
- 9.5.6.3.5 Employees shall be notified if they are exposed to levels deemed above and will be given the opportunity to observe the monitoring process.
- 9.5.6.4 Audiometric Testing:
 - 9.5.6.4.1 Audiometric testing shall be made available at no cost to those whose exposure meets or exceeds an 8-hour TWA of 85 DB.
 - 9.5.6.4.2 Audiometric testing will be performed by a qualified audiologist.
 - 9.5.6.4.3 Baseline and annual audiograms will be performed per regulatory requirements.
- 9.5.6.5 Hearing Protectors:
 - 9.5.6.5.1 Hearing protectors such as ear plugs, or earmuffs will be provided at no cost to the employee.
 - 9.5.6.5.2 Employers shall ensure proper initial fitting and supervise correct use of all hearing protectors.
- 9.5.6.6 Training:
 - 9.5.6.6.1 Employees shall be trained in the effects of noise on hearing, the purpose of hearing protectors, selection of protectors, proper fitting, use, care, and the audiometric testing process.
 - 9.5.6.6.2 Training shall be performed prior to job assignment and annually thereafter.
- 9.5.6.7 Recordkeeping:
 - 9.5.6.7.1 Employee audiograms will be kept in the employee's file for the duration of employment. These are available upon request.
 - 9.5.6.7.2 Noise exposure records will be kept in the Safety Office for 2 years. These are available upon request.
- 9.5.7 Respiratory protection:
 - 9.5.7.1 Definitions:
 - 9.5.7.1.1 **Abrasive-Blasting Respirator**- A respirator constructed to cover the wearer's head, neck, and shoulders to protect the wearer from rebounding abrasive material.
 - 9.5.7.1.2 **Air-Purifying Respirator**- A respirator with an air-purifying filter, cartridge or canister that removes specific air contaminants by passing ambient air through the air-purifying element.
 - 9.5.7.1.3 **Atmosphere-Supplying Respirator**- A respirator that supplies the user with breathing air from a source independent of the ambient atmosphere and includes supplied-air respirators (SARs) and self-contained breathing apparatuses.

- 9.5.7.1.4 **Canister or Cartridge**- A container with a filter, sorbent, catalyst, or combination of these items that removes specific contaminants from the air when passed through the container.
- 9.5.7.1.5 **Demand Respirator**- An atmosphere-supplying respirator that admits breathing air to the facepiece only when a negative pressure is created inside the facepiece by inhalation.
- 9.5.7.1.6 **Emergency Situation**- Any occurrence, such as equipment failure, rupture of containers, or failure of control of equipment that results in an uncontrolled significant release of an airborne contaminant.
- 9.5.7.1.7 **Employee Exposure**- Exposure to the concentration of an airborne contaminant that would occur if the employee were not using respiratory protection.
- 9.5.7.1.8 **End-of-Service-Life Indicator (ESLI)**- A system that warns the respirator user of the approach of the end of adequate respiratory protection. (For example, that the sorbent is approaching saturation or is no longer effective.)
- 9.5.7.1.9 **Filtering Facepiece (Dust Mask)**- A negative pressure particulate respirator with a filter as an integral part of the facepiece or with the entire facepiece composed of the filtering medium.
- 9.5.7.1.10 **Fit Factor**- A quantitative estimate of the fit of a particular respirator to a specific individual typically including an estimate of the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn.
- 9.5.7.1.11 **Fit Test**- The use of a protocol to qualitatively or quantitatively evaluate the fit of a respirator on an individual. (See also qualitative fit test and quantitative fit test.)
- 9.5.7.1.12 **High Efficiency Particulate Air (HEPA) Filter**- A filter that is at least 99.97% effective in removing monodisperse particles of 0.3 micrometers in diameter. The equivalent NIOSH 42 CFR 84 particulate filters are the N100, R100, and P100 filters.
- 9.5.7.1.13 **Immediately Dangerous to Life or Health (IDLH)**- An atmosphere that poses an immediate threat to life, would cause irreversible adverse health effects, or would impair an individual's ability to escape from a dangerous atmosphere.
- 9.5.7.1.14 **Negative-Pressure Respirator (Tight Fitting)**- A respirator in which the air pressure inside the facepiece is negative during inhalation with respect to the ambient air pressure outside the respirator.
- 9.5.7.1.15 **Oxygen-Deficient Atmosphere**- An atmosphere with oxygen content below 19.5% by volume.
- 9.5.7.1.16 **Oxygen-Enriched Atmosphere**- An atmosphere with oxygen content above 23.5% by volume.
- 9.5.7.1.17 **Physician or Other Licensed Health Care Professional (PLHCP)**- An individual whose legally permitted scope of practice (license, registration, or certification)

allows him or her to independently provide or be delegated the responsibility to provide some or all the healthcare services required.

- 9.5.7.1.18 **Positive Pressure Respirator**- A respirator in which the pressure inside the respiratory inlet covering exceeds the ambient air pressure outside the respirator.
- 9.5.7.1.19 **Powered Air-Purifying Respirator (PAPR)**- An air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering.
- 9.5.7.1.20 **Pressure Demand Respirator**- A positive-pressure, atmosphere-supplying respirator that admits breathing air to the facepiece when the positive pressure is reduced inside the facepiece by inhalation.
- 9.5.7.1.21 **Qualitative Fit Test (QLFT)**- A pass/fail test to assess the adequacy of respirator fit that relies on the individual's response to the test agent.
- 9.5.7.1.22 **Quantitative Fit Test (QNFT)**- An assessment of the adequacy of the respirator fit by numerically measuring the amount of leakage into the respirator.
- 9.5.7.1.23 **Self-Contained Breathing Apparatus (SCBA)**- An Atmosphere-supplying respirator for which the breathing air source is designed to be carried by the user.
- 9.5.7.1.24 **Service Life**- The period in which a respirator, filter, sorbent, or other respiratory equipment provides adequate protection to the wearer.
- 9.5.7.1.25 **Supplied-Air Respirator (SAR) or Airline Respirator**- An atmosphere-supplying respirator for which the source of breathing air is not designed to be carried by the user.
- 9.5.7.1.26 **Tight-Fitting Facepiece**- A respiratory inlet covering that forms a complete seal with the face.
- 9.5.7.1.27 **User Seal Check**- An action conducted by the respirator user to determine if the respirator is properly sealed to the face.

9.5.7.2 Components of a respiratory program:

- Selecting respirators
- medical evaluation of employee
- Fit testing
- Respirator use
- Respirator maintenance and storage
- Training
- Program evaluation
- Recordkeeping

- 9.5.7.2.1 The company shall designate a program administrator to oversee the program who will be qualified by appropriate training or experience.

- 9.5.7.2.2 The company shall provide respirators, training, and medical evaluations at no cost to the employee.
- 9.5.7.3 Selecting respirators:
 - 9.5.7.3.1 An evaluation is conducted to identify respiratory hazards in the workplace and relevant workplace/user factors. Respirator selection is based on these findings.
 - 9.5.7.3.2 The evaluation of workplace hazards must include a reasonable estimate of employee exposures to respiratory hazards and an identification of the chemical state and physical form of the contaminant. Where employee exposure cannot be identified or reasonably estimated, the atmosphere must be considered IDLH.
 - 9.5.7.3.3 Only respirators certified by the National Institute for Occupational Safety and Health (NIOSH) shall be used in compliance with the conditions of its certification.
 - 9.5.7.3.4 A respirator appropriate for the chemical state and physical form of the contaminant is selected from a sufficient number of respirator models and sizes to ensure acceptability and proper fit for the employee. The respirator selected must be adequate to protect the health of the employee during routine and reasonably foreseeable emergency situations.
- 9.5.7.4 Respirators for IDLH atmospheres:
 - 9.5.7.4.1 A full facepiece pressure demand SCBA certified by NIOSH for a minimum service life of 30 minutes (or)
 - 9.5.7.4.2 A combination full facepiece pressure demand SAR with auxiliary self-contained air supply
 - 9.5.7.4.3 It is not the practice of this company to do tasks in this environment. Should a task have this requirement, and the hazards cannot be engineered out, a properly trained third party will be contracted to complete the work in this area.
- 9.5.7.5 Respirators for Non-IDLH atmospheres:
 - 9.5.7.5.1 For protection against gasses and vapors one of the following will be provided:
 - 9.5.7.5.1.1 The respirator is equipped with an ESLI certified by NIOSH for the contaminant.
 - 9.5.7.5.1.2 If there is no ESLI appropriate for conditions in the workplace, the program administrator implements a change schedule for canisters and cartridges that is based on objective information or data that ensures that canisters and cartridges are changed before the end of their service lives. The program administrator must document and attach to the respirator program the information and data relied on, the basis for the canister and cartridge change schedule, and the basis for reliance on the data.

9.5.7.5.2 For protection against particulates, one of the following will be provided:

9.5.7.5.2.1 An atmosphere-supplying respirator

9.5.7.5.2.2 An air purifying respirator equipped with a filter certified by NIOSH as a HEPA filter, or a filter certified by NIOSH under 42 CFR part 84.

9.5.7.6 Medical Evaluation:

9.5.7.6.1 Using a respirator can place a physiological burden on employees that varies with the type of respirator worn, the job and workplace conditions, and the medical status of the employee. Accordingly, these are the minimum requirements for medical evaluation that must be implemented to determine an employee's ability to use a respirator:

9.5.7.6.1.1 A PLHCP must be selected to perform medical evaluations for each worker. The PLHCP must be provided with a copy of this respiratory protection program and a copy of the OSHA regulation 29 CFR 1910.134 Respiratory Protection.

9.5.7.6.1.2 The PLHCP must perform medical evaluations using an OSHA Respirator Medical Evaluation Questionnaire or a medical examination that obtains the same information as Sections 1 and 2, Part A of the OSHA Respirator Medical Evaluation Questionnaire.

9.5.7.6.1.3 A follow-up medical examination must be provided for an employee who gives a positive response to any of questions 1 through 8 in Section 2, Part A of the questionnaire or whose initial medical examination demonstrates the need for a follow-up medical examination.

9.5.7.6.1.4 The questionnaire and examinations must be administered confidentially during the employee's normal working hours or at a time and place convenient to the employee. The questionnaire must be administered so that the employee understands its contents. Company management must provide employees with an opportunity to discuss the questionnaire and examination results with the PLHCP.

9.5.7.6.1.5 Supplemental information for the PLHCP:

9.5.7.6.1.5.1 The type and weight of the respirator to be used by the employee.

9.5.7.6.1.5.2 The duration and frequency of the respirator use (including use for rescue and escape).

9.5.7.6.1.5.3 The expected physical work effort.

9.5.7.6.1.5.4 Additional protective clothing and equipment to be worn.

9.5.7.6.1.5.5 Temperature and humidity extremes that might be encountered.

9.5.7.6.1.6 Medical determination:

- 9.5.7.6.1.6.1 The company must obtain a written recommendation from the PLHCP regarding the employee's ability to use the respirator. The recommendation must provide only the following information:
- 9.5.7.6.1.6.2 Any limitations on respirator use related to the medical condition of the employee or to the workplace conditions in which the respirator will be used, including whether the employee is medically able to use the respirator.
- 9.5.7.6.1.6.3 The need, if any, for follow-up medical evaluations.
- 9.5.7.6.1.6.4 A statement that the PLHCP has provided to the employee with a copy of the written recommendation of the PLHCP.

9.5.7.6.1.7 Additional Medical Evaluations:

- 9.5.7.6.1.7.1 If the employee reports medical signs or symptoms that are related to the ability to use a respirator.
- 9.5.7.6.1.7.2 If the PLHCP, supervisor, or program admin. determines that an employee needs to be reevaluated.
- 9.5.7.6.1.7.3 Information from this respiratory protection program, including observations made during fit testing and program evaluation indicates a need for employee reevaluation.
- 9.5.7.6.1.7.4 If a change occurs in workplace conditions (for example, physical work effort, protective clothing, or temperature) that might substantially increase the physiological burden placed on an employee.

9.5.7.7 Fit Testing:

- 9.5.7.7.1 Before an employee is required or allowed to use any respirator with a negative- or positive-pressure, tight-fitting facepiece, the employee must pass an appropriate QLFT or QNFT using the same make, model, style, and size of respirator that will be used at the jobsite. The QLFT and QNFT must be in accordance with the following guidelines:
 - 9.5.7.7.1.1 An employee using a tight-fitting facepiece respirator must be fit tested before initial use of the respirator, whenever a different respirator facepiece (make, model, style, or size) is used, and at least annually thereafter.
 - 9.5.7.7.1.2 Additional fit tests must be conducted whenever the employee reports or the PLHCP, supervisor, or program administrator makes visual observations of changes in the employee's physical condition that could affect respirator fit. Such conditions can include facial scarring, dental changes, cosmetic surgery, or an obvious change in body weight.
 - 9.5.7.7.1.3 If after passing a QLFT or QNFT, the employee subsequently notifies the PLHCP, supervisor, or program administrator that the fit of the respirator is

unacceptable, the employee is given a reasonable opportunity to select a different respirator facepiece and be retested.

- 9.5.7.7.1.4 The fit test must be administered using an OSHA-accepted QLFT or QNFT protocol.
- 9.5.7.7.1.5 QLFT may only be used to fit test negative-pressure air-purifying respirators that must achieve a fit factor of one hundred or less.
- 9.5.7.7.1.6 If the fit factor, as determined through an OSHA-accepted QNFT protocol, is equal to or greater than one hundred for tight-fitting half facepieces or equal to or greater than five hundred for tight-fitting full facepieces, the QNFT has been passed with that respirator.
- 9.5.7.7.1.7 Fit testing of tight-fitting atmosphere-supplying respirators and tight-fitting PAPRs requires quantitative or qualitative fit testing in the negative pressure mode, regardless of the mode of operation that is used for respiratory protection.
 - 9.5.7.7.1.7.1 Qualitative fit testing of these respirators by temporarily converting the facepiece of the respirator into a negative-pressure respirator with appropriate filters or by using an identical negative pressure air-purifying respirator facepiece with the same sealing surfaces as a surrogate for the atmosphere-supplying or powered air-purifying respirator facepiece.
 - 9.5.7.7.1.7.2 Quantitative fit testing of these respirators by modifying the facepiece to allow sampling inside the facepiece in the breathing zone of the user, midway between the nose and mouth. To modify the facepiece, install a permanent sampling probe onto a surrogate facepiece or use a sampling adapter designed to temporarily provide a means of sampling air from inside the facepiece.
 - 9.5.7.7.1.7.3 Any modifications to the respirator facepiece for fit testing must be completely removed and the facepiece restored to the NIOSH approved configuration before that facepiece can be used in the workplace.

9.5.7.8 Use of Respirators:

- 9.5.7.8.1 The company must prohibit conditions that result in facepiece seal leakage, preventing employees from removing respirators in hazardous environments and taking actions to ensure continued effective respirator operation throughout the work shift.
 - 9.5.7.8.1.1 Facial hair is prohibited if it comes between the sealing surface of the facepiece and the face (the face-to-facepiece seal) or that interferes with valve function.
 - 9.5.7.8.1.2 Any condition that interferes with the face-to-facepiece seal or valve function.

- 9.5.7.8.1.3 If an employee wears corrective glasses, goggles, or other PPE, that equipment must be worn in a manner that does not interfere with the face to-facepiece seal.
- 9.5.7.8.1.4 Employees who use a tight-fitting respirator must check to ensure that an adequate face-to-facepiece seal is achieved each time the respirator is put on. Either the following positive- and negative-pressure checks or the respirator manufacturer's recommended user seal check method. User seal checks are not substitutes for qualitative or quantitative fit tests.
- 9.5.7.8.1.5 When there is a change in work area conditions or degree of employee exposure or stress that might affect respirator effectiveness, the program administrator must reevaluate the continued effectiveness of the respirator.
- 9.5.7.8.1.6 The employer shall ensure that employees leave the respirator use area under the following conditions:
 - 9.5.7.8.1.6.1 To wash their faces and respirator facepieces as necessary to prevent eye or skin irritation associated with respirator use.
 - 9.5.7.8.1.6.2 If they detect vapor or gas breakthrough, changes in breathing resistance, or leakage of the facepiece.
 - 9.5.7.8.1.6.3 To replace the respirator or the filter, cartridge, or canister elements.
- 9.5.7.8.1.7 If the employee detects vapor or gas leakage, changes in breathing resistance, or leakage of the facepiece, the respirator must be replaced or repaired before the employee can return to the work area.
- 9.5.7.9 Maintenance, care, and storage of respirators:
 - 9.5.7.9.1 Each respirator user is provided with a respirator that is clean, sanitary, and in good working order. Cleaning will be done after each use before storing. To clean and disinfect respirators, use the procedures recommended by the respirator manufacturer.
 - 9.5.7.9.2 Store all respirators where they will be protected from damage, contamination, dust, sunlight, extreme temperatures, excessive moisture, and damaging chemicals. Pack respirators in a way that prevents the facepiece and exhalation valve from being damaged or deformed.
 - 9.5.7.9.3 Inspect all respirators used in routine situations before each use and during cleaning.
 - 9.5.7.9.3.1 A check of respirator function, tightness of connections and the condition of the various parts, including but not limited to, the facepiece, head straps, valves, connecting tube, cartridges, canisters, or filters.
 - 9.5.7.9.3.2 A check of elastomeric parts for pliability and signs of deterioration.
 - 9.5.7.9.3.3 Certify the respirator by documenting the date the inspection was

performed, the name and signature of the person who made the inspection, the findings, the required remedial action, and a serial number or other means of identifying the inspected respirator.

9.5.7.9.3.4 Provide this information on a tag or label that is attached to the storage compartment for the respirator, kept with the respirator, or included in inspection reports stored as paper or electronic files.

9.5.7.9.3.5 Respirators that fail an inspection or are otherwise found to be defective must be removed from service and discarded.

9.5.7.10 Training

9.5.7.10.1 Training for employees who are to use respirators will be provided. The training will be conducted so as to be understood by the employee and will recur annually and more often if necessary. The training must ensure that each employee can demonstrate the following knowledge:

9.5.7.10.1.1 Why the respirator is necessary and how improper fit, use or maintenance can compromise the protective effect of the respirator.

9.5.7.10.1.2 The limitations and capabilities of the respirator.

9.5.7.10.1.3 How to use the respirator effectively in emergency situations, including situations in which the respirator malfunctions.

9.5.7.10.1.4 How to inspect, attach, remove, use, and check the seals of the respirator.

9.5.7.10.1.5 The procedures for maintaining and storing the respirator.

9.5.7.10.1.6 How to recognize medical signs and symptoms that can limit or prevent the effective use of respirators.

9.5.7.10.1.7 The general requirements of this program and all applicable regulations. Retraining is administered annually and when the following situations occur:

9.5.7.10.1.7.1 Changes in the workplace or the type of respirator render previous training obsolete

9.5.7.10.1.7.2 Inadequacies in the employee's knowledge or use of the respirator indicate that the employee has not retained the necessary level of understanding or skill

9.5.7.10.1.7.3 Any other situation in which retraining seems necessary

9.5.7.10.1.8 Sometimes an employee may wear a respirator, when not required by the company, to avoid exposures to hazards, even if the amount of the hazardous substance does not exceed the limits set by OSHA standards. Certain precautions are to be taken to ensure that the respirator itself does not present a hazard:

9.5.7.10.1.8.1 Read and heed all instructions provided by the manufacturer about the use, maintenance, cleaning and care, and warnings regarding the limitations of the respirator.

9.5.7.10.1.8.2 Choose a respirator that is certified to protect against the contaminant of concern. HIOSH certifies respirators. A label or statement of certification should appear on the respirator or respirator packaging and explain the purpose of, and the protection offered by the respirator.

9.5.7.10.1.8.3 Do not wear a respirator in atmospheres containing contaminants against which that respirator is not designed to protect. For example, a respirator designed to filter dust particles will not protect you against gases, vapors, or very small solid particles of fumes or smoke.

9.5.7.10.1.8.4 Do not mistakenly use a respirator that belongs to someone else.

9.5.7.11 Program Evaluation

9.5.7.11.1 The program administrator conducts evaluations of the workplace when necessary to ensure that the provisions of the current written program are being effectively implemented and continue to be effective. The administrator regularly consults employees required to use respirators to assess the effectiveness of the program and identify any problems. Any problems that are identified during this assessment must be corrected. Factors to be assessed include:

9.5.7.11.1.1 Respirator fit (including the ability to use the respirator without interfering with effective workplace performance).

9.5.7.11.1.2 Appropriate respirator selection for the hazards to which the employee is exposed.

9.5.7.11.1.3 Proper respirator use in the workplace conditions that the employee encounters.

9.5.7.11.1.4 Proper respirator maintenance.

9.5.7.12 Recordkeeping

9.5.7.12.1 Records shall be kept for a period of 30 years and will be made available to the employee upon written request.

9.5.8 Flame-Retardant Clothing:

9.5.8.1 C&C shall ensure that its employees wear at minimum HRC class 2 shirts and pants with the shirts tucked in and sleeves not to be rolled up under the following conditions:

9.5.8.1.1 The employee is exposed to contact with energized circuits/parts operating at more than six hundred volts, or

9.5.8.1.2 An electric arc could ignite flammable material in the work area that, in turn, could ignite the employee's clothing, or

9.5.8.1.3 Molten metal or electric arcs from faulted conductors in the work area could ignite the employee's clothing, or

9.5.8.1.4 The estimated heat energy exceeds 2.0 cal/cm²

- 9.5.8.2 Employees shall wear natural fiber garments under FR clothing. DO NOT wear undergarments made of acetate, nylon, polyester, rayon, or polypropylene.
- 9.5.8.3 When client rules are different from those of C&C, the more stringent rules of the two shall be enforced.
- 9.5.8.4 The use of higher HRC rated FR/Arc clothing will be in accordance with the regulations regarding specific tasks.

9.6 INSULATING PPE

- 9.6.1 Identification:
 - 9.6.1.1 Insulating items made of rubber shall be marked to indicate class (0-4) and type (I/II).
 - 9.6.1.2 Rubber gloves shall be clearly marked as to class and type on the cuff portion.
 - 9.6.1.3 Insulating items shall have in-service and testing dates documented.
 - 9.6.1.4 All insulating items shall be maintained and stored in accordance with manufacturer's recommendations and requirements.
- 9.6.2 Cover, line hose, gloves, sleeves, and any other rubber insulating items are to be inspected daily, prior to use:
 - 9.6.2.1 Gloves shall be given an air test in addition to the inspection.
 - 9.6.2.2 Insulating items also shall be inspected following any event that may have damaged the item.
 - 9.6.2.3 Insulating equipment may not be used if:
 - 9.6.2.3.1 It contains a hole, puncture or cut.
 - 9.6.2.3.2 There is an object embedded in it.
 - 9.6.2.3.3 The texture of the rubber is inconsistent.
 - 9.6.2.3.4 It does not have a current inspection date.
 - 9.6.2.4 Test intervals will be in accordance with Table 1; Chapter 7 Section 7.6.2.1 unless client requirements are more stringent.

10 FALL PROTECTION

10.1 Description

- 10.1.1 The Fall Protection program is designed to eliminate falls from elevation by providing guidelines as to how to protect against fall hazards. Key elements of this provision include awareness, inspections and practices that address fall hazards prior to employee exposure.

10.2 Definitions

- 10.2.1 **Anchorage** – point of attachment for fall-arrest equipment that is capable of sustaining a static drop of 5,000 pounds per attached employee.
- 10.2.2 **Exposed** – any employee working within six feet of a six-foot fall shall be considered exposed to the hazard.
- 10.2.3 **Full-Body Harness** – straps which may be secured about the employee in a manner that will distribute fall-arrest forces over the thighs, pelvis, waist, chest, and shoulders with means for attaching it to other components of a fall-arrest system.
- 10.2.4 **Guardrail System** – consists of a top-rail that is 42” above the working surface, a mid-rail that is 21” above the working surface. The top-rail must be able to sustain a force of two hundred pounds horizontally or vertically. Mid-rail must hold 150 pounds.
- 10.2.5 **Shock-Absorbing Lanyard (deceleration device)** – mechanism (e.g., rip-stitch lanyard, tearing/deforming lanyard, self-retracting lifeline) which serves to dissipate a substantial amount of energy during a fall arrest or otherwise limit energy imposed on an employee in arresting a fall.
- 10.2.6 **Travel Limiting/Positioning** – system that tethers an employee to a fixed point and will not allow a free fall of more than two feet.

10.3 Responsibility

- 10.3.1 All employees will be trained in fall protection regulations, equipment and C&C procedures during new-employee orientation. This training shall be documented and include:
 - 10.3.1.1 Recognition of when fall protection is needed.
 - 10.3.1.2 How to do personal fall-arrest equipment.
 - 10.3.1.3 Identification and requirements of an appropriate anchorage point.
 - 10.3.1.4 How to appropriately attach items in a fall-arrest system.
 - 10.3.1.5 Limitations of fall-arrest systems.
 - 10.3.1.6 External hazards that could diminish the effectiveness of the system.
 - 10.3.1.7 How to properly inspect, store and maintain fall-protection equipment.
- 10.3.2 Site supervision will determine appropriate fall-protection systems at the work location and communicate these to employees via the THA (Task Hazard Analysis) prior to work starting.
- 10.3.3 Supervision shall develop a plan to safely and promptly rescue an employee who has fallen and arrested by fall-arrest equipment.
- 10.3.4 Retraining shall be provided when work practices change, when fall protection equipment changes or when other deficiencies are noted.

10.4 Compliance

- 10.4.1 If feasible, a guardrail system shall be constructed (meeting the requirements outlined in the DEFINITIONS Section 10.2) to prevent employees from falling to the ground or lower level that is four feet or more below the present working surface.
- 10.4.2 Any employee exposed to a fall of four feet or greater shall employ a method of fall protection that eliminates the hazard of free-falling a distance of more than four feet.
 - 10.4.2.1 Standard shock-absorbing lanyards are six feet long - and extend to approximately nine feet in arresting a fall – and should not be used when employees are exposed to falls less than 18 feet.
 - 10.4.2.2 Retractable lifelines are designed to lock up within a 2- to 24-inch range and should be used to protect employees working at lower elevations.
- 10.4.3 Personal fall protection systems shall include OSHA, ANSI, and/ or ATSM approved full-body harness with Arc Flash rating, an approved lanyard, and a connecting device.
- 10.4.4 All connectors shall be made of drop-forged or pressed steel and be cadmium plated. All surfaces shall be smooth and free of sharp edges.
- 10.4.5 All connectors shall have double-locking snap hooks or properly rated carabiners.
- 10.4.6 Fall-arrest systems should not be designed to allow employees to “swing-fall” and strike another object.
- 10.4.7 Anchorage points should be positioned directly overhead, and employees should not be positioned more than six feet away from the anchorage point to reduce “swing-fall” hazards.
- 10.4.8 Employees engaged in climbing structures shall always employ 100% fall protection.
- 10.4.9 Fall protection systems shall be designed so an employee cannot free fall more than six feet, contact a lower level or adjacent structure (swing-fall).
- 10.4.10 Hole covers shall be clearly identified (painted or otherwise) as “HOLE,” “COVER” or “HOLE COVER.”
- 10.4.11 Covers must be secured from slipping or shifting.
- 10.4.12 Covers must be constructed to be able to support at least twice the anticipated load crossing it.
- 10.4.13 Where the potential for falling objects to strike personnel at a lower level, a protective system shall be in place.
 - 10.4.13.1 The area beneath the falling-object hazard should be a delineated drop zone to deter personnel, or nets, covers or other shielding may be placed to prevent falling objects from striking workers at a lower level.
- 10.4.14 Employees working from aerial devices shall be always connected to an approved anchorage point on the aerial device.
- 10.4.15 Employees who are working from a ladder more than four feet off the ground and cannot maintain three points of contact shall use a personal fall-protection system.

10.4.16 In the rare occasion where standard methods of fall protection are unable to be utilized, those areas must be designated as controlled access zones.

10.4.16.1 Controlled Access Zone Safety Monitoring System Requirements:

10.4.16.1.1 A Site-Specific Access Zone Safety plan must be developed, documented, and reviewed by management.

10.4.16.1.2 A safety monitoring system shall be used.

10.4.16.1.3 A competent person must be designated to identify fall hazards, warn employees unaware of fall hazards or performing in an unsafe manner, be on the same working surface and within visual sight, close enough for verbal communication, and not be assigned other duties that might interfere with the monitor's ability to perform the monitor's designated duties.

10.5 Climbing and Working on Poles

- 10.5.1 All poles and structures shall be inspected before climbing to assure that they are in a safe condition for the work to be performed and that they can sustain the additional or unbalanced stresses to which they will be subjected. Refer to Section 21 Pole Handling and Inspection.
- 10.5.2 If poles or structures may be unsafe for climbing, they shall not be climbed until made safe by guying, bracing, or other remedial action.
- 10.5.3 Wires shall not be attached to or removed from a pole or structure until it is certain the pole or structure will withstand the altered strain.
- 10.5.4 Poles, except new poles, shall be tested before they are climbed. If a pole is not strong enough to sustain a lineman's weight by reason of its condition or its placement (such as in soft ground), it shall be guyed or otherwise secured throughout the time any work is being performed on it. If the pole to be climbed is being replaced and the new pole is set adjacent to it, the old pole may be lashed to the new one in lieu of guying.
- 10.5.5 When poles are encountered that are unsafe to climb due to ice, badly chewed, wide cracks, shell rot, etc., an aerial basket shall be used in place of climbing.
- 10.5.6 Workers shall not wear their climbers while driving or riding in vehicles or when working on the ground, on ladders (except hook ladders) or on platforms in which the wearing of the climbers creates a hazard. Climbers shall be put on at the base of the pole prior to climbing. Climbers shall be removed at the base of the pole after the climb is completed.
- 10.5.7 Gaffs on climbers shall be kept within safe length limits (1.25" minimum), properly shaped, sharpened, and guards secured while not in use.
- 10.5.8 Employees shall not work on an elevated pole or structure without first securing themselves with a fall-protection device.
- 10.5.9 Metal hooks, chains, etc., for holding tools or tape shall not be attached to body belt or harness. Leather or other non-conductive material shall be used for this purpose.
- 10.5.10 The fall restraint device shall not be put around a pole above the uppermost pole attachment position, except where pole top or attachment is above eye level. The safety strap shall not be

used on pole steps, cross arm braces, insulators, insulator pins, conductors, rotten or otherwise weak cross arms or on attachments that are being moved.

10.5.11 The fall restraint device shall be so placed that it will not be cut by line equipment or twisted or fouled by material that may give way under strain.

10.5.12 When two or more employees are to work on the same pole at the same time, each shall reach the working position before the next leaves the ground and shall descend the pole one at a time.

10.6 Inspection and Care

10.6.1 Personal Fall Protection equipment shall be inspected as follows:

10.6.1.1 Personal Fall Protection equipment shall be inspected before each use by the user.

10.6.1.2 Personal Fall Protection equipment shall be inspected annually by a competent person. The competent person shall attach the appropriate inspection identification indicating the annual inspection is complete.

10.6.1.3 Personal Fall Protection equipment shall be inspected after being subjected to loading from a fall. All equipment except for the larger Self Retracting Lifelines, which can be returned to the manufacturer for repair and recertification, will be discarded.

10.6.1.4 All incoming fall protection equipment shall be inspected and tagged appropriately before distribution to employees.

10.6.1.5 Employees shall not use fall protection equipment that has not been inspected and tagged.

10.6.1.6 Annual inspections shall be performed in accordance with the equipment manufacturers recommended inspection criteria.

10.6.1.7 Equipment found to be degraded, damaged, or missing the annual inspection tag, shall be immediately removed from service.

10.6.1.8 All inspected equipment will be identified using a colored tag, zip tie, wrap, or other device as follows:

Last Digit in the Year Color

0 or 5 Orange

1 or 6 Green

2 or 7 Yellow

3 or 8 White

4 or 9 Blue

10.6.1.9 The annual inspection is good for the calendar year (January 1 through December 31st).

10.6.1.10 Annual inspections will be completed in the month of January.

10.6.2 Personal Fall Protection equipment shall be properly stored and cleaned as follows:

- 10.6.2.1 Personal Fall Protection equipment shall be clean and properly stored after use in accordance with the manufacturer's recommendations.
- 10.6.2.2 Personal Fall Arrest Protection shall be stored in a cool, dry, and clean environment, out of sunlight, and away from chemicals. Avoid areas where heat, moisture, light, oil, and chemicals or their vapors, or other degrading elements may be present.
- 10.6.2.3 During cleaning, equipment found to be degraded, damaged, or missing appropriate tag information shall be immediately removed from service.

11 LOCKOUT/TAGOUT

This section does not apply to switching and tagging of transmission lines, distribution lines, and substation equipment. For these systems, Host utility switching requirements must be followed.

11.1 Description

- 11.1.1 The lockout/tagout program has been devised to establish guidelines for the implementation of a system to protect employees from the sudden, unexpected release of stored energy.
- 11.1.2 The company's program requires the company to conduct a periodic inspection of the energy control procedure annually, to ensure that the procedure and the requirements of this standard are being followed. The periodic inspection must be performed by an authorized company employee other than the ones(s) utilizing the energy control procedure being inspected. The periodic inspection must be conducted to correct any deviations or inadequacies identified. Where lockout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected. Where the tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected. The company will certify that the periodic inspections have been performed. The certification must identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

11.2 Definitions

- 11.2.1 **Authorized Person** – an employee with specific training, experience and/or skills that allow them to effectively shut down or isolate a particular device or system.
- 11.2.2 **Clearance (for work)** – authorization by a person or group with jurisdiction to perform a specified task or permission to enter a restricted area.
- 11.2.3 **Lockout** – isolation of a device or system where the energy source is mechanically isolated from the rest of the system.
- 11.2.4 **Stored Energy** – may include electrical, hydraulic, pneumatic, chemical, thermal, mechanical, or other sources that potentially could release and cause harm to an employee.
- 11.2.5 **Tagout** – isolation of a device or system where the energy source is shut off and a warning tag applied indicating startup would cause death or serious harm to employees.

11.3 Responsibility

- 11.3.1 **Management must:**
 - 11.3.1.1 Ensure that supervision has been trained on lockout/tagout methods and procedures and understand how to implement such a system.
 - 11.3.1.2 Provide and document training for all employees on lockout/tagout.

- 11.3.1.3 Annually review the program for proper implementation and recordkeeping.
- 11.3.1.4 Annually review the effectiveness of the program with employees involved in lockout tagout procedures.

11.3.2 Supervision must:

- 11.3.2.1 Be able to identify devices or systems that require lockout/tagout in place prior to work.
- 11.3.2.2 Communicate with the client/system operator and ensure methods are adequate for the task being performed.
- 11.3.2.3 Prepare a written procedure for the method and communicate the procedure to all employees via the THA (Task Hazard Analysis).
- 11.3.2.4 Perform or oversee testing of the device/system after lockout/tagout has been completed and ensure the item or system is at a zero-energy state prior to work being performed.

11.3.3 Employees must:

- 11.3.3.1 Be aware of the method being used and understand the tasks permitted under the system in place.
- 11.3.3.2 Do not enter an area or work on a device/system for which clearance has not been granted and/or appropriate lockout/tagout procedures have not been completed.

11.4 Compliance

- 11.4.1 **Preparation for shutdown.** Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy. Affected personnel are to be informed.
- 11.4.2 **Machine or equipment shutdown.** The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown must be utilized to avoid additional or increased hazard(s) to employees as a result of the equipment stoppage.
- 11.4.3 **Machine or equipment isolation.** All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).
- 11.4.4 Lockout or tagout device application.
 - 11.4.4.1 Lockout/tagout devices shall be affixed to each energy isolation device by authorized employees.
 - 11.4.4.2 Lockout devices, where used, shall be affixed in such a manner that will hold the energy isolating devices in a “safe” or “off” position.
 - 11.4.4.3 Tagout devices, where used, shall be affixed in such a manner that will clearly indicate that the operation or movement of energy isolating devices from the “safe” or “off” position is prohibited.
 - 11.4.4.4 The lockout/tagout devices used must be identified with the company name, name of the person who applied for it, and a contact number.

11.4.5 Stored energy.

11.4.5.1 Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe.

11.4.5.2 If there is a possibility or re-accumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.

11.4.6 Verification of isolation.

11.4.6.1 Prior to starting work, or resuming work, on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation of the machine or equipment has been accomplished.

11.4.6.2 Whenever electricity is one of the energy sources, the authorized employee shall follow the procedure below to ensure that the energy source has been isolated.

11.4.6.2.1 Attempt to start or operate the machine.

11.4.6.2.2 Test a voltmeter on a source that is known to be live to ensure that the meter is functioning properly. **(CAUTION: Be sure that the meter is rated for the voltage you are testing.)**

11.4.6.2.3 Test equipment that has been locked out.

11.4.6.2.4 Test the voltage meter on a live circuit to ensure that the meter is still functioning properly.

11.4.7 **Release from lockout or tagout.** Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed, and actions taken by the authorized employee(s) to ensure the following:

11.4.7.1 **The machine or equipment.** The work area shall be inspected to ensure that non-essential items have been removed and to ensure that machine or equipment components are operationally intact.

11.4.7.2 **Employees.** The work area shall be checked to ensure that all employees have been safely positioned or removed.

11.4.7.3 The program requires that each authorized company employee must place his or her personal lock and/or tag (LOTO) on each group lockout/tagout device prior to commencing any servicing or maintenance operation. The supervisor responsible for the group lockout/tagout is forbidden to remove the group LOTO device until each authorized employee in the group has removed his or her personal device.

11.4.8 **Notification of all employees.** After lockout/tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified that the lockout or tagout device(s) have been removed.

11.4.9 **Lockout/tagout devices removal.** Each lockout or tagout device shall be removed from each energy-isolating device by the employee who applied the device. **Exception:** When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may

be removed under the direction of C&C management, provided that specific procedures and training for such removal are followed. The specific procedure shall include at least the following elements:

- 11.4.9.1 Verification by C&C that the authorized employee who applied the device is not at the facility.
 - 11.4.9.2 Reasonable efforts shall be made to contact the employee who applied the lockout device to notify them of the removal BEFORE the removal occurs.
 - 11.4.9.3 A qualified employee will inspect and verify equipment is ready to be energized and is free of debris or tools, which may have been left by other employees.
 - 11.4.9.4 Verification that the authorized employee has this knowledge before him/her resumes work at that facility is mandatory.
 - 11.4.9.5 In an instance where an employee cannot be notified before his/her next shift, the job supervisor shall ensure that an employee is stationed at the location of the WORK (Not the lockout location) to notify the authorized employee of the removal. A sign or notice shall also be posted at the work location and the lockout location warning the authorized employee of the removal of his/her lockout device.
- 11.4.10 **Disciplinary Procedures.** Due to the serious nature surrounding lockout/tagout operations, anyone cutting off a lockout lock without following due process shall be disciplined up to termination.

12 TOOL/EQUIPMENT INSPECTION

12.1 Purpose

- 12.1.1 This program is intended to provide comprehensive directions for the inspection and maintenance of tools and equipment.

12.2 Definitions

- 12.2.1 **Inspection** – thorough viewing and testing of a tool or piece of equipment used to determine its ability to perform intended tasks.
- 12.2.2 **Red-Tagged** – an item that has been found to be damaged or otherwise ineffective and removed from service.

12.3 Responsibility

- 12.3.1 Management must:
 - 12.3.1.1 Provide proper tools and equipment for employees to safely and efficiently perform assigned tasks.
 - 12.3.1.2 Provide access to training/instruction in the proper use of tools and equipment.
- 12.3.2 Supervision must:
 - 12.3.2.1 Ensure tools/equipment on jobsite have appropriate inspections and corresponding tags.
 - 12.3.2.2 Oversee employee inspection of tools/equipment.
 - 12.3.2.3 Remove from service (Red-Tag) any tool or piece of equipment that is not adequate and make arrangements for repairs or a replacement.
- 12.3.3 Employees must:
 - 12.3.3.1 Inspect all tools/equipment prior to use.
 - 12.3.3.2 Refuse to use damaged or uninspected tools or equipment.
 - 12.3.3.3 Report defective tools/equipment to supervision for removal from service.

12.4 Compliance

- 12.4.1 All tools (hand or externally powered), portable ladders, fall protection equipment and rigging shall be visually inspected by the employee using the item prior to use.
- 12.4.2 Tools and equipment must be in proper working condition per manufacturer's specifications.
- 12.4.3 Fabricated tools shall be accompanied by an engineer's review indicating it is adequate to perform intended tasks.
- 12.4.4 Employees shall use only company supplied tools other than the hand tools required by their job classification, which they are required to supply.
- 12.4.5 Powder-actuated tools shall be used according to manufacturer's recommendation

13 MOBILE EQUIPMENT/VEHICLE INSPECTIONS/TRAINING

13.1 Purpose

- 13.1.1 This program is intended to provide directions on inspection and maintenance of mobile equipment and vehicles.

13.2 Definitions

- 13.2.1 **Maintenance** – employee specifically trained and assigned to troubleshoot and repair equipment and/or vehicles.
- 13.2.2 **Defect** – damage or wear that renders vehicles or equipment unfit for use. Items that exhibit defects may pose a threat to operator, passenger, or anyone around the vehicles or equipment.
- 13.2.3 **Red-Tagged** – an item that has been removed from service due to a defect that inhibits the ability to operate it in a safe manner.

13.3 Responsibility

- 13.3.1 Operators must:

- 13.3.1.1 Be properly trained, authorized, and demonstrate competency to operate and inspect vehicles or equipment.

- 13.3.1.2 Inspect vehicles or equipment prior to use and document inspection on the appropriate form.

- 13.3.1.3 Notify supervision of any defects found during inspection.

- 13.3.2 Supervision must

- 13.3.2.1 Ensure the operator has inspected vehicles or equipment and has received training for the type of equipment.

- 13.3.2.2 Red tag any vehicles or equipment that has a defect and notify maintenance of defect(s).

- 13.3.2.3 Ensure red-tagged equipment is not used.

- 13.3.3 Maintenance

- 13.3.3.1 Review inspections and address defects in a timely manner.

- 13.3.3.2 Maintain control of any vehicles or equipment found to have a defect until the defect is repaired and item determined fit for duty.

- 13.3.3.3 Maintain logs of repairs and maintenance of all C&C vehicles and equipment.

- 13.3.3.4 The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown must be utilized to avoid additional or increased hazard(s) to employees as a result of the equipment stoppage.

13.4 Compliance

- 13.4.1 All vehicles and equipment shall be inspected daily, prior to use. This inspection is to be documented and maintained.
- 13.4.2 All pertinent items on the inspection form are to be addressed by the operator completing the inspection.
- 13.4.3 Any defects or damage found during inspection must be indicated on the inspection form.
- 13.4.4 Maintenance must be notified of all defects found during inspection.
- 13.4.5 No vehicles or equipment is to be operated that is found to have a defect as defined above.

13.5 Vehicle General Requirements

- 13.5.1 Operators must have a valid license (operator's or commercial drivers) and be authorized by C&C to drive a motor vehicle for C&C.
- 13.5.2 All state and local motor vehicle regulations must be followed.
- 13.5.3 An operator shall not permit unauthorized persons to ride in C&C vehicles.
- 13.5.4 Seat belts must be worn in vehicles so equipped.
- 13.5.5 Operators must not permit anyone to ride on the running board, fender, or any part except on the seats inside the vehicle.
- 13.5.6 No one is permitted to ride on trailers.
- 13.5.7 Employees shall not jump off moving vehicles.
- 13.5.8 Operators shall clearly signal turns, intent to pass another vehicle, and stops.
- 13.5.9 Yield the right of way every time to other drivers or pedestrians who are obviously not yielding to you in situations where you normally would have right of way. It is better to be annoyed than to explain a collision.
- 13.5.10 When backing vehicles, proceed slowly and keep a constant lookout the entire time. Always use a spotter. If a spotter is not available, then the driver must perform a 360° walk around. Also, if the driver loses site of the spotter, the driver must stop until spotter is located.
- 13.5.11 When backing vehicles, proceed slowly and keep a constant lookout the entire time. Always use a spotter.
- 13.5.12 Loads extending four feet or more beyond the body of the vehicle shall have a warning flag or working strobe light attached that meets and/ or exceeds local DOT requirements.
- 13.5.13 Flaggers are required when a truck hauling poles has turned a corner or maneuvering in such a way that the poles will interfere with the flow of traffic from any direction.
- 13.5.14 Do not jump off equipment. Always use steps or ladders. Always maintain three points of contact getting in/out or on/off equipment.

- 13.5.15 Before a vehicle is driven under or adjacent to energized equipment the clearance shall be checked to ensure that proper clearances will be maintained between the vehicle and energized equipment.
- 13.5.16 When parking on a roadway, vehicles shall park off the traveled road surface, whenever possible. When vehicles must park closer than fifteen feet to the traveled road surface, appropriate warning devices shall be used.
- 13.5.17 When stopping or parking where the vehicle is exposed to roadways and other traffic the emergency flashers and beacons, if equipped, shall be used.
- 13.5.18 Report vehicle accidents to the police and your immediate supervisor immediately.
- 13.5.19 Do not fuel a vehicle if the engine is running. Do not smoke nor allow employees who are smoking to approach the fueling area.
- 13.5.20 Housekeeping: A loose object in a vehicle during an accident can be a deadly item. A vehicle cluttered with loose tools, equipment, materials, and debris is an indication of a lack of care and proper upkeep of the vehicle by the driver. Tools, equipment, and materials shall be properly secured. Trash shall be removed from the cab and passenger compartment daily.
- 13.5.21 Focus fully on driving when in school zones or other areas where children are playing.
- 13.5.22 Vehicles/equipment will utilize wheel chocks when not on level ground.
- 13.5.23 Vehicles/equipment will have ignitions in off position when not in use.
- 13.5.24 All equipment left unattended at night, adjacent to a highway in normal use, or adjacent to construction areas where work is in progress, will have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, to identify the location of the equipment.

13.6 Drivers

- 13.6.1 Supervisors must determine that all vehicle operators possess a valid and appropriate class Driver's License issued by the State Department of Highway Safety and Motor Vehicles from the state where the employee resides. The employee may be required to conform to applicable state laws concerning driver license residence requirements.
- 13.6.2 Employees shall notify their supervisors immediately if their driving privileges are suspended, revoked, or cancelled and cease to operate C&C vehicles.
- 13.6.3 All license holders shall report all violations both in commercial and private vehicles immediately to C&C office.
- 13.6.4 All employees' driver licenses will be verified annually.

13.7 Inspections

- 13.7.1 Before leaving the work headquarters, the employees in charge shall visually inspect and operate the equipment and assure themselves that the brakes, lights, tires, horns, and steering operate properly. Trucks equipped with air brakes shall be drained of moisture. The operators or

employees in charge shall also check the overall condition of the equipment and ensure that the housekeeping of the equipment is in order. If the equipment has hydraulic controls, they shall be visually inspected for any defects, the hydraulic reservoir shall be checked for proper oil level as well as the condition of the oil and the system shall be run through a complete cycle to ensure that the controls are operating properly. The vehicle shall also be checked for sufficient amounts of fuel, oil and water. For any vehicle over 10,000 lbs. gross vehicle weight (GVW) the driver must complete a daily vehicle inspection report (DVIR) at the end of each shift.

13.7.2 Use the Vehicle Inspection forms that are available from any supervisor. Equipment outfitted with ZONAR system shall be inspected and documented with ZONAR whenever possible.

13.7.3 Operators shall insure that the following required safety equipment is in the vehicle – one (1) First Aid Kit, one (1) properly charged and sealed fire extinguisher and three (3) reflective warning triangles.

13.8 Trailers

13.8.1 When attaching trailers, make certain that the safety latch on pintle hook and safety chains are firmly in place. Use care in parking on highways and immediately display proper warning signals.

13.8.2 All trailers shall be equipped with approved lifting handles or lifting mechanism.

13.8.3 When connecting fifth wheel trailers, the following procedure will be followed:

13.8.3.1 Back tractor in direct line to the trailer, i.e., not jackknifed or at an angle, until the two units are close enough to connect the airlines and light connections.

13.8.3.2 Connect both airlines and light cord.

13.8.3.3 Lock the trailer brakes.

13.8.3.4 Raise or lower the trailer so that the kingpin will properly index with the fifth wheel latch.

13.8.3.5 Back under the trailer with enough force to engage and latch the fifth wheel.

13.8.3.6 Pull forward with the trailer brakes still locked to make sure the fifth wheel is latched properly

13.8.3.7 With the trailer and tractor brakes locked, raise the landing gear all the way up.

13.8.3.8 Check the operation of all applicable lights and safety devices.

13.8.4 Extreme caution must be used when connecting or disconnecting trailers to prevent being crushed or pinched between the vehicle and trailer.

13.8.5 Before disconnecting a trailer, the wheels should be chocked to prevent uncontrolled movement.

13.8.6 Safety chains or cables shall be used when pulling a trailer. These safety devices shall be of sufficient strength to maintain connection of the trailer to the pulling vehicle under all conditions. Semi or fifth wheel connection type trailers are exempt.

13.8.7 Spotters/flaggers shall be used when backing all trailers. If a spotter is not available, the driver must perform a 360° walk around. Also, if the driver loses the spotter, the driver must stop until spotter is located.

13.9 Cell Phone Policy

- 13.9.1 Employees are prohibited from conducting or performing all cell phone actions that are not performed hands-free while operating a C&C owned, rented, or leased motor vehicle or operating any motor vehicle on authorized C&C business.
- 13.9.2 Anyone driving a Commercial Motor Vehicle (CMV) cannot use a handheld cell phone while driving the CMV. It is illegal under federal law. C&C can face serious monetary penalties if its drivers violate this law. The drivers can have their Commercial Driver Licenses disqualified and face stiff monetary fines. To be in compliance:
 - 13.9.2.1 Make sure the mobile telephone is within close enough proximity that it is operable while the driver is properly restrained by seat belt.
 - 13.9.2.2 Use an earpiece or the speaker phone function.
 - 13.9.2.3 Use voice-activated dialing.
 - 13.9.2.4 Use the hands-free feature. To comply, a driver must have his or her mobile telephone located where he or she is able to initiate, answer, or terminate a call by touching a single button. The driver must be in a seated driving position and properly restrained by a seat belt. Drivers are not in compliance if they unsafely reach for a mobile phone, even if they intend to use the hands-free function.

13.10 Powered Industrial Trucks

- 13.10.1 Employees designated to operate powered industrial trucks (forklifts) shall receive training specific to the piece of equipment to be operated and demonstrate proficiency prior to unsupervised operation. Rough terrain forklifts such as Lull-type equipment, have specific training requirements also.
- 13.10.2 This training shall include:
 - 13.10.2.1 A classroom session that addresses operating instructions, load capacity, traveling distances, refueling dangers, traveling on ramps, visibility issues, and the principles of counterbalances.
 - 13.10.2.2 A hands-on session that demonstrates general inspection of powered industrial trucks.
 - 13.10.2.3 A supervised field session where the prospective operator demonstrates the ability to adequately inspect a powered industrial truck.
 - 13.10.2.4 A supervised field session where the prospective operator demonstrates the ability to safely operate a powered industrial truck.
- 13.10.3 All sessions shall be documented and observed by a qualified, competent trainer/operator.
- 13.10.4 Only employees who successfully demonstrate competency will be authorized to operate powered industrial trucks for C&C.
- 13.10.5 Authorization shall be good for a period of three years.
 - 13.10.5.1 Employees who are observed operating a powered industrial truck in an unsafe manner shall have authorization revoked.

13.10.5.2 Employees who operate a powered industrial truck that either has not been inspected, or inspection reveals defects that affect the safe operation of the powered industrial truck shall have authorization revoked.

13.10.5.3 Any employee who has had authorization to operate a powered industrial truck shall be required to attend retraining prior to operating.

13.10.6 "Free Rigging" is not allowed on the forks of any lift. Only approved below the hook devices must be used suspending loads below forks.

14 WORK ZONE/TRAFFIC CONTROL

14.1 Purpose

14.1.1 This program establishes standards for protecting employees, the public and other workers from exposure to potential hazards by providing adequate warning and direction.

14.2 Definitions

14.2.1 **Barricade** – an obstruction placed to inhibit traffic in a particular area.

14.2.2 **High-Speed Area** – road or highway where the posted speed limit is 55 mph or higher.

14.2.3 **Rural/Mid-Speed Area** – road or highway with a posted speed limit between 35 and 50 mph.

14.2.4 **Sign** – a visual warning of hazard. Signs may be permanently fixed or temporary and are placed in proximity to hazards.

14.2.5 **Sign Paddles** – hand-held signals indicating to traffic either "STOP" or "SLOW." These signs shall be clearly marked and stationed on a 6-foot staff.

14.2.6 **Signal** – a moving sign (placed or held by flaggers or vehicles) that warns of possible or existing hazards.

14.2.7 **Signal Flag** – warning signal which may be positioned or hand-held. This item must be high visibility red or orange and be at least 24 inches square.

14.2.8 **Urban/Low-Speed Area** – road or highway with a posted speed limit of 35 mph or lower.

14.2.9 **Traffic cone** - a channelizing device designed to mark work sites, delineate tapers, and to cordon off hazardous areas.

14.2.10 **Emergency** - a condition defined as unpredictable periods of time where public safety is endangered and when protection to the public can be accomplished sooner by use of men and equipment at hand than by fully complying with this section. A vehicle being used in an emergency, with no other work area protection equipment, must use emergency lights.

14.3 Responsibility

14.3.1 Management must:

- 14.3.1.1 Provide supervision with adequate signs, signals, and trained personnel to conduct an effective work zone protection function.
- 14.3.1.2 Regularly audit work zone protection and make necessary adjustments.

14.3.2 Supervision must:

- 14.3.2.1 Communicate with local authorities, client representatives and other affected persons or groups prior to the project to determine work zone protection concerns and procedures.
- 14.3.2.2 Audit and inspect items and employees to ensure adequate materials and trained personnel are available to conduct effective work zone protection tasks.
- 14.3.2.3 Thoroughly inspect work zones upon completion of work to determine the removal of all tools, materials and other items that could potentially present hazards upon removal of protective devices/systems.
- 14.3.2.4 Modify placement of signs, signals and personnel as the project evolves to maintain maximum flow of public traffic while maintaining the safe work zone for employees.

14.3.3 Employees must:

- 14.3.3.1 Know and understand requirements of work-zone protection system.
- 14.3.3.2 Don all appropriate PPE (Class 2 or 3 high-visibility vests for daytime work and class 3 for all nighttime work, etc.), have available appropriate signals and understand communication system established.
- 14.3.3.3 Properly install work-zone protective systems.

14.4 Compliance

14.4.1 Signs, signals, and barricades

- 14.4.1.1 Signs, signals, and barricades shall comply with Part VI of the Manual on Uniform Traffic Control Devices or the state specific requirements, whichever is more stringent, when used for work-zone protection.
- 14.4.1.2 Signs used to warn public traffic of flaggers, upcoming construction, lane changes, etc. must be at least 48 inches square, positioned on the right-hand side of the road or lane and be of high-visibility material.
 - 14.4.1.2.1 Whenever vehicles and other equipment are parked where work may result in the exposure of employees or equipment to passing traffic, a Maintenance of Traffic (MOT) plan meeting D.O.T. or local government regulations shall be used to adequately warn and protect the public.

- 14.4.1.2.2 Vehicles and equipment on roadways and shoulders shall be guarded by traffic cones by day and warning lights by night.
 - 14.4.1.2.3 Vehicle emergency flashers and beacons shall be operating when parked near work areas and are exposed to the public.
 - 14.4.1.2.4 In high-speed areas, signs shall be placed 1,500 feet out from travel restrictions.
 - 14.4.1.2.5 In rural/mid-speed zones, signs shall be placed 750 feet out from travel restrictions.
 - 14.4.1.2.6 In urban/low-speed zones, signs shall be placed 250 feet out from travel restrictions.
 - 14.4.1.2.7 Where roads intersect with the road containing the work zone, where those intersections occur within the posting area, signs shall be placed at the intersection warning drivers of restrictions ahead.
- 14.4.2 This Program requires adherence to all requirements set forth in the Manual on Uniform Traffic Control Devices in addition to localized requirements for traffic control to include appropriate traffic control devices, and traffic control signs. All federal, state, and local traffic codes will be adhered to when establishing protective systems. All applicable permits will be procured prior to the commencement of work.
- 14.4.3 Work-zone protection devices, personnel and equipment shall be removed from the area, and flow of traffic re-established as soon as work in the area is complete, and all hazards have been removed.
- 14.4.4 During night operations or whenever visibility is diminished (rain, fog, etc.) reflective items or flashing lights shall be employed.
- 14.4.5 Even when C&C uses an outside source certified in Maintenance of Traffic (MOT) for traffic control, we must have at least one person on the crew with current training and certification from an approved DOT training facility for that state.
- 14.4.6 When backing vehicles and equipment, an individual shall be positioned at the rear or sides of the vehicle to serve as a spotter.
- 14.4.7 All affected employees will receive training on this program upon hire, regular refresher training as required, and all corresponding training documentation will be retained.

14.5 Flaggers

- 14.5.1 Personnel assigned to assist in traffic control via flagging shall be trained in the specifics of the situation, including the use of signs, signals, and communication systems in place.
- 14.5.2 Flaggers shall wear Class 2 or 3 reflective, high-visibility vests (appropriate for conditions and local DOT regulations) at all times. Class 3 must be worn for nighttime activities.
- 14.5.3 Flaggers shall always face the flow of traffic during flagging operations.
- 14.5.4 Sign paddles and hand signals shall be used by flaggers to direct the flow of traffic.

- 14.5.5 Flaggers shall be positioned as far to the right-hand side of road (or relevant throughway) as possible to maintain ability to signal traffic and stay clear of hazards.
- 14.5.6 Should any vehicle not comply with signs or signals, flagger closest to violating vehicle shall immediately notify flagger on other end of zone (if applicable) and task supervision to warn of pending hazard(s).

15 AERIAL DEVICES

15.1 Description

- 15.1.1 C&C Aerial Devices program is designed to govern the inspection, operation and performance of employees working in or with aerial devices and related equipment.

15.2 Definitions

- 15.2.1 **Aerial Device** – any vehicle-mounted device – telescoping, articulating or both – which is used to position personnel.
- 15.2.2 **Extendible Boom Platform** – aerial device with a telescopic or extendible boom. Telescopic derricks with personnel-platform attachments shall be included in this definition.
- 15.2.3 **Equipment Safety Zone** – A physical barrier around a truck or piece of equipment warning personnel not to approach, reducing the risk of step/touch potential. Special precautions must be taken to protect the public and to ensure that the ground clamp is not removed from the ground rod.
- 15.2.4 **Insulated Aerial Device** – aerial device designed for working on or near energized lines or apparatus.
- 15.2.4 **Platform** – any personnel-carrying device (basket, bucket, etc.) which is a component of an aerial device.

15.3 Responsibility

- 15.3.1 Management must
 - 15.3.1.1 Provide required training for personnel to safely operate aerial devices.
 - 15.3.1.2 Oversee maintenance program for aerial devices to ensure safe equipment is in use.
- 15.3.2 Supervision must
 - 15.3.2.1 Ensure only trained; authorized operators are running aerial devices.
 - 15.3.2.2 Disqualify personnel who exhibit unsafe operating functions.
- 15.3.3 Operators must
 - 15.3.3.1 Inspect equipment daily, prior to use.
 - 15.3.3.2 Refuse to operate any equipment that has damage or defects that make it unsafe to operate.
 - 15.3.3.3 Install an Equipment Safety Zone, position outriggers and pads and operate machine according to operator's manual.

15.3.4 Employees (non-operators)

- 15.3.4.1 Employees who are not authorized to operate aerial devices shall not enter an aerial device unless an authorized operator is at the controls.
- 15.3.4.2 Employees shall wear fall-arrest equipment and all required PPE for performance of assigned tasks while in an aerial device.

15.4 Compliance

- 15.4.1 Only trained, authorized personnel shall operate an aerial device
- 15.4.2 Operators shall inspect aerial devices daily, prior to operation. Special emphasis given to elevating and rotating components. This inspection shall be documented and maintained with the equipment.
- 15.4.3 Operator's manual and all required ANSI/OSHA documentation shall be with the equipment.
- 15.4.4 Employees working in aerial devices shall be made aware of hazards associated with the equipment, establish communication with the operator (if applicable), and tie off to an approved anchorage point with a full-body harness and lanyard.
- 15.4.5 Employees working in aerial devices shall always keep both feet on the platform.
- 15.4.6 When working on or near energized parts or lines, insulated aerial devices shall be used and minimum approach distances shall be maintained with the assistance of a designated spotter.
- 15.4.7 Equipment shall be isolated, insulated or grounded prior to employees moving within ten feet of an energized part or line to protect employees from incidental contact.
- 15.4.8 Only qualified personnel may work on energized parts or lines while in an aerial device.
- 15.4.9 Equipment shall not travel with the boom extended or while employees are in or on a platform.
- 15.4.10 Employees are to maintain all body parts within the confines of the basket while platform is in motion.
- 15.4.11 Bucket trucks shall be dielectrically tested as frequently as OSHA procedures indicate. If a bucket truck fails, the test will not be used until tests indicate it is safe.
- 15.4.12 When the boom is maneuvered over a street or highway, necessary precautions shall be taken to avoid accidents with traffic
- 15.4.13 Extendible and articulating boom platforms
 - 15.4.13.1 Lift controls shall be tested each day prior to use to determine that such controls are in safe working condition.
 - 15.4.13.2 Only trained persons shall operate an aerial lift.
 - 15.4.13.3 Belting off to an adjacent pole, structure, or equipment while working from an aerial lift shall not be permitted.

- 15.4.13.4 Employees shall always stand firmly on the floor of the basket and shall not sit or climb on the edge of the basket or use planks, ladders, or other devices for a work position.
- 15.4.13.5 A body harness shall be worn, and a lanyard shall be attached to an approved anchorage point when working from an aerial lift.
- 15.4.13.6 Boom basket load limits specified by the manufacturer shall not be exceeded.
- 15.4.13.7 The brakes shall be set, and outriggers shall be positioned on pads.
- 15.4.13.8 An aerial lift truck may not be moved when the boom is elevated in a working position with men in the basket, except for equipment which is specifically designed for this type of operation.
- 15.4.13.9 Articulating boom and extensible boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Upper controls shall be in or beside the platform within easy reach of the operator. Lower controls shall provide for overriding the upper controls. Controls shall be plainly marked as to their function. Lower-level controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.
- 15.4.13.10 Climbers shall not be worn while performing work from an aerial lift. Exceptions: restricted access is encountered by the Line Crew.
- 15.4.13.11 The insulated portion of an aerial lift shall not be altered in any manner that might reduce its insulating value.
- 15.4.13.12 Before moving an aerial lift for travel, the boom(s) shall be inspected to see that it is properly cradled, and outriggers are in stowed position.
- 15.4.13.13 Any modifications to an aerial lift must be made under the direction of the manufacturer.
- 15.4.13.14 This aerial device, platform/basket, shall not be used to lift conductor unless a material hoist is attached and rated to do so.

16 EMERGENCY ACTION PLAN (EAP)

16.1 Description

- 16.1.1 This program outlines methods documented in a pre-job plan to deal with emergency situations. An Emergency Action Plan (EAP) will provide critical information and procedures designed to limit injury in the event of an unplanned event that poses significant endangerment to life or health.

16.2 Definitions

- 16.2.1 **Emergency Facility** – establishment that provides mobile care and/or a facility designated to provide immediate health care to injured personnel.
- 16.2.2 **Medical Facility** – establishment that provides secondary and/or long-term care to injured personnel.

16.3 Responsibility

- 16.3.1 The Vice President of Safety is the sole point of contact for all client and media sources in times of incidents/emergency. This includes all social media unless a delegate has been named by the Vice President of Safety.
- 16.3.2 Safety must:
 - 16.3.2.1 Compile necessary information regarding local services and provide phone numbers, directions, and maps.
 - 16.3.2.2 Follow-up with supervision in completion of document.
- 16.3.3 Supervision must:
 - 16.3.3.1 Finalize the EAP, providing specific requirements particular to the site.
 - 16.3.3.2 Communicate the EAP to employees and assign roles.
 - 16.3.3.3 Ensure employees understand the EAP and any assigned responsibilities.
 - 16.3.3.4 Modify the EAP as necessary and communicate changes to employees.
- 16.3.4 Employees must:
 - 16.3.4.1 Have the EAP communicated to them and understood its contents.
 - 16.3.4.2 Sign the EAP to verify understanding of procedures and responsibilities.

16.4 Compliance

- 16.4.1 All projects with a duration of over two weeks undertaken by C&C should have a written EAP in place prior to commencement of work.
- 16.4.2 EAP is to be initiated by safety and completed by on-site supervision.
- 16.4.3 EAPs shall include, at a minimum:
 - 16.4.3.1 Name of emergency contact(s).
 - 16.4.3.2 Location and phone numbers for local emergency services.
 - 16.4.3.3 Location and directions to (including maps) nearest emergency facility.
- 16.4.4 Specific procedures to be used in the event of emergency.
- 16.4.5 Employees in remote locations shall use two-way radio communications as a means to provide notification and instructions in the event of an emergency.
- 16.4.6 All employees shall have EAP communicated to them and sign-off on EAP prior to working.
- 16.4.7 EAP is to be maintained on-site and remain available to employees for the duration of the project.
- 16.4.8 All C&C field employees shall receive First Aid/CPR training, and that training shall be monitored to ensure it remains valid.
 - 16.4.8.1 Supervision shall ensure a minimum of two employees on each crew have current First Aid/CPR training.

- 16.4.8.2 Supervision shall monitor monthly training matrix to ensure employees remain compliant.
- 16.4.9 Pictures of jobsites or incidents and emergency situations are strictly prohibited. The Safety/Risk departments will direct the taking of pictures for investigative purposes.

16.5 Facility Emergency Response Plan

- 16.5.1 The Office Manager, Shop Supervisor, Tool Room Supervisor, and field supervisors are responsible for developing and maintaining the facility's emergency response plan. The plan includes the following elements:
 - 16.5.1.1 Personnel roles, lines of authority, and communication procedures.
 - 16.5.1.2 Pre-emergency planning.
 - 16.5.1.3 Emergency recognition and prevention.
 - 16.5.1.4 Emergency medical and first aid treatment.
 - 16.5.1.5 Methods or procedures for alerting onsite employees.
 - 16.5.1.6 Safe distances and places of refuge.
 - 16.5.1.7 Site security and control.
 - 16.5.1.8 Evacuation routes and procedures.
 - 16.5.1.9 Decontamination procedures.
 - 16.5.1.10 Personal protective and emergency equipment.
- 16.5.2 In the event of an emergency situation, emergency responders such as fire, police, and hospital are notified by the Office Manager, Shop Supervisor, Tool Room Supervisor, Safety Personnel, field supervisor or designated person in charge. The emergency phone number to be called is 911.

17 HOUSEKEEPING

17.1 Description

- 17.1.1 This program outlines good work practices to eliminate hazards created from accumulated items, debris or other materials and prevent injuries and illness caused by storing materials, tools and equipment in improper locations.

17.2 Definitions

- 17.2.1 **Appropriate Container** – receptacle designed for storing/handling material, tools and equipment being placed inside it.
- 17.2.2 **Access** – area designated as walkways or means to reach ladders, stairs, or other devices.
- 17.2.3 **Housekeeping** – proper storage, maintenance and placement of tools, materials, equipment, and other items.
- 17.2.4 **Sanitary** – a reasonable state of cleanliness that will not cause injury or illness to employees.

17.3 Responsibility

17.3.1 Management must:

- 17.3.1.1 Provide employees with appropriate tools, materials, equipment, and other necessary items to complete assigned tasks.
- 17.3.1.2 Periodically audit jobsites, C&C vehicles, warehouses, job trailers and other areas to ensure housekeeping is maintained.

17.3.2 Supervision must:

- 17.3.2.1 Address housekeeping in job-planning sessions, THAs (Task Hazard Analysis), safety meetings and in other instances to ensure clean, sanitary, and orderly jobsites.
- 17.3.2.2 Assign an appropriate number of personnel to maintain housekeeping issues daily.
- 17.3.2.3 Continuously monitor jobsites for housekeeping issues and take corrective measures as needed.

17.3.3 Employees must:

- 17.3.3.1 Place tools, materials, equipment, debris and other items in appropriate locations, containers or assigned areas following use.
- 17.3.3.2 Notify supervision in the event housekeeping issues arise on the jobsite and take necessary measures to remedy them.

17.4 Compliance

- 17.4.1 All tools, materials, debris, equipment, and other items are to be maintained in appropriate containers, locations, or designated areas when not in use.
- 17.4.2 Jobsites shall be free of leftover wire scraps and other trash accumulated after the job is finished.

- 17.4.3 No items are to be placed or stored to block access to emergency exits/routes, fixed ladders, stairways, electrical switches, shutoff valves, fire-fighting equipment or emergency eye wash/showers.
- 17.4.4 Flammable or combustible liquids shall not be stored in areas used for exits, stairways or areas normally used for safe passage.
- 17.4.5 Exits shall be clearly marked, and safe routes established and posted in a conspicuous location.
- 17.4.6 Cabs of trucks, pickups, and the inside of C&C vehicles shall be kept free of cans, bottles, etc. Beds of pickups, service trucks, boom trucks, bucket trucks, diggers and trailers shall also be kept in an orderly manner.
- 17.4.7 Used rags, trash and spent items must be placed in proper, provided receptacles.
- 17.4.8 Combustible materials, such as oil-soaked rags, waste and shavings shall be kept in clearly marked, approved metal containers with metal lids.
- 17.4.9 Containers shall be emptied regularly, as soon as practical.
- 17.4.10 Protruding nails, metal scraps, etc. will be removed from kegs, boxes, packing cases and crates immediately, while the job is in progress.
- 17.4.11 If nails cannot be pulled from boards, they should be bent over, and the boards stacked with the bent over nails down.
 - 17.4.11.1 Only appropriate tools will be used to pull or bend nails.
- 17.4.12 Stacked materials will be cross-tied or otherwise secured, to prevent tipping.
- 17.4.13 Equipment is to be parked in an orderly manner (preferably backed in) in all yard areas.
- 17.4.14 Branch offices and yard areas shall be kept free of trash, weeds, high grass and unsightly materials stored in the open yard.
- 17.4.15 Paper and other combustible materials shall not be allowed to accumulate, and weeds or other range vegetation shall not be permitted to grow in, or around the neighborhood of pole yards, buildings, or oil tanks.
- 17.4.16 Restroom facilities shall be identified prior to work.
- 17.4.17 Access to restroom and hand-washing facilities is to be provided for every twenty employees on site.
- 17.4.18 Restroom facilities shall be maintained in sanitary condition.

18 CRANES, DERRICKS, AND HOISTING EQUIPMENT

18.1 Description

- 18.1.1 This program outlines hoisting activities which potentially could expose personnel, equipment, and property to injury and/or damage. This procedure requires all lifts to be planned to the extent necessary for the lift to be performed safely.

18.2 Definitions

- 18.2.1 **Critical Lift** – lift involving a weight that is 75% or more than the amount allowed by a particular piece of equipment on its capacity chart.
- 18.2.2 **Lifting Area** - area where the boom is likely to swing over during the lift.

18.3 Responsibility

18.3.1 Management must:

- 18.3.1.1 Provide properly working, adequate equipment for all lifts anticipated for a project.
- 18.3.1.2 Provide training for employees to operate equipment necessary to complete required lifts.

18.3.2 Supervision must:

- 18.3.2.1 Ensure equipment is adequate for the lift and that it has been inspected prior to use.
- 18.3.2.2 Establish documented lift plan and ensure communication exists between all affected employees.
- 18.3.2.3 Allow only qualified personnel to operate cranes, derricks, or other hoisting equipment.
- 18.3.2.4 Review and approve all critical lift plans.

18.3.3 Operators must:

- 18.3.3.1 Inspect hoisting equipment daily, prior to use, and document this inspection.
- 18.3.3.2 Notify supervision immediately upon discovery of defects in equipment.
- 18.3.3.3 Refuse to operate any piece of equipment that has any defect, or a condition is present that could inhibit the equipment's ability to safely make the lift.
- 18.3.3.4 Determine (via the capacity chart) whether the proposed lift is within capacity.
- 18.3.3.5 Ensure all documentation concerning the operation of the crane is always accessible.
- 18.3.3.6 Barricade the area included in the equipment's swing radius (if applicable) to keep personnel out of the area.

- 18.3.4 Ensure a qualified signal person is in place during any lift that contains an obstructed view and maintain visual contact with that person and establish signals prior to the lift.

18.4 Compliance

18.4.1 Assembly/Disassembly:

- 18.4.1.1 Assembly and disassembly of a crane shall be done only under the supervision of a competent, authorized person strictly following manufacturer's instructions.

18.4.2 Modifications:

- 18.4.2.1 Modifications, alterations, additions, or any other procedure to the crane may not be completed without written permission from the crane manufacturer or a registered professional engineer.

18.4.3 Inspections:

- 18.4.3.1 The lifting area shall be inspected prior to operations to ensure the ground will support lifting operations.
- 18.4.3.2 All functional operating mechanisms shall have a documented inspection daily, prior to working by a competent operator.
- 18.4.3.3 A competent person shall conduct documented monthly inspections.
- 18.4.3.4 Equipment not in regular use (idle for more than one month, but less than six months) shall be inspected by maintenance prior to deployment to a project.
- 18.4.3.5 Prior to use, all new and altered cranes shall receive an annual inspection of the hoisting machinery by an accredited crane examiner recognized by the U.S. Department of Labor. Records shall be kept of the dates and results of each inspection.
- 18.4.3.6 Test loads shall not be more than 125% of the rated load unless otherwise recommended by the manufacturer. Test reports shall be placed on file where readily available.
- 18.4.3.7 Documented Pre-lift certifications shall be performed on personnel platforms and suspended baskets at 125% of the basket capacity prior to lifting personnel as specified in the manufacture's operating requirements.

- 18.4.4 No crane shall be operated if any safety device is damaged, missing or otherwise not in proper working order. Cranes with these defects shall be red-tagged, and maintenance and supervision are to be notified.

18.5 Crane Safety

- 18.5.1 Report any unsafe conditions to the supervisor immediately.
- 18.5.2 Access for entry and assembly of the crane shall be free from obstructions, underground hazards, and overhead power lines.
- 18.5.3 All crane equipment and operation of crane equipment shall meet the requirements of the manufacturer, ANSI, ASME and OSHA.
- 18.5.4 Crane equipment shall have the required inspection current and available upon arrival at the job site.
- 18.5.5 Lifting beams shall conform to ANSI B30.20, 1985 regulations which requires the following permanent markings:
 - 18.5.5.1 Manufacturers name.
 - 18.5.5.2 Serial number (ID #).
 - 18.5.5.3 Weight of the bar if over 100 lbs.
 - 18.5.5.4 Rated load.
- 18.5.6 Prior to lifting activities, the area shall be inspected to prevent equipment from coming within 20 feet of power lines.
 - 18.5.6.1 If equipment must be placed so that it is possible for the line, load, or any other part of the crane to be within twenty feet of a line, the line must be de-energized or visibly grounded for unqualified workers.
- 18.5.7 No one shall place their hands or any other portion of the body under a load suspended by the crane.
- 18.5.8 No unauthorized personnel shall be working within the lifting area of the crane.
- 18.5.9 All personnel shall be clear of crawler tracks while the crane is moving.
- 18.5.10 All personnel except for the operator and oiler shall be clear of the crane rotating area during its operation.
- 18.5.11 A designated signal person shall provide directions to the operator using the standard hand signals or radio communications.
- 18.5.12 Operators shall not leave their position at the controls of cranes, hoists, derricks, or other lifting devices while the load is suspended.
- 18.5.13 The manufacturer's load chart shall be affixed to the crane or located in the operator's cab accessible to the operator.
- 18.5.14 When pick and carry operations occur, the ground shall be smooth, level, and compacted, free from obstructions, underground hazards, and overhead power lines.
- 18.5.15 Jib and boom shall be free from structural damage that exceeds the manufacturer's maximum allowable tolerances.

- 18.5.16 Anti-two-blocking device shall be functional and operational on all cranes equipped with such device.
- 18.5.17 No crane shall be operated in wind speeds that exceed 35 mph or the manufacturer's recommendations whichever is the lesser wind speed.
- 18.5.18 No crane using a suspended personnel platform or basket shall be operated in winds that exceed 20 mph or the manufacturer's recommendations.
- 18.5.19 Where surface area of material being lifted creates a sail affect, the crane may be required to cease operating at lower wind speeds than stated.
- 18.5.20 No person shall disable or circumvent a safety device while the crane is performing lifting service.
- 18.5.21 Tag lines should be used to stabilize loads.

18.6 Critical Lifts

- 18.6.1 A critical lift is established where any one of the following conditions are created:
 - 18.6.1.1 Where in the crane's current configuration at any point during the lift, a gross load weight exceeds 75% of the capacity of the crane.
 - 18.6.1.2 A single lift when two or more cranes are used.
 - 18.6.1.3 Hoisting of suspended work platforms with personnel.
- 18.6.2 Any lift should also be designated as critical if the load requires exceptional care in handling because of its size, weight, close tolerance to obstructions, high susceptibility to damage or other unusual features or if there is an unacceptable risk of personal injury or significant adverse health impact.

18.7 Critical Lift Plan

- 18.7.1 Where a critical lift will be performed, a written critical lift plan shall be submitted to the Superintendent prior to commencing with the lift. The written plan shall include the following:
 - 18.7.1.1 Crane manufacturer, capacity, and all specifications for the configuration to be used for the lift.
 - 18.7.1.2 Load chart data for the crane to be used to make the lift.
 - 18.7.1.3 Total calculated weight of the load to be lifted including all rigging and other deductions consistent with the manufacturer's load chart.
 - 18.7.1.4 Diagrams of the lift that provide geometrical conditions of the load, rigging, and all crane positions during the lift.
- 18.7.2 Method by which communication will be provided to the crane operator. (Designated signal person, two-way radio, hard wire phone system, etc.)
- 18.7.3 A critical lift hazard analysis which identifies the hazards associated with the lift and the means and methods to reduce, mitigate, or eliminate the hazards.

- 18.7.4 The written plan shall be submitted prior to any critical lift for review and approval by the Supervisor. No critical lifts shall be conducted prior to such approval.
- 18.7.5 A pre-lift meeting involving participating personnel shall be conducted before making a critical lift. The critical lift plan/procedure shall be reviewed with all personnel involved with the lift and questions shall be resolved.
- 18.7.6 Only designated, qualified signalers shall give signals to the operator. However, the operator shall obey a STOP signal always, no matter who gives the signal.
- 18.7.7 An initial lift of the load will be made, and the weight of the load will be read on the Load Moment Indicator (LMI) and documented on the lift plan. If the reading shows a weight that is heavier than what has been calculated on the critical lift plan, the lift will be canceled. The critical lift plan must then be recalculated using the actual weight shown on the LMI. If the reading shows a weight that is less than what has been calculated on the critical lift plan, the lift may continue. The actual weight will still be documented on the critical lift plan.

18.8 Operator Qualification

- 18.8.1 All persons who operate hoisting equipment shall have received required training for the type of equipment and lifts being performed.
- 18.8.2 Training shall be performed by a qualified training entity.
- 18.8.3 Training will be conducted as often as is required.
- 18.8.4 Re-training of employees will be conducted should requirements change; in the event an employee displays a need for re-training or following an at-fault incident resulting from improper use of hoisting equipment.

19 RIGGING

19.1 Description

- 19.1.1 This program outlines procedures for performing safe, effective rigging operations to ensure loads are stable and do not cause harm to personnel or property.

19.2 Responsibility

- 19.2.1 Management must:
 - 19.2.1.1 Provide adequate rigging equipment for assigned tasks
 - 19.2.1.2 Employees directed to perform rigging operations shall receive training prior to being assigned any task involving these.
 - 19.2.1.3 Periodically audit rigging equipment used on jobsites and note any deficiencies to supervision.

19.2.2 Supervision must:

- 19.2.2.1 Ensure rigging equipment is being inspected prior to use.
- 19.2.2.2 Observe employees and ensure proper rigging procedures are known and being used in lifting operations.
- 19.2.2.3 Regularly inspect rigging equipment for current inspections and damaged items.
- 19.2.2.4 Destroy and remove from service any item that is damaged or otherwise unfit for rigging operations.

19.3 Compliance

19.3.1 Inspection:

- 19.3.1.1 All slings, hoists, fasteners, and attachments shall be inspected daily, prior to use.
 - 19.3.1.2 Any item not displaying the current inspection tag must be removed from service.
 - 19.3.1.3 Hand lines shall be inspected before they are used. Hand lines shall be available and used on all aerial equipment when going aloft except during live line barehand work.
 - 19.3.1.4 Hand lines should always be kept dry. When not in use, hand lines should be made up into coils and stored properly.
 - 19.3.1.5 All rigging equipment shall have a documented annual inspection performed by a qualified individual.
- 19.3.2 Tags indicating the load rating must be affixed to chains and all slings.
- 19.3.3 All rigging equipment shall be of sufficient strength, proper type, and safe for its intended use.
- 19.3.4 Rigging equipment including stringing lines, pulling lines, conductor grips, load baring hardware and accessories, and hoists shall not be loaded beyond its rated capacity.
- 19.3.5 Makeshift lifting devices shall not be used.
- 19.3.6 Slings shall not be shortened with knots, bolts, or other makeshift devices.
- 19.3.7 Slings used in a basket hitch shall have the load balanced to prevent slippage.
- 19.3.8 Slings shall be securely attached to the load by the use of hooks with retaining devices or the use of shackles or another positive latching device.
- 19.3.9 Slings shall be padded or protected from the sharp edges of their loads.
- 19.3.10 A sling shall not be pulled from under a load when the load is resting on the sling.
- 19.3.11 Slings shall be long enough to provide the maximum practical angle between the sling leg and the horizontal plane of the load.
- 19.3.12 Shackle pins shall never be replaced with bolts or other non-approved devices.
- 19.3.13 Only hooks with approved retaining devices shall be used. The load shall be securely seated in the saddle of the hook.
- 19.3.14 When eye bolts are used, care shall be taken to ensure that bolt is not side loaded.

19.4 Rebar Cage Rigging

19.4.1 Anchorage Points:

19.4.1.1 When selecting the proper anchorage point for rigging, employees shall place all lifting stress on the vertical bars (not the horizontal rings).

19.4.1.2 Inspect all below-the-hook lifting devices for signs of defect or damage. Supervision, or the competent person, will determine whether damage allows lift to continue.

19.4.2 Safety latches are required on all hooks.

19.4.3 Verify the total load weight and assure all below-the-hook devices are adequately rated to support the load weight.

19.4.4 Determine center of gravity.

19.4.5 Chain should be used when rigging a rebar cage. Should nylon slings be used, softeners between the steel and sling must be in place to avoid wear.

19.5 Lifting Operations

19.5.1 A pre-lift meeting involving participating personnel shall be conducted before making a lift. The lift plan shall be reviewed with all personnel involved.

19.5.2 Only trained, qualified signalers shall give signals to the operator. However, the operator shall always obey a STOP signal, regardless of who gives the signal.

19.5.3 Rigging attachment points shall be inspected prior to lift.

19.5.4 No loads should be lifted over personnel.

19.5.5 No one shall place their hands or any other portion of the body under a load suspended by the crane.

19.5.6 No unauthorized personnel shall be working within the lifting area of the crane.

19.5.7 Tag lines should be used on all loads.

20 POLE HANDLING AND INSPECTION

20.1 Description

20.1.1 This program provides direction in the hauling, storage, setting and removing of poles.

20.2 Responsibility

20.2.1 Supervision must:

20.2.1.1 Ensure pole handling operations are pre-planned (THA).

20.2.1.2 Delineate a safety zone or otherwise isolate area where poles are being handles to keep out unauthorized personnel.

20.2.1.3 Monitor pole handling activities to ensure compliance.

20.2.2 Employees must:

20.2.2.1 Read and understand the THA (Task Hazard Analysis).

20.2.2.2 Stop work in the event there is a deviation from the planned method.

20.2.2.3 Monitor pole handling activities to ensure compliance.

20.3 Compliance

20.3.1 Pole Hauling and Temporary Storage:

20.3.1.1 If it becomes necessary to store poles at the location where they are to be set, they shall be so placed that they will not interfere with traffic.

20.3.1.2 If poles left on or near streets, highways or walkways overnight create a hazard, they shall be safeguarded by red lights or well –lighted warning signs.

20.3.1.3 Poles, loaded on a truck or trailer, shall be securely fastened in at least two places.

20.3.1.4 Employees shall not ride pole dollies or trailers.

20.3.1.5 The wheels of the transporting vehicle shall be blocked or securely braked prior to loading or unloading.

20.3.1.6 Confirm weight of poles prior to handling to not overload equipment.

20.3.1.7 Pole Tongs are strictly prohibited.

20.3.2 Setting and Removing Poles:

20.3.2.1 If any holes are left unfilled and/or unattended, they shall be protected with proper coverings. Refer to 10.4.11 through 10.4.13

20.3.2.2 All persons not engaged in pole-setting operations shall keep out of the work area.

20.3.2.3 While setting or removing poles between or near conductors energized above 600 volts observe the following:

20.3.2.3.1 If safety clearance cannot be maintained, the conductors shall be de-energized or covered with protective devices and spread, or pole guards shall be used.

- 20.3.2.3.2 Workers handling the butt of the pole shall wear rubber gloves whether or not cant hooks, peaveys, or slings are used.
- 20.3.2.3.3 Ground wires shall not be attached to the pole higher than ten feet from the ground.
- 20.3.2.4 Employees shall not stand or pass under a suspended load or adjacent to or over or under a loaded winch line.
- 20.3.2.5 Employees engaged in handling or working on poles shall wear suitable gloves and long sleeves.
- 20.3.2.6 When removing poles ensure the manufacturers recommendations for hoisting equipment is followed.
- 20.3.2.7 When poles are set, moved, or removed near exposed energized overhead conductors, the pole may not encroach the minimum approach distance.

20.4 General

- 20.4.1 The following is a procedure for inspecting and testing pre-set poles and structures. All wood poles require inspection, sounding and probe/prod testing to confirm that they are in sound and in good condition. This includes poles that will be climbed, experience a load change (even if worked from an aerial device) or have a ladder placed against them. All concrete and metal poles and structures require inspection for any signs or instability.
- 20.4.2 NOTE: If there is any doubt about the structural integrity of a pole or structure, it must not be climbed or worked unless it can be secured.

20.5 Climbing Requirements

- 20.5.1 To be considered for climbing, a pole **must** meet inspection, sounding and prob/prod testing requirements.
 - 20.5.1.1 C&C employees shall not climb poles that cannot be tested.
 - 20.5.1.2 C&C employees shall not climb poles during any work that could create a shock load, such as cutting and lowering conductors without rigging.
 - 20.5.1.3 C&C employees shall, during any load shift, watch the top of the pole for signs of breakage and unusual deflection.
 - 20.5.1.4 C&C employees shall sound and probe/prod the pole before climbing.
 - 20.5.1.5 C&C employees shall not climb any customer-owned meter pole unless the depth is confirmed prior to attempting the climb.
 - 20.5.1.5.1 No ladder will be put against a temporary meter structure unless all supports for the structure are secured to driven stakes.
 - 20.5.1.6 When a new pole is set next to an old pole, C&C employees will tie or lash the old pole to the new pole to ensure integrity, whether the old pole is suspected of decay.
 - 20.5.1.6.1 The new pole will be climbed when possible.

20.6 Wood Pole Inspection

20.6.1 Wood poles require an inspection before climbing, working, or changing load.

20.6.1.1 C&C employees will visually inspect all poles for any of the following signs of instability.

20.6.1.1.1 Decay, loose soil, green growth, damp conditions or other signs of possible weakness in the surrounding soil.

20.6.1.1.2 Runoff that has saturated poles with water, accelerating decay. (Landscape erosion).

20.6.1.1.3 Wood separation, bird holes, rot, cracks and burn marks.

20.6.1.1.4 Rust or rot in guy wires and anchor rods that are attached to the pole or structure.

20.6.1.1.5 Any sign of instability in adjacent poles and structures.

20.6.1.1.6 Any slack in guy wires, which could indicate that anchor rods have pulled up out of the ground.

20.7 Determining Pole Setting Depth

20.7.1 When the pole's appearance indicates that soil around the pole has been removed, C&C employees **must** determine whether the pole is set at the proper and will:

20.7.1.1 Observe signs that the soil has been removed include discoloration and water marks toward the base of the pole.

20.7.1.2 In most soil conditions, poles must be set at a depth of at least 10% of their total length, plus 2 ft. For depth requirements in specific soil conditions, refer to engineering standards.

20.7.1.3 Use the pole brand that identifies the pole length to determine the pole's setting depth.

20.7.1.3.1 Observe the pole brand to assure that it is stamped 10 to 13 ft. from the butt of the pole.

20.7.1.3.2 Observe for a legible pole brand and refer to available engineering documentation or job drawings for pole details.

20.7.1.3.3 Question the depth at which the pole is set, measure the pole from its top to the ground. Subtract the length of the pole above ground from the total length specified on the pole brand to determine the setting depth.

20.7.1.3.3.1 Refer to available engineering documentation for job drawings for pole details as needed.

20.8 Wood Pole Sounding

20.8.1 After the inspection, sound the pole.

20.8.1.1 To sound the pole, C&C employees will strike it with a hammer, starting at the ground line and continuing upward to a height of 6 ft. (See Figure 1).

20.8.1.2 C&C employees will strike the pole in each quarter section at 2- to 3-ft intervals.

20.8.1.2.1 A sturdy pole should give a solid or ringing sound when struck and the hammer should rebound sharply from each strike.

20.8.1.2.2 A dull sound or weak rebound indicates decay.

20.8.1.2.3 Debris trickling when sounding indicates the core of the pole is unsafe.

Figure 1 Sounding a Pole



WARNING Sounding a frozen pole could give a solid sound even though the pole is weak. Always dig around the base of frozen poles to facilitate probing.

20.8.2 NOTE: Sounding is only effective for testing the part of the pole that is above ground or near the surface grade. Sounding is not effective for detecting rot below the ground. The probe/prod test helps determine pole integrity below the ground.

20.9 Probe/Prod Testing

20.9.1 After completing the inspection and sounding of the pole, C&C employees should complete probe/prod testing with an approved probing tool as follows:

20.9.1.1 Probe downward through the soil, into the pole, keeping continuous pressure on the probing tool (Figure 2).

20.9.1.2 Probe the pole in at least four points in each quarter section of the pole, from the ground line to 6 in. below ground.

Figure 2
Probe/Prod Testing



- 20.9.1.3 NOTE: If the pole has any underground facilities, make sure that the probing tool will not penetrate any cables before starting probe/prod test.
- 20.9.1.4 NOTE: If the ground or the pole is frozen, dig around the base of the Pole to remove frozen soil. The slide-hammer probing tool is available to facilitate probing in frozen conditions.
- 20.9.1.5 If the probing tool penetrates the pole with little pressure, there may be decay below ground
 - 20.9.1.5.1 Additional safety checks are required.
 - 20.9.1.5.2 Declare the pole unsafe if there is substantial decay above or below ground.
- 20.9.1.6 If decay is suspected, C&C employees should continue with the following safety checks:
 - 20.9.1.6.1 Dig completely around the pole to a depth of 18 in.
 - 20.9.1.6.2 Probe the pole with a probing tool to determine the pole's condition
 - 20.9.1.6.3 Decay shall be confirmed under either of the following conditions:
 - 20.9.1.6.3.1 The probing tool penetrates with minimal pressure or a sudden lack of resistance (e.g., core rot.)
 - 20.9.1.6.3.2 There is visual evidence of substantial decay above or below ground, as shown in Figure 3

Figure 3
Chart for Extent of Decay

	Distribution-class poles; a hole of more than 4-in. diameter or multiple holes with diameters of more than 2 in. Transmission-class poles: a hole of more than 4-in. diameter or multiple holes with diameters or more than 3 in. Poles (whether distribution or transmission) with rot all the way around the below-ground surface area.
--	--

WARNING Do not climb poles with substantial rot without supplemental support. Brace or reinforce the pole or use alternate methods and equipment before climbing or performing the required work.

20.10 Weathered and Aged Poles

20.10.1 If a pole shows signs of age and extreme weathering, C&C employees will dig completely around the pole to a depth of 18 in. and probe the pole with a probing tool to determine the pole's condition.

20.10.2 **NOTE:** Inspect sound and probe/prod all wood poles thoroughly. Age is not the best indicator of stability.

20.11 Supplemental Methods of Support

20.11.1 C&C employees **must not** climb or perform work on poles that fail any of the inspection, sounding or probe/prod testing until one or more of the following supplemental methods for support have been installed:

20.11.1.1 A truck boom using the winch, sling, and pole grabber (not grabbers only.)

20.11.1.2 Tying or lashing an old pole to a new pole.

20.11.1.3 A steel pole brace.

20.11.1.4 Temporary rope guys.

20.11.1.5 **NOTE:** Poles may need to be guyed from multiple angles.

20.12 Testing Poles Surrounded by Concrete or Asphalt

20.12.1 When testing poles that are surrounded by concrete or asphalt, insert the probing tool through the gap between the concrete or asphalt surface and the pole.

20.12.1.1 When no gap exists, remove a small section of concrete or asphalt so that it is possible to use the probing tool.

20.13 Testing Poles in Standing Water

20.13.1 Use an approved probing tool to test poles in standing water to probe/prod the pole below the surface of the water and underground.

20.13.1.1 A T-handle fiberglass probe can be used and extended with approved attachments.

20.14 Pole Top Extensions (PTX)

20.14.1 When work is required on a distribution pole with a pole-top extension (PTX), C&C employees will not climb the PTX unless they have confirmed that the PTX is safe to climb.

20.14.1.1 Check transmission poles with wooden bayonets holding the static thoroughly for rot.

20.14.1.1.1 Sound the wood and tighten the through-bolts before climbing.

20.15 Inspecting Concrete and Metal Poles and Structures

20.15.1 Inspection includes:

20.15.1.1 Checking footings and pads for cracks, erosion, and signs of rust.

20.15.1.2 Confirming that bolts and other anchor methods at the base are tight and free of rust, corrosion, and rot.

20.15.1.3 Checking guy wires and anchor rods that are attached to the pole or structure for any signs of rust or rot.

20.15.1.4 Inspecting the surrounding soil for decay, loose soil, green growth, damp conditions or other signs of possible weaknesses in the surrounding soil.

20.15.1.4.1 Landscape should be carefully observed as runoff can collect around the bases of metal poles and structures, accelerating decay or rust.

20.15.1.5 Checking for any sign of instability in adjacent poles and structures.

20.16 Marking Unsafe Wood Poles

20.16.1 After a pole is deemed unsafe to climb or work, C&C employees will mark the pole to identify the condition which will assist crews locate it for replacement. (See Figure 4)

Figure 4 Do Not Climb Tag



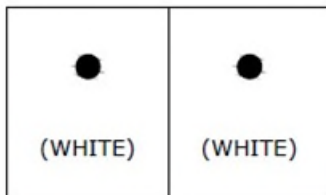
20.16.2 Ground line treatment (GLT) contractors must mark poles with one of the following methods:

20.16.2.1 Reject P1 (Figure 5): nail two white tags under the pole tag or on the roadside of the pole for poles that were not treated.

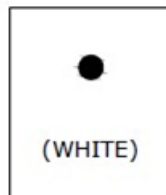
20.16.2.2 Reject P2 Pole (Figure 6): nail a single white tag under the pole tag or on the roadside of the pole for poles that were not treated.

20.16.2.3 Reject P3 and P4 Poles (Figure 7): nail a yellow tag under the pole tag for poles that are candidates for reinforcement.

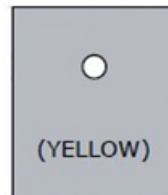
20.16.2.4 Nail a dated GLT tag for poles that have been treated (Figure 8).



**Figure 5
Tag for Reject
P1 Pole**



**Figure 6
Tag for Reject
P2 Pole**



**Figure 7
Tag for Reject
P3 & P4 Poles**



**Figure 8
Tag for Treated
Poles**

20.17 Testing Wood Poles for Multiple-Day Projects

- 20.17.1 On projects that last for more than 1 day (multiple-day projects), poles must be visually inspected each day. Existing poles must receive sounding and probe/prod testing on the first day they will be worked.
- 20.17.2 C&C employees must verify that sounding and probe/prod testing was performed on the first day an existing pole was worked, sounding and probe/prod testing are required.

21 ENCLOSED AND CONFINED SPACES

21.1 Description

- 21.1.1 The enclosed and confined spaces program provides direction to C&C employees in the identification of enclosed and confined spaces. C&C employees typically are not permitted to enter enclosed and confined spaces but may do so provided specific training is provided to supervisor, attendant(s), and entrants. The Safety department will also provide specific procedures in the event entry is required.

21.2 Definitions

- 21.2.1 **Attendant** – employee positioned at the entrance of an enclosed or confined space that monitors movement and evaluates the space conditions.
- 21.2.2 **Enclosed and confined spaces**– an area that (1) is large enough for an employee to enter and perform assigned tasks, (2) has limited means of entry or exit, (3) is not designed for continuous occupancy or exhibits any other recognized safety or health hazard.
- 21.2.3 **Enclosed Space** - Manholes, vaults, etc. that contain operating transmission and distribution equipment where the only potential hazards in the manholes and vaults are electrical.
- 21.2.4 **Entrant** – employee(s) trained and assigned to enter enclosed and confined spaces to perform tasks.
- 21.2.5 **Entry** – occurs at the point any part of an entrants' body breaks the plane of the entrance to a confined space.
- 21.2.6 **Hazardous Atmosphere** – condition that may exist in enclosed and confined spaces where a contaminant is present more than the established limits according to SDS, OSHA or client requirements. An atmosphere that contains less than 19.5% oxygen is also considered hazardous.
- 21.2.7 **Permit-Required** – enclosed and confined spaces as defined above that also may include a hazardous atmosphere or is configured in a manner that may cause an entrant to be engulfed or entrapped and requires a written permit to enter.
- 21.2.8 **Rescue** – system designed in advance of entry that allows for retrieval of an employee who cannot escape from an enclosed and confined spaces unaided.
- 21.2.9 **Supervisor** – trained, competent employee who oversees all enclosed and confined spaces entry operations.

21.3 Responsibility

- 21.3.1 Management must:
 - 21.3.1.1 Provide employees with training designed to allow for identification of confined or enclosed spaces.
 - 21.3.1.2 Instruct employees to not enter enclosed and confined spaces unless specific training and procedures are provided.

21.3.2 Supervision must:

- 21.3.2.1 Evaluate jobsite and identify any suspected enclosed and confined spaces and indicate their presence on the THA (Task Hazard Analysis) or other document and communicate to all employees.
- 21.3.2.2 Develop work procedures that allow for assigned tasks to be completed without entering a confined space.
- 21.3.2.3 Monitor jobsites to ensure enclosed and confined spaces are identified and not entered.
- 21.3.2.4 If entry into an enclosed and confined space is required to perform assigned tasks, contact safety department, management, and client representatives to plan for and conduct training

21.3.3 Employees must:

- 21.3.3.1 Identify areas that have characteristics of enclosed and confined spaces and notify supervision immediately upon discovery.
- 21.3.3.2 Not enter any area suspected to be an enclosed and confined spaces unless specific training has been conducted and job procedures outlined and communicated.

21.3.4 Safety Department:

- 21.3.4.1 Assist supervision to formulate job procedures that allow for completion of work without entering confined space.
- 21.3.4.2 Should entry be required, facilitate training for all affected employees to allow for safe entry and exit of enclosed and confined spaces.
- 21.3.4.3 Evaluate and approve enclosed and confined spaces entry permit that may be required as a result of entry.

21.4 Compliance

- 21.4.1 An enclosed and confined space Entry Permit must be completed and approved by the supervisor and client representative (as required) before any employees may enter a confined space.

21.4.2 Training:

- 21.4.2.1 Every employee at C&C who faces the risk of confined space entry is provided with training so that each designated employee acquires the understanding, knowledge, and skills necessary for the safe performance of the duties assigned to them.
- 21.4.2.2 The Safety Department ensures that all employees who enter permit-required confined spaces are properly trained. Specific job requirements dictate who will need confined space training.

21.4.3 Rescue and Emergency Services

- 21.4.3.1 Rescue and emergency services will be one of two methods. An outside source such as fire rescue or equivalent, or C&C trained employees. Only authorized and trained

personnel shall perform a rescue in the event of an emergency. These personnel will have training in the following as a minimum to:

- 21.4.3.1.1 Perform the assigned rescue duties.
 - 21.4.3.1.2 Correctly use personal protective equipment (PPE) required for the job.
 - 21.4.3.1.3 Establish proficiency as an authorized entrant.
 - 21.4.3.1.4 Perform basic first aid and cardiopulmonary resuscitation (CPR).
 - 21.4.3.1.5 C&C ensures that at least one member of the rescue team holds a current certification in first aid and CPR.
- 21.4.4 All entrants must be informed of the potential hazards and results of atmospheric monitoring and must participate in the permit review and signing. Enclosed and confined spaces Entry Permits shall include, at a minimum:
- 21.4.4.1 Identification of space covered.
 - 21.4.4.2 The purpose of the entry.
 - 21.4.4.3 The date and time of entry.
 - 21.4.4.4 Duration of the permit.
 - 21.4.4.5 Identification of authorized entrants.
 - 21.4.4.6 Identification of authorized attendants.
 - 21.4.4.7 Identification of authorized supervisor.
 - 21.4.4.8 Special Permits required (hot work, etc.)
 - 21.4.4.9 Emergency contact information.
 - 21.4.4.10 Hazards present, or potentially present in a space and control measures, including:
 - 21.4.4.10.1 Energy-control methods in place.
 - 21.4.4.10.2 Limited egress from work area.
 - 21.4.4.10.3 Oxygen-deficient atmospheres.
 - 21.4.4.10.4 Accumulation of toxic or flammable gases, vapors, or dusts.
 - 21.4.4.10.5 Exposure to high temperatures.
 - 21.4.4.10.6 Physical hazards such as engulfment, electric shock, noise, moving machinery, and falls
 - 21.4.4.10.7 Toxic materials which could be present and their permissible exposure limits.
 - 21.4.4.10.8 Tools and equipment required that have been inspected and working properly.
 - 21.4.4.11 A checklist of precautions to be taken prior to and during enclosed and confined spaces entry shall include:
 - 21.4.4.11.1 Notification of departments/operations likely to be affected by the work.
 - 21.4.4.11.2 Signs and barriers installed as needed.

- 21.4.4.11.3 Atmosphere Tested: Initially and periodically throughout each shift. The person evaluating the atmosphere must be trained and qualified to perform this operation.
- 21.4.4.11.4 Oxygen Content: The oxygen content must not drop below 19.5% or exceed 23.5%.
- 21.4.4.11.5 Presence of Flammable or Combustible Vapors or Gases: If the atmosphere contains 10% or more of the LFL (Lower Flammable Limit) of a substance, the entry will be stopped, and control measures placed before re-entry may occur.
- 21.4.4.11.6 Safe Means of Egress: Establish clear, unobstructed access in and out of the work area.
- 21.4.4.12 At least one attendant shall be positioned outside the permit space into which entry is authorized for the duration of entry operations.
 - 21.4.4.12.1 If multiple spaces are to be monitored by a single attendant, include in the permit the means and procedures to enable the attendant to respond to an emergency affecting one or more of the permit spaces being monitored without distraction from the attendant's responsibilities.
 - 21.4.4.12.2 This program does allow for a single attendant to cover multi-employer entrants in the confined space. Supervision will ensure effective communication exists with all contractors involved.
- 21.4.4.13 Positive Means of Communication: Establish a positive means of communication between workers in the enclosed and confined spaces and personnel on the outside. There should be visual and/or voice contact between the workers. Radios or video equipment may be required.
- 21.4.4.14 Emergency and Rescue Procedures: Equipment, personnel, and procedures must be ready and available for emergency or rescue efforts before entry.
- 21.4.4.15 Employees involved with the entry shall review emergency plans before entry begins and must know the methods of rescue and the types of equipment to be used.
- 21.4.4.16 Entrants shall leave the space at once if ordered by the attendant, or if he develops any signs and symptoms of over exposure to materials or conditions.
- 21.4.4.17 Adequate illumination shall be provided to employees who will be working on or near exposed live parts or equipment.
- 21.4.4.18 Shields, barriers, or other insulation materials shall be provided to employees who will be working near electrical hazards.
- 21.4.4.19 All atmospheric testing devices shall be calibrated per manufacturer's recommendation.
- 21.4.4.20 Upon the introduction of new hazards all work shall be paused, and workers shall gather outside of the confined space to review the additional hazards. All applicable documentation shall be updated to reflect the new hazards and appropriate mitigation measures.

21.4.4.21 Upon completion of task(s) Confined Space Permits shall be terminated in accordance with client policy and local regulations.

21.4.5 Confined Space Permits are valid for the work period or work shift and become void and shall be reissued when:

21.4.5.1 There is an unplanned interruption in the work process

21.4.5.2 The surrounding conditions change that introduce a new hazard

21.4.5.3 Workers leave the space to perform other work

21.4.5.4 The workspace is left unattended

21.4.5.5 The work period (normal time a worker or crew is scheduled to work during that day) ends

21.4.5.6 When new crew assumes the work assignments of the existing work crew

21.4.5.7 Permits are not void during any single work period when crew members are added to the existing crew or when crew members are replaced on a planned rotational basis and the provisions of the permit are met including training and instructions. All new crew members will need to be informed of the work being performed and review the task hazard analysis.

21.4.5.8 Permits become void when the scope of work exceeds the definition of work defined on the permit, and when work is required to be completed that is not covered by the permit.

21.4.5.9 Confined Space Permits shall be posted at the confined space work area until the work is completed. At the conclusion of work, the permit shall be returned to the issuer (i.e., Entry Supervisor, client, etc.).

21.4.5.10 Completed confined space permits shall be kept for a minimum of 12 months and until a review of the confined space permit program is completed.

21.4.6 Atmospheric Testing

Atmospheric conditions of a confined space shall be tested with calibrated equipment prior to entry of workers and as identified by the Initial Evaluation of Confined Spaces. Atmospheric testing shall be completed as indicated below and recorded on the Entry Permit:

21.4.6.1 Oxygen content shall be tested. The acceptable range is 19.5 to 23.5 percent.

21.4.6.2 Test for combustible gas and vapors. Acceptable range is 0 to 10 percent of the Lower Flammable Limit (or Lower Explosive Limit). Record readings on the Entry Permit.

21.4.6.3 Check for toxic gases and airborne combustibles (i.e., dusts) as identified by the initial determination of confined spaces.

21.4.6.4 Entrants and/or attendants may request additional monitoring at any time.

21.4.6.5 Gas Monitoring **DEFINITIONS**

21.4.6.5.1 Zero (fresh air) Calibration – This is done in a clean atmosphere of 20.9% oxygen and no detectable VOC, toxic, or combustible gases. It is used to set the zero point for each sensor.

21.4.6.5.2 Span Calibration – is the set of operations that establish, under specified conditions, the relationship between the values of quantities indicated by a measuring instrument and the corresponding values realized by given standards. Note: Refer to the gas bottle label for specific values.

21.4.6.5.3 Bump Testing – Ensures that all sensors are reading accurately according to the set values of the gas being applied. Note: Refer to the gas bottle label for specific values.

21.4.6.5.4 STEL – Short Term Exposure Limit

21.4.6.5.5 TWA – Time Weighted Average

21.4.6.5.6 LEL – Lower Explosive Limit

21.4.6.6 PROCEDURES

21.4.6.6.1 Zero Calibration

After the gas monitor is turned on in a safe, well ventilated, clean air environment, and is in operation mode, the oxygen sensor should read 20.9%. All other sensors should read 0. If this not the case, zero calibration should be performed. Refer to the manufacturer's reference guide for proper procedure. A calibration log shall be maintained in accordance with manufacturers recommendations and when applicable for use.

21.4.6.6.2 Span Calibration

All monitors shall be calibrated according to the manufacturer's recommendations. Refer to the manufacturer's reference guide for proper calibration procedures. A calibration log shall be maintained in accordance with manufacturers' recommendations and when applicable for use.

21.4.6.6.3 Bump Testing

All gas detection monitors shall be bump tested daily or prior to each use. Refer to the manufacturer's reference guide for proper bump testing procedure. Each Bump Tests will be documented and recorded on The Company logs.

21.4.6.6.4 Alarm Values

Peak, STEL, and TWA values shall be set to meet or exceed the OHS regulations for the specific gases that are being monitored. Alarm levels for LEL's shall not exceed 10%.

Alarm values shall meet site specific requirements that exceed OHS regulations.

21.4.6.6.5 Servicing and Maintenance

Service and maintenance should be performed by competent and trained personnel. Documentation will be kept for all gas detection monitors and maintained in specified locations of The Company.

21.4.7 Cellars/Bell Holes

- 21.4.5.1 Cellars around producing wells must be covered or filled. Adequate footing should be provided when work is being done at floor level over an uncovered cellar.
- 21.4.5.2 At least two trained employees shall be present when digging a bell hole, holes are four feet deep or deeper or hydrocarbons have been present.
- 21.4.5.3 When working in a bell hole where Hydrogen Sulfide (H₂S) or hydrocarbons are present, workers should be equipped with retrieval devices. Hot work and Entry Permits must be issued where needed.
- 21.4.5.4 When working in excavations more than four feet deep, a competent person must inspect the space for potential hazards and establish appropriate protective systems.

21.4.8 Transformers

- 21.4.6.1 Before entering a transformer that has been sealed, employees shall ventilate with forced air until the proper atmospheric conditions are obtained by testing. Tests should be conducted continuously throughout maintenance activity to assure air quality.

22 EXCAVATIONS

22.1 Purpose

- 22.1.1 This program establishes procedures for opening, protecting, and working around excavations to prevent unauthorized personnel from having access and protect employees from hazards associated with open excavations.
- 22.1.2 When employees must enter ditches, holes, and trenches over five (5) feet in depth they must be shored, sloped, or other protective means shall be used.
- 22.1.3 Trenches less than five (5) feet in depth shall be considered effectively protected when examination reveals no hazardous ground condition, or the angle of repose is such that no caving can occur.

22.2 Definitions

- 22.2.1 **Barricade** – warning device or other item used to alert personnel to the existence of an open excavation. Barricades shall be at least six feet (if practical) from the edge of the excavation or erected so as to prevent access to the excavation.
- 22.2.2 **Competent Person** – employee with sufficient training or experience to recognize hazardous characteristics of an excavation, establish protective systems or control measures for those characteristics and has the authority to alter or stop the job to make necessary changes.
- 22.2.3 **Protective System** – sloping, shoring, benching, or use of a trench box to prevent a cave-in.
- 22.2.4 **Unconfined Compressive Strength (UCS)** – measurement of soil that demonstrates its cohesiveness. Expressed in tons per square foot (TSF), the higher the rating the less likely it is to produce a cave-in.
- 22.2.5 **Pre-Dig Checklist**- A standardized document used to aid in identifying all potential underground utilities prior to excavation.

22.3 Responsibility

- 22.3.1 Management shall ensure a trained, competent person is available to inspect any excavation that may be entered by C&C employees.
- 22.3.2 Supervision shall not allow any employee to enter an excavation that has not been inspected by a competent person and appropriate protective measures have been implemented.

22.4 Compliance

- 22.4.1 Before an excavation, installing castings, or earth-moving activities are performed, a call shall be made to the proper authority. (One-Call system for dig permits in the state where the work is being performed.) A confirmation number shall be obtained and logged. Individual owners of underground utilities who are not members of the call center shall also be contacted. In addition to the above requirements, a PCA Pre-Dig Checklist process must commence. This living document records the location, type, and status of identified utilities and must be completed in real-time as utilities are identified and verified. The Pre-Dig Checklist must be consulted prior to

commencing excavation activities to ensure all necessary precautions have been taken. PCA provides both electronic (Safety Culture) and paper versions of this document. The Safety Culture version of this document is required unless otherwise directed by the host utility. in order to aid in the identification of existing underground utilities.

- 22.4.2 Excavations shall be inspected by a competent person daily and immediately following a change in conditions (rain, etc.) prior to any employee entering. A competent person shall select the protective systems for excavations less than 20 feet deep. A registered professional/engineer shall select protective systems for excavations at 20 feet or greater in depth.
- 22.4.3 All C&C supervisors are competent persons.
- 22.4.4 Unattended excavations must be adequately barricaded and marked with a warning sign or covered with planks strong enough to prevent personnel from falling or stepping into them.
- 22.4.5 If the competent person concludes the potential for a cave-in exists, and the excavation is less than four feet deep, appropriate protective systems shall be placed prior to employee entry.
- 22.4.6 Excavations four feet or more in depth shall have a safe means of egress (ladder, ramp) placed to require no more than 25 feet of lateral travel for employees to reach it.
- 22.4.7 The competent person shall determine soil classification:
 - 22.4.7.1 Class A Soil: stable rock or cohesive soil that does not present cave-in potential. Soil that has been previously disturbed, is fissured (cracked), is subject to vibration from heavy equipment or other traffic is not considered Class A.
 - 22.4.7.2 Class B Soil: Angular gravel, crushed rock or previously disturbed or fissured soil that normally would be considered Class A.
 - 22.4.7.3 Class C Soil: Granular, submerged or previously disturbed soils.
- 22.4.8 Should an excavation be in immediate proximity of public vehicular traffic; appropriate traffic controls shall be in place to protect employees. All employees shall wear local DOT compliant Class 2 or 3 high-visibility clothing when working near public roadways.
- 22.4.9 No employee may be present in an excavation while digging operations are underway.
- 22.4.10 Should there be potential for a hazardous atmosphere to be present in the excavation, or accumulate during operations, a trained operator shall perform an air-quality test prior and during any employee entering the excavation.
 - 22.4.10.1 Should a hazardous atmosphere be present in an excavation, no employees may enter until appropriate control measures are in place. Emergency rescue equipment must be readily available where hazardous atmospheric conditions exist or can reasonably be expected to develop.
- 22.4.11 Employees may not enter an excavation in which water is accumulating until a system has been placed to eliminate the water and a competent person has inspected the excavation and placed appropriate protective systems.
- 22.4.12 Training:
- 22.4.13 Supervisors will conduct employee training and evaluation. They shall have the necessary knowledge, training, and experience to train excavation workers. The topics to be covered are:

- 22.4.13.1 Access and egress.
- 22.4.13.2 Spoil pile locations.
- 22.4.13.3 Protective measures.
- 22.4.13.4 Required PPE.

22.5 Protective Systems

- 22.5.1 Sloping shall be the preferred method of protecting employees who enter an excavation.
 - 22.5.1.1 The competent person shall determine the class of soil in and around the excavation and ensure proper sloping is present prior to employee entry.
 - 22.5.1.2 For Class C soil, the sides of the excavation shall be sloped at an angle of 1.5 out for every one foot in depth.
 - 22.5.1.3 For Class B soil, the sides of the excavation shall be sloped at an angle of one foot out for every one foot in depth.
 - 22.5.1.4 Benching (or stair-stepping) requirements shall be the same as sloping.
- 22.5.2 Trench Box:
 - 22.5.2.1 The trench box shall extend no less than 18 inches above the top of the excavation.
 - 22.5.2.2 The trench box shall be of sufficient strength (as indicated on the manufacturer's data plate) for the depth and soil composition.
 - 22.5.2.3 Employees entering a trench box shall always stay within the confines of the box.
- 22.5.3 Open hole(s) greater than 30 inches in diameter and greater than 4 ft in depth:
 - 22.5.3.1 A barrier such as fencing or made from cones connected with cone bars, continuous caution tape, or rope shall be put in place at a minimum distance of six feet from the edge of the hole when site conditions allow. If site conditions do not allow a barrier to be placed six feet from the edge, then an OSHA-approved safety guardrail system should be used. The only opening shall be to allow for the spoils removal.
 - 22.5.3.2 Personnel who enter the protected zone between the barrier and the hole shall utilize 100% fall protection anchored to an approved anchor point.
 - 22.5.3.3 Any hole left unattended shall be protected by covering with a secured poly mat, steel plate, or wood plate.

23 LADDERS/SCAFFOLDS

23.1 Description

- 23.1.1 This program outlines procedures for employees when using ladders and/or scaffolds to perform tasks at height

23.2 Compliance

23.2.1 All ladders and scaffolds shall be constructed of materials appropriate to the task and environment and be compliant with all applicable OSHA and ANSI standards.

23.2.2 Inspections:

23.2.2.1 All ladders and scaffolds shall be inspected daily, prior to use.

23.2.2.2 Scaffolds must be inspected by a competent person, and any employee working from a scaffold must be made aware of hazards associated with working from that scaffold.

23.2.2.3 Defective ladders or scaffolds shall be red tagged.

23.2.3 Ladders:

23.2.3.1 Only wood or fiberglass ladders may be used.

23.2.3.2 All warning labels and stickers must be on the ladder and in readable condition.

23.2.3.3 Ladders shall not be painted, stained, or have any other coating applied to them that could hide defects or create a hazardous condition.

23.2.3.4 Ladders shall be Type IA (a rating of 250 pounds) or greater.

23.2.3.5 Ladders may be placed only on firm, level surfaces.

23.2.3.6 Step ladders shall be used only in the opened, locked position.

23.2.3.7 The top two steps of a step ladder shall not be used to gain elevation.

23.2.3.8 Extension or straight ladders shall be positioned at a 75° angle. (This is achieved by bringing out the base of the ladder one foot for every four feet in length of the ladder.)

23.2.3.9 Extension or straight ladders shall be tied off to an adjacent structure to prevent falling, or an employee will be positioned at the base to hold the ladder during ascent and/or descent.

23.2.3.10 Extension or straight ladders shall extend three feet beyond a landing.

23.2.4 Scaffolds:

23.2.4.1 Scaffolds shall be erected by competent, trained scaffold builders. C&C employees may not erect scaffolding.

23.2.4.1.1 Scaffolding may only be modified by the competent person.

23.2.4.1.2 C&C employees shall make no modifications to scaffolding.

23.2.4.2 Scaffolds shall not be used that have not been tagged by the competent person as being complete and safe for use, nor prior to inspection by a competent person.

23.2.4.3 Scaffolds shall be fully decked and have a complete handrail system.

23.2.4.4 Toe boards shall be in place, or the area beneath the scaffold shall be barricaded to prevent injury from falling objects.

23.2.4.5 Only heavy-duty scaffolds may be used (75 lbs. /square foot capacity).

24 HAND AND POWER TOOLS

24.1 Purpose

24.1.1 The Hand and Power Tools program establishes guidelines for the use, service, inspection, and storage of hand and power tools to prevent injuries from unauthorized or improper use of tools.

24.2 Responsibility

24.2.1 Management must:

24.2.1.1 Provide proper tools in good repair for employees to perform assigned tasks.

24.2.1.2 Provide training to employees in the proper use of tools required to complete assigned tasks.

24.2.2 Supervision must:

24.2.2.1 Ensure employees are using the correct tool for the task.

24.2.2.2 Oversee employee activities to ensure only trained, authorized employees are utilizing tools.

24.2.3 Employees must:

24.2.3.1 Inspect tools daily, prior to use.

24.2.3.2 Notify supervision in the event a tool is damaged, or if the proper tool for the task is not available.

24.2.3.3 Use only tools for which he or she has received training.

24.3 Compliance

24.3.1 Employees shall be trained on the proper use, maintenance, inspecting of, and storage of tools required in performance of assigned tasks.

24.3.2 Tools shall be maintained in good repair, with all safety devices intact.

24.3.3 Any tool that has been damaged, had any safety device rendered inoperable or found to be in otherwise inoperable condition shall be either red tagged until repaired or destroyed and disposed of.

24.3.4 Pocket knives or non-safety utility knives shall not be used for cutting/stripping unless it is impossible to utilize another tool designed for that task. Not having the proper cutting tool available on site is not an excuse for using knives. Cutting tools other than a knife, i.e. wire cutters/strippers, side cutters, snips, and other cutting tools, shall always be used first. A safety utility knife with an automatic retracting blade or other means of blade protection would be the second selection. The use of a company-issued pocket knife or non-safety utility knife is only permitted if a safety utility knife or other cutting tool cannot be used. The second and third options (knives) can only be used upon management approval and in combination with a thorough task hazard and PPE analysis.

24.3.5 All Power tools designed to be operated with two hands, such as angle grinders with side handles, band saws, reciprocating saws, circular saws, rotary hammers, demolition hammers, and concrete saws, shall be operated using both hands at all times to ensure maximum control, precision, and safety. This practice helps to stabilize the tool, reduce the risk of injury, and prevent accidental loss of control. Operators must ensure that side handles or auxiliary grips are securely attached and used correctly. Tools must be inspected before use to confirm they are in proper working condition, and operators must remain attentive to their grip and positioning throughout the task. Adhering to this policy is essential for maintaining a safe work environment and minimizing the potential for injury, accidents, or equipment damage.

24.3.6 All manufacturers' safety recommendations must be followed.

24.4 Service of Tools

24.4.1 Before repairing, servicing, or changing components on any power tool, the power source must be disconnected.

24.4.2 If the tool is driven by a gasoline engine, the ignition wire shall be disconnected from the spark plug, or other precautions must be taken to prevent the accidental firing of the engine.

24.4.3 Employees shall wear appropriate PPE for the tool and the task being performed.

24.4.4 Spark-resistant or pneumatic tools shall be employed in environments where the potential for fire or explosion exists.

24.4.5 All power tools must be equipped with a switch that must be manually held in the ON position.

24.5 Types of Tools

24.5.1 Electric-powered tools:

24.5.1.1 All electric-powered tools shall be run through a circuit equipped with GFCI protection.

24.5.1.2 Tools with damaged cords or plug assemblies shall be red tagged.

24.5.1.3 The frames of portable electrical tools and equipment must be grounded either through a third wire in the cable containing the circuit conductors, or through a separate wire grounded at the source of the current, or,

24.5.1.4 Be double-insulated and approved by Underwriters Laboratories (UL).

24.5.1.5 Tools showing worn, deteriorated, or inadequate insulation must be removed from service until repaired.

24.5.2 Pneumatic Tools:

24.5.2.1 Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.

- 24.5.2.2 Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

24.5.3 Hydraulic Tools:

- 24.5.3.1 Manufacturers' safe operating pressure for hydraulic tools, hoses, valves, pipes, filters, and fittings shall not be exceeded.
- 24.5.3.2 Pressure shall be released before connections are broken unless quick-acting, self-closing connectors are used.
- 24.5.3.3 The fluid used in hydraulic-powered tools shall be resistant and shall retain its operating characteristics at the most extreme temperatures to which it will be exposed.
- 24.5.3.4 All hydraulic lines longer than thirty-five feet should have check valves or provided for loss of insulating value due to partial vacuum when used where they may come into contact with exposed live parts.

24.5.4 Hand Tools:

- 24.5.4.1 Tools should not be used directly over the head.
- 24.5.4.2 Tools shall be of the proper size for the nut, bolt, etc. being worked on.
- 24.5.4.3 Tools shall be used only for their intended purpose.
- 24.5.4.4 Extension, or cheaters, shall not be used on wrench handles.
- 24.5.4.5 When connections are known to be quick breaking, causing a sudden release, a hammer wrench should be used instead of a wrench that requires body force.

24.5.5 Air Compressors:

- 24.5.5.1 Air intake piping must be located to prevent hydrocarbon gases, exhaust gases or any flammable vapors from entering the air compressor.
- 24.5.5.2 Air compressor discharge piping must be equipped to collect and remove oil and water from air lines.
- 24.5.5.3 Air receivers must be equipped with an indicating pressure gauge and pressure relief valves. The air receivers should have a sign or a name plate to show normal operating pressure and maximum working pressure.
- 24.5.5.4 Automatic-start air compressors must have a warning sign stating that the unit starts automatically.
- 24.5.5.5 All moving parts such as shafts, couplings, belts, and sheaves shall be enclosed to provide complete protection of personnel and allow for dissipation of heat.

24.5.6 Abrasive Wheel Grinders and Chop Saws

- 24.5.6.1 Safety washers must be used on all abrasive wheels.
- 24.5.6.2 Abrasive wheels must have a protective shield and a tool rest that is adjustable to maintain a clearance no greater than one-eighth inch.
- 24.5.6.3 The operator must wear safety glasses and a face shield during grinding.

- 24.5.6.4 The spindle speed of the machine must not exceed the maximum operating speed marked on the wheel.

24.6 Welding, Burning and Chipping

- 24.6.1 Before beginning welding, burning, or chipping operations, appropriate permits must be obtained.
- 24.6.2 Appropriate eye and face protection shall be used when welding.
- 24.6.3 No unauthorized person will be allowed to use welding equipment.
- 24.6.4 Welders are responsible for the maintenance of their equipment and for the protection of persons in the immediate area.
- 24.6.5 All gas welders must have flashback arrestors at the gauges.
- 24.6.6 Plastic-case lighters must not be carried around welding operations or open flames.
- 24.6.7 Adequate ventilation shall be available to ensure that the fumes are kept out of employees' breathing zones while welding.
- 24.6.8 Power to an electric arc welding machine will be turned off when the equipment is not in use.
- 24.6.9 Only enough cable to reach the job should be used. Always roll cable back on track after use. A ground should be connected directly to the piece being welded.

25 ELECTRICAL SAFETY

25.1 General

- 25.1.1 This section provides direction is the use of electrical tools, equipment, and other items.

25.2 Responsibility

- 25.2.1 Management must:
 - 25.2.1.1 Provide employees with adequate, properly maintained tools and equipment to perform assigned tasks.
 - 25.2.1.2 Regularly inspect electrical items and work areas to ensure compliance with electrical guidelines.
- 25.2.2 Supervision must:
 - 25.2.2.1 Instruct employees on safe electrical practices.
 - 25.2.2.2 Ensure unqualified personnel are not exposed to energized parts.
- 25.2.3 Employees shall:
 - 25.2.3.1 Comply with C&C policies on the use, inspection, and storage of electrical items.
 - 25.2.3.2 Notify supervision in the event damaged or inadequate items are discovered or if an unsafe condition concerning electrical items is present in the work location.

25.3 Compliance

25.3.1 Inspection/Servicing:

- 25.3.1.1 Only qualified persons shall service or be exposed to energized parts.
- 25.3.1.2 Lockout/ tagout procedures will be used when equipment being serviced has controls located away from the equipment. Parts are considered live until lockout/tagout procedures are complete.
- 25.3.1.3 All unsafe equipment, lines, and electrical apparatus should be reported immediately to your supervisor.

25.3.2 Approach Distances:

- 25.3.2.1 Unqualified personnel must maintain a distance of at least ten feet from all unprotected energized parts or equipment, for 50kV or less.

25.3.3 Extension Cords

- 25.3.3.1 Cords with damaged insulation or missing ground prongs shall be removed from service immediately.
- 25.3.3.2 Repairs to extension cords only may be made by qualified electricians and must meet manufacturer's requirements following repair.
- 25.3.3.3 Repairs to extension cords only may be made by qualified electricians and must meet manufacturer's requirements following repair.
- 25.3.3.4 Cords shall be positioned so as to not be damaged by closing doors, mobile equipment or other workplace items.

25.3.4 Ground Fault Circuit Interrupter (GFCI):

- 25.3.4.1 All electric power tools shall be run through a GFCI (circuit breaker or portable).
- 25.3.4.2 GFCIs shall be tested according to C&C policy.

25.3.5 Insulated tools or handling equipment must be used when working near energized parts.

25.3.6 Hands, shoes, and clothing should be dry when any energized electrical equipment is handled. Finger rings, earrings, and watches shall not be worn.

25.3.7 Operate electrical equipment according to operating instructions.

25.3.8 Electrical outlets shall not be overloaded.

25.3.9 All outlets must be grounded.

25.4 Emergency Procedures

25.4.1 Do not touch an employee who is caught in a live circuit.

25.4.2 If possible, safely de-energize circuit.

25.4.3 Attempt to knock employee out of circuit using a dry, non-conductive item (wood 2 x 4, fiberglass item, etc.)

25.4.4 Contact EMS (911)

25.4.5 Notify supervision.

26 FIRE PREVENTION/PROTECTION

26.1 Description

26.1.1 This program outlines procedures to be used to prevent the occurrence of fires and steps in the process of extinguishing a fire in its incipient stage.

26.2 Definitions

26.2.1 **Incipient Stage** – a fire that is just starting. Fires that are growing, or continue to grow after extinguishing attempts are made, are not considered incipient.

26.2.2 **Fire Watch** – employee, who is trained in the use of a portable fire extinguisher, who is assigned the task of observing an area where hot work is being performed. This employee shall be assigned no other duties.

26.3 Responsibility

26.3.1 Management must:

26.3.1.1 Provide policies to prevent fires and train selected employees to fight fires in the incipient stage. Employees shall be trained in their specific roles welding, fire watch, and other personnel involved in hot work operations.

26.3.1.2 Inspect workplaces to identify potential fire sources.

26.3.1.3 Review training records to ensure employees selected to use fire-fighting equipment are adequately trained.

26.3.1.4 Ensure Hot Work Permits meet all local jurisdiction and client requirements.

26.3.2 Supervision must:

- 26.3.2.1 Monitor jobsites to ensure potential fire sources are controlled or eliminated.
- 26.3.2.2 Inspect fire-fighting equipment to ensure it is accessible and ready to use.
- 26.3.2.3 Communicate the location(s) of firefighting equipment to all employees.
- 26.3.3 Employees must:
 - 26.3.3.1 Identify potential fire sources and report to supervision immediately.
 - 26.3.3.2 Use fire-fighting equipment only if trained in its use and if fire is in an incipient stage.

26.4 Compliance

- 26.4.1 Fire prevention:
 - 26.4.1.1 Housekeeping shall be continuously monitored on jobsites, in shops and warehouses and in office areas.
 - 26.4.1.2 Flammable liquids and materials shall be properly stored and disposed of.
 - 26.4.1.3 Incompatible substances shall be stored separately or isolated per manufacturer's recommendations.
 - 26.4.1.4 Flammable liquids shall be kept in approved safety cans and identified with proper labels.
 - 26.4.1.5 Appropriate extinguishers shall be present in areas to handle potential fires. Class ABC extinguishers should be standard.
 - 26.4.1.6 Hot work may only be performed in designated areas or under the observation of a trained fire watch.
 - 26.4.1.7 A trained fire watch employee shall be in place and equipped with a working approved fire extinguisher during all hot work activities and for a minimum of 30 minutes post all hot work activities.
 - 26.4.1.8 Smoking or open flames shall not be permitted in areas where dangerous gases might be present. Absence of "No Smoking" signs shall not excuse smoking in dangerous places.
 - 26.4.1.9 Hot Work Permits shall be completed prior to beginning any welding, cutting, burning, flame, arc, or spark producing work.

26.5 Classes of Fires

- 26.5.1 Class A Fire: Composed of ordinary combustibles.
 - 26.5.1.1 These normally consist of burning paper, wood, or similar debris.
 - 26.5.1.2 Water or a Class ABC extinguisher should be used on Class A fires.
- 26.5.2 Class B Fire: Flammable liquids
 - 26.5.2.1 Class B fires are oil, grease, and other flammable liquids.
 - 26.5.2.2 CO₂ or Class ABC extinguishers should be used on Class B fires.
- 26.5.3 Class C fires: Electrical
 - 26.5.3.1 Overloaded outlets are the primary cause of Class C fires.

26.5.3.2 CO2 or Class ABC extinguishers should be used on Class C fires. DO NOT USE WATER on a Class C fire.

26.5.4 Class D fires: Flammable metals

26.5.4.1 Flammable metals typically generate their own heat and may release toxic fumes when ignited.

26.5.4.2 Contact professional help in the event of a Class D fire.

26.6 Training

26.6.1 Employees designated to use portable fire extinguishers shall be trained in their proper use and limitations.

26.6.2 This training shall be completed prior to being assigned a task where the use of a portable fire extinguisher is likely.

26.6.3 Training shall be updated annually, whenever there is a change in the procedures for use of portable fire extinguishers or in the event an employee demonstrates the need for additional training.

26.7 Firefighting

26.7.1 Summon help. Do not fight a fire before alerting someone else.

26.7.2 Analyze the situation:

26.7.2.1 Ensure fire is contained to a small, manageable area.

26.7.2.2 Ensure an escape route is present.

26.7.2.3 Evacuate all non-essential personnel.

26.7.2.4 Isolate all fuel sources and/or threatened facilities.

26.7.3 PASS System shall be used when fighting a fire with a portable fire extinguisher.

26.7.3.1 (P)ull the pin.

26.7.3.2 (A)im the nozzle at the base of the fire.

26.7.3.3 (S)queeze the trigger.

26.7.3.4 (S)weep the base of the fire, side to side, until fire is extinguished.

26.7.4 When an extinguisher has fully discharged, and the fire has not been extinguished, evacuate the area, and notify professional help.

26.7.5 Observe location for 30 minutes after fire has been extinguished to ensure re-fire does not occur.

26.8 Extinguisher Inspections and Maintenance

26.8.1 All assigned C&C vehicles shall be equipped with a CLASS ABC fire extinguisher.

26.8.2 All fire extinguisher hose nozzles will always be kept free of obstructions.

26.8.3 Fire extinguishers that are not fully charged or exhibit a defect outlined above, shall be removed from service and a replacement obtained immediately.

- 26.8.4 All fire extinguishers shall receive an annual inspection by an authorized technician and carry a tag indicating such.

27 OFFICE/WAREHOUSE SAFETY

27.1 Slips, Trips and Falls

- 27.1.1 Walk carefully on stairs and use handrails.
- 27.1.2 Employees cleaning or waxing floors shall place warning signs to alert others to the potential of slippery floors. All spills shall be cleaned up immediately.
- 27.1.3 Drawers on desks and cabinets shall be kept closed when not in use.
- 27.1.4 Keep the floor clear of telephone cords, electric cords and extensions and paper cartons.
- 27.1.5 Do not sit on the edge of a chair. Do not tilt back on a chair not meant to recline.
- 27.1.6 Do not use boxes, chairs, or other items in place of a ladder.

27.2 Strains/Sprains

- 27.2.1 Heavy stockroom items should be located on shelves below shoulder height.
- 27.2.2 Unless bolted to the wall, filing cabinets may tip towards the user if a second drawer is opened.
- 27.2.3 Flex the knees when lifting items located on the floor, no matter what weight.
- 27.2.4 Get assistance in moving any item greater than forty pounds.

27.3 Punctures/Lacerations/Cuts

- 27.3.1 Pins of any kind are not to be used to fasten paper; use staples or paper clips.
- 27.3.2 Paper cutter handles must be stored in the down position and never left raised.
- 27.3.3 Do not place broken glass or other sharp objects in the trash or wastepaper container.
- 27.3.4 Do not clean, oil, or adjust any machine that is powered; disconnect the supply.
- 27.3.5 Fans must be caged/enclosed to prevent contact with blades.
- 27.3.6 Paper “spikes” for receipts, etc. are not permitted.
- 27.3.7 Loose fitting clothing, bracelets, rings, ties, etc., should not be worn around power driven equipment with rotating parts.
- 27.3.8 Blind corners should be approached with caution.

27.4 Fire Prevention/Electrical

- 27.4.1 Hallways, aisles, and stairwells must be kept free to obstructions.
- 27.4.2 No combustible materials are to be stored in stairwell areas.
- 27.4.3 All emergency exits, and fire extinguishers must be kept unobstructed.

- 27.4.4 Electrical cords, outlets, or other electrical equipment thought unsafe should not be used and should be reported to supervision immediately. Tag the equipment out.
- 27.4.5 Cigarette butts and other smoking materials should not be placed in wastepaper containers unless wetted first.
- 27.4.6 Safety and Health Department must approve flammable solvent usage.

27.5 Ergonomic Issues

- 27.5.1 Computers, typewriters, and other equipment must be positioned to avoid muscle and eye strain to the operator. Stiff neck, shoulders, pain or numbness in the hands, and headaches are symptoms that may be caused by ill-adjusted workstations. Employees who feel they may be experiencing an ergonomic problem or need their workstation/job area assessed, should contact the Safety Department for specific guidance or assistance.
- 27.5.2 Useful terms:
 - 27.5.2.1 Ergonomics – the science of fitting workplace conditions and job demands to the capabilities of the working population.
 - 27.5.2.2 Work-related musculoskeletal disorders (WMSD) – refers to 1) musculoskeletal disorder to which the work environment and the performance of work contribute significantly, or 2) musculoskeletal disorders that are made worse or longer lasting by work conditions.
- 27.5.3 Signs and symptoms that may indicate an employee is experiencing an ergonomic problem:
 - 27.5.3.1 Certain jobs or work conditions cause worker complaints, undue strain, localized fatigue, discomfort, or pain that does not go away after overnight rest.
 - 27.5.3.2 Workers visiting the clinic make frequent reference to physical aches and pains related to certain types of activities, such as repetitive and forceful exertions, frequent, heavy, or overhead lifts, awkward work positions or use of vibrating equipment.
- 27.5.4 General points to remember for computer workstation:
 - 27.5.4.1 Top of computer screen should be at eye level; lower for bifocal wearers; screen distance at arm's length (15"-32").
 - 27.5.4.2 Document holder placed to reduce or eliminate head/neck movements.
 - 27.5.4.3 Chair backrest provides firm lower back support.
 - 27.5.4.4 Keyboard height promotes relaxed arms with forearms parallel to the floor.
 - 27.5.4.5 Wrists straight with padded, moveable wrist rests that are the same height as keyboard home row, if needed.
 - 27.5.4.6 Ample leg room under the work surface.
 - 27.5.4.7 Feet rest firmly on the floor or on a footrest.

27.6 Warehouse Safety

27.6.1 General:

- 27.6.1.1 All storage areas must be kept free of materials that can cause tripping, fire, explosion, or pest harborage. Aisles, stairways, walkways, and loading platforms must also be kept free of such materials.
- 27.6.1.2 Warehouse must have posted smoking and non-smoking areas.
- 27.6.1.3 Highly volatile materials must not be stored in a warehouse. Appropriate outside storage should be provided.
- 27.6.1.4 Do not exceed floor, or platform loads that are posted or otherwise stated.
- 27.6.1.5 A non-skid surface should be provided on ramps and walkways where there is a danger of slipping.
- 27.6.1.6 Bins and racks should be spaced and located to allow safe access to material.

27.6.2 Lifting and carrying:

- 27.6.2.1 Pipes, conduit, reinforcing rods, and other conducting material shall not be carried on the shoulders near exposed live electrical equipment or conductors.
- 27.6.2.2 Hand lines or hoists should be used for raising or lowering tools and material to another level, which is beyond reach.
- 27.6.2.3 Do not jump from platforms, scaffolds, loading docks, or other elevated places.
- 27.6.2.4 Use proper lifting techniques when picking up items or materials.
- 27.6.2.5 When heavy objects (greater than 50 lbs.) are to be lifted, two employees or proper lifting equipment are required.

28 SUBSTATIONS

28.1 Purpose

- 28.1.1 This section provides additional direction to employees whose work involves working in substations.

28.2 General

- 28.2.1 Only trained, authorized employees may enter a substation.
- 28.2.2 Movement of vehicles, gin poles, cranes, and other hoisting or mechanized equipment shall be controlled by signal personnel or spotters.
- 28.2.3 Mobile equipment with booms or extensions above the cab level shall be equipped with a minimum 4/0 AWG extra flexible copper or equivalent ground lead. The equipment shall be bonded to the station ground mat when being operated in a stationary position.

- 28.2.4 No parking shall be allowed within the substation unless required for work purposes.
- 28.2.5 Before driving a car or truck into a substation, the driver shall check the overhead clearance of the vehicle (e.g., radio antenna, boom, basket) to prevent contact with low wires or other structures and ensure the path to be traveled will support the intended load.
- 28.2.6 Except for fuse replacement or other necessary access by qualified persons, the guarding of energized parts within a compartment shall be maintained during the operation and maintenance functions to prevent accidental contact with energized parts and to prevent tools or other equipment from being dropped on energized parts.
- 28.2.7 When draw-out type circuit breakers are removed or inserted, the breaker shall be in the open position and the control circuit shall also be rendered inoperative if the design of the equipment permits.
- 28.2.8 When substation fences are expanded, or a section is removed, grounding continuity shall be maintained, and bonding shall be used to prevent electrical discontinuity.
- 28.2.9 When guards are removed from energized equipment, barriers shall be installed around the work area to prevent employees, who are not working on the equipment but are in the area, from contacting the exposed live parts.
- 28.2.10 Only qualified personnel may handle bus or tower steel, or other materials of a length that could contact energized equipment.
 - 28.2.10.1 Such material shall not be carried on the shoulder.
 - 28.2.10.2 No material or equipment shall be stored under an energized bus or line or near energized equipment.
- 28.2.11 Sufficient access and working space shall be provided and maintained around electric equipment to permit ready and safe operation and maintenance of such equipment.

28.3 Working in Substations

- 28.3.1 When entering or leaving substation switchyards, employees will notify appropriate personnel as to reason for being there and length of stay.
- 28.3.2 No workers shall work upon or climb a substation structure containing energized equipment or work near energized equipment without permission from the supervisor in charge or competent person appointed by the supervisor.
- 28.3.3 When work is to be performed near live high voltage equipment, approved temporary barricading/ barrier equipment be placed between the space occupied by the worker and the nearest energized equipment.
- 28.3.4 If it is impossible or impractical to cover (insulate), or isolate, any energized equipment or conductors where a worker is performing construction/maintenance type work, and the worker or the workers tools could have come in contact with the energized equipment, or conductors, that the worker shall have an experienced person as an observer to help direct activity and to assist in avoiding electrical contact. If for any reason the attention and/or services of the observer are needed for other reasons, the worker in the energized zone shall move to a safe position and shall not return into the energized zone until the observer has returned.

- 28.3.5 If it should be necessary to work from a ladder on an energized source, a ladder shall be designated for energized work and stored in a weatherproof location and dielectrically tested annually.
- 28.3.6 Antennas of either mobile or portable radios shall be always kept at a safe distance from energized conductors and/or equipment.
- 28.3.7 Rubber gloves and sleeves shall be worn when opening or closing gang-operated switches unless opened by remote controls.
- 28.3.8 When any substation equipment is removed from service, prior to work being performed, the switches, or other means used to disconnect the equipment from service shall be checked open visually, tagged with hold tags and grounds applied in appropriate locations. Tags shall be attached in a location where their purpose is evident, such as on the operating handle, at the identification number of the device on the structure.

28.4 Handling materials and tools

- 28.4.1 No materials or tools of any sort shall be carried on the shoulder when working around energized equipment.
- 28.4.2 Only a fiberglass tape shall be threaded through a duct line supporting energized cables. Workers shall be stationed at each end of the duct line.
- 28.4.3 Metal tapes or rulers shall not be used around energized conductors or equipment. (The only exception to this rule is the use of metal tapes for measuring new foundation dimensions. When such measurements are being made around energized conductors, two workers shall handle the tape, one at each end, until the work is finished, and the tape returned to its container. The container shall be clearly marked, identifying it as metal tape.)

28.5 Back-feed situations

- 28.5.1 When work is to be performed on a power transformer which involves working on or close to any high voltage parts, in addition to isolating the transformer with disconnecting switches, any device connected to the transformer bushings or to the conductors between the transformer and the isolating switches which could provide a back-feed path shall be isolated and grounded from all potential back-feed sources.
 - 28.5.1.1 Any station service transformer(s) or potential transformer(s) with a primary disconnect or fused switch shall have the switch(es) opened.
 - 28.5.1.2 Any potential transformer without a primary disconnecting device shall have the secondary fuses removed.
 - 28.5.1.3 Any potential devices or carrier coupling devices shall be grounded with the grounding switch(es) provided in or on the device for this purpose.
 - 28.5.1.4 When a temporary power or potential supply is used to operate auxiliary (cooling, motor controls, etc.) equipment on a substation transformer, the normal power or potential sources shall be disconnected from the transformer before the temporary supply is connected.

- 28.5.2 Before switching is performed in a substation where work is in progress, the employee performing the switching shall notify all personnel working within the substation. All personnel will recheck the status of the structure, lines, and equipment before resuming work.

28.6 Transformers

- 28.6.1 When it is necessary to remove a utility access hole cover or inspection plate from a transformer, any pressure or vacuum shall be released prior to removing any stud or bolt.
- 28.6.2 Before work begins on any power transformer suspected of internal faults, overloads, overheating due to cooling system failure, etc., testing for combustible gases shall be done.
- 28.6.3 IF excessive combustible gases are present, the transformer shall be purged with nitrogen from the lowest point available until the gases are within acceptable limits.
- 28.6.4 No oil shall be removed from a faulted transformer until the combustible gases are at an acceptable limit.
- 28.6.5 All transformers taken out of service for maintenance or repair shall be assessed for voltage and grounded on the high (primary), low (secondary) side and the tertiary side, if present.

28.7 Circuit breakers

- 28.7.1 Approved switch-pullers suit and hood shall be worn when racking circuit breakers in or out of metal clad switchgear. All other personnel shall be clear (at least 20 feet) of the work area during the time the breaker is being racked in or out.
- 28.7.2 The circuit breaker shall be in the open position and the control circuit rendered inoperative if the design permits.
- 28.7.3 Employees shall take all precautions necessary to prevent breaker operation when performing maintenance. When jacking mechanism for slow closing or opening, operating power must be disconnected, and manufacturer supplied locking pins, or other devices shall be used to prevent injury or damage done to trip free operation of the mechanism.
- 28.7.4 Prior to performing maintenance on air blast or gas circuit breakers which are out of service, the capacitor shall be grounded before contact is made with any normally energized parts.
- 28.7.5 All breaker bushings shall be tested for voltage with an approved voltage detector and grounded when the breaker is isolated for maintenance.
- 28.7.6 When using test equipment which produces a voltage or current that is applied to the equipment under test, the test area is to be roped off where personnel traffic warrants it and the equipment under test shall be flagged.
- 28.7.7 Electric circuits or equipment and other equipment or systems where sudden release of hazardous energy may result in injury, shall have energy sources secured and tagged (and/or locked) prior to beginning work, unless such work is conducted using energized or in-service safe work practices.

28.8 Gas insulated substations and equipment

- 28.8.1 Employees shall wear approved protective clothing to avoid skin contact with powder residue, which may be found inside the SF6 gas containment system.
- 28.8.2 Employees shall use a regulator, gauge, filter, and hose to proper PSI rating when filling or adding SF6 gas.
- 28.8.3 Prior to entering a breaker or bus, all appropriate testing for any existing hazards shall be performed.
- 28.8.4 Gas circuit breakers shall be removed from service before adding SF6 gas to dead tank breakers.
- 28.8.5 A visible air gap shall be established when opening switches in a gas insulated bus system.

28.9 Static-induced voltages in substations

- 28.9.1 Employees are to be aware of the potential static and induced voltages in energized substations and lines.
- 28.9.2 When working from ladders or other elevations, maintain a safe distance to avoid static and induced voltages.
- 28.9.3 Vehicles and equipment may require grounding to avoid static and induced voltages.
- 28.9.4 Any accidental opening in the grounding system shall be repaired using high voltage rubber gloves and by installing jumpers across the opening.

28.10 Oil pressing

- 28.10.1 Employees shall not perform any work where he or she is required to stand on top of the transformer when the transformer is under vacuum during transformer processing.
- 28.10.2 When oil processing trailers are operating in a substation, they shall be grounded to a common point at the equipment ground that is attached to the station ground.
- 28.10.3 Employees shall wear protective equipment when making or breaking hoses containing hot oil during processing.

29 ENVIRONMENTAL PROGRAM

29.1 Description

- 29.1.1 The environmental program defines policies, procedures, and requirements relative to the environment and spills.

29.2 Definitions

- 29.2.1 **Solvents**- products used for the cleaning of tools, equipment parts and process systems.
- 29.2.2 **Gray Water**- Water from sources such as hand washing faculties, showers, sinks, dishwashers, and clothes washing machines.
- 29.2.3 **Vehicles**- Units such as pickups, cars, vans, and buses.

29.3 Responsibilities

- 29.3.1 Management shall be responsible for the maintenance and updating of this standard.
- 29.3.2 Field supervision is responsible for the implementation and enforcement of this standard.
- 29.3.3 C&C will strive to conduct its affairs in accordance with the dictates of sound environmental protection practices, including pollution prevention wherever possible. C&C will also strive to avoid, minimize, and appropriately mitigate adverse environmental impacts under their control and report such circumstances to responsible parties when they are known. C&C expects each manager and supervisor to conduct C&C business in a manner that promotes the protection of the environment during the normal daily planning process, adherence to environmental regulations, education of employees and intervening actions when necessary. Each employee, in turn, is expected to perform their daily work tasks using methods that are conducive of protecting the environment and report accidental spills and releases immediately upon their occurrence. This policy is not intended to extend legal obligations in these matters beyond those established by applicable laws and regulations; and this policy statement is not intended to create further or additional legally enforceable requirements.
- 29.3.4 Whenever possible, C&C will engage in practices to recycle or repurpose materials being removed from a job site. Items will be properly segregated and distributed to an appropriate facility.

29.4 Compliance

- 29.4.1 Spills and unplanned releases of materials that will (or may) contaminate the environment must be reported immediately to the Safety Department.
- 29.4.2 In the event of a spill, the employee(s) performing work where the spill occurred are responsible for discontinuing work activities and notifying their supervisor.
- 29.4.3 In the event of an unplanned release into the atmosphere, employee(s) performing the work where the release occurred are responsible for discontinuing their work activities and reporting the release immediately to their supervisor.

- 29.4.4 In all instances where spills and leaks occur, all possible measures must be taken to preclude the contamination of water sources, entry of contaminants into sewer and drainage systems, and other such closures. Appropriate spill prevention planning must be included in the work planning process and documented on the THA (Task Hazard Analysis).
- 29.4.5 Should soil become contaminated due to accidental spills or leaks, all possible measures must be taken to control the spread of the contamination.

29.5 Vehicles/Equipment

- 29.5.1 Prior to use each day, heavy equipment and vehicles must be inspected for hydraulic leaks, engine oil leaks, fuel leaks, and any other system leak that could cause a contamination of the environment.
- 29.5.2 If such a leak is discovered, the unit must be repaired prior to use or removed from service.
- 29.5.3 If a leak occurs while the heavy equipment or vehicle is in operation, the equipment or vehicle shall be shut off, and immediate actions should be taken to confine the leak to further prevent contamination of sources of water.

29.6 Hydraulic tools

- 29.6.1 Tools such as hydraulic jacks must be inspected prior to each use to ensure they are in good working condition. If a leak develops while hydraulic tools are used, they must be taken out of service immediately and repaired.
- 29.6.2 The person using the tool is responsible for the cleanup of the spill. If a spill occurs above ground level, where the contamination is widespread, the responsible employee must seek immediate assistance from their supervisor.

29.7 Solvents/Paints/Other Chemicals

- 29.7.1 Persons who use painting, coating, and sealant materials are responsible for taking measures to preclude the contamination of soil and water sources.
- 29.7.2 This includes the following precautions:
 - 29.7.2.1 Sealing building drains and other similar systems.
 - 29.7.2.2 Storage of materials where they cannot be accidentally damaged or punctured.
 - 29.7.2.3 Covering open water sources and using dike materials (diapers or booms) or other controls as absorbents and liners.

29.8 Wash facilities (sanitary)

- 29.8.1 Drainage from sanitary facilities and wash facilities (hand, shower, and bath) must be disposed of in accordance with local ordinances and regulations.
- 29.8.2 Waste from washing facilities for equipment and vehicles must be disposed of in accordance with ordinances and regulations.

29.9 Site spill prevention plans (if required)

- 29.9.1 Prior to the commencement of work, projects may be required to develop a “Site Specific Spill Prevention Plan.” If necessary, this plan shall include the following as applicable:
 - 29.9.1.1 Define the owner spill prevention plan requirements.
 - 29.9.1.2 Identify systems that may contain air, water, and soil contamination.
 - 29.9.1.3 Review the safety data sheets and related spill cleanup methods.
 - 29.9.1.4 Define the types of spill containment and cleanup materials that may be required.
 - 29.9.1.5 Strategically locate “spill kits” in the work area- booms, diapers, absorbents, collecting containers, and PPE.
- 29.9.2 Waste storage, disposal, and manifest procedures:
 - 29.9.2.1 Identify training required.
 - 29.9.2.2 Define spill prevention coordinator and client contact list.
 - 29.9.2.3 Develop a spill response plan that includes:
 - 29.9.2.3.1 Names and telephone numbers of individuals to be contacted.
 - 29.9.2.3.2 Evacuation plan
 - 29.9.2.3.3 Instructions for containing the spilled material including potential releases to the environment.
 - 29.9.2.3.4 Inventory of Spill Control Materials and PPE
 - 29.9.2.3.5 Decontamination procedures

30 HELICOPTER WORK

30.1 Helicopter practices and procedures

- 30.1.1 The following practices and procedures shall be adhered to during all helicopter work performed by C&C employees. This is not meant to be an all-inclusive list. Certain projects may require more and/or different procedures and/or practices:
 - 30.1.1.1 Job safety meeting/briefing
 - 30.1.1.2 Task Hazard Analysis
 - 30.1.1.3 Keep unauthorized persons out of work areas.
 - 30.1.1.4 Inspect landing zones and secure any items that can become airborne from prop wash.
 - 30.1.1.5 Keep doors and windows closed on all vehicles in the landing zones.
 - 30.1.1.6 Inspect and check all required PPE.
 - 30.1.1.7 Always approach from the front of the machine.
 - 30.1.1.8 Stay away from the tail of the machine.

- 30.1.1.9 Check radios/communications with pilot and crew.
- 30.1.1.10 Maintain contact.
- 30.1.1.11 Secure all tools and materials.
- 30.1.1.12 Inspect and manually operate the release latch and connections on long line.
- 30.1.1.13 Be sure the machine is grounded before contacting the ship or long line.
- 30.1.1.14 Check, understand, and agree with the pilot and crew on proper hand signals.
- 30.1.1.15 Read and understand the following OSHA regulatory guide section 1926.551 on helicopters before starting and working.

30.2 OSHA 1926.551

- 30.2.1 **Helicopter regulations:** Helicopter cranes shall be expected to comply with any applicable regulations of the Federal Aviation Administration.
- 30.2.2 **Briefing:** Prior to each day's operation a briefing shall be conducted. This briefing shall set forth the plan of operation for the pilot and ground personnel.
- 30.2.3 **Personal protective equipment (PPE):** PPE for employees receiving the load shall consist of complete eye protection and hard hats secured by chinstraps. Loose-fitting clothing, likely to flap in the downwash, and thus be snagged on a hoist line, shall not be worn.
- 30.2.4 **Loose gear and objects:** Every practical precaution shall be taken to provide protection to the employees from flying objects in the rotor downwash. All loose gear within 100 ft. of the place of lifting the load, depositing the load, and all other areas susceptible to rotor downwash shall be secured or removed.
- 30.2.5 **Housekeeping:** Good housekeeping shall be maintained in all helicopters loading and unloading areas.
- 30.2.6 **Operator responsibility:** The helicopter operator shall be responsible for the size, weight, and way loads are connected to the helicopter. If, for any reason, the helicopter operator believes the lift cannot be made safely, the lift shall not be made.
- 30.2.7 **Hooking and unhooking loads:** When employees are required to perform work under a hovering craft, a safe means of access shall be provided for employees to reach the hoist line hook and engage or disengage cargo slings. Employees shall not perform work under a hovering craft except when necessary to hook or unhook the load.
- 30.2.8 **Static charge:** Static charge on the suspended load shall be dissipated with a ground device before ground personnel touch the suspended load, or protective rubber gloves shall be worn by all ground personnel touching the suspended load.
- 30.2.9 **Weight limitation:** The weight of an external load shall not exceed the manufacturer's rating.
- 30.2.10 **Ground lines:** hoist wires or other gear, except for pulling lines or conductors that are allowed to "payout" from a container or roll off a reel, shall not be attached to any fixed ground structure, or allowed to foul on any fixed structures.

- 30.2.11 **Visibility:** When visibility is reduced by dust or other conditions, ground personnel shall exercise special caution to keep clear of main and stabilizing rotors. Precautions shall also be taken by the employer to eliminate as far as practicable reduced visibility.
- 30.2.12 **Signal systems:** Signal systems between aircrew and ground personnel shall be understood and checked in advance of hoisting the load. This applies to either radio or hand signal systems.
- 30.2.13 **Approach distance:** No unauthorized person shall be allowed to approach within 50-ft. of the helicopter when the rotor blades are turning.
- 30.2.14 **Approaching the helicopter:** Whenever approaching or leaving a helicopter with the blades rotating, all employees shall remain in full view of the pilot and keep in a crouched position. Employees shall avoid the area from the cockpit or cabin rearward unless authorized by the helicopter operator to work there.
- 30.2.15 **Personnel:** Sufficient ground personnel shall be provided when required for safe helicopter loading and unloading operations.
- 30.2.16 **Communications:** There shall be constant reliable communication between the pilot and a designated employee of the ground crew who acts as a signalman during the period of loading and unloading. The signalman shall be distinctly recognizable from other ground personnel.
- 30.2.17 **Fires:** Open fires shall not be permitted in an area that could result in such fires being spread by the rotor downwash.

30.3 Helicopter pre-flight checklist

JOB BRIEFING/HAZARD ANALYSIS
DEBRIS SECURED IN LANDING ZONES
CHECK PROPER PPE IS BEING WORN
MAINTAIN EYE CONTACT
RELEASE LATCH AND CONNECTIONS CHECKED

UNAUTHORIZED PERSONS OUT OF WORK AREA
DOORS AND WINDOWS CLOSED ON VEHICLES IN LANDING ZONES
CHECK RADIOS/COMMUNICATION WITH PILOT AND CREW
MATERIALS AND TOOLS SECURED

CREW:

DATE: _____

31 SUBCONTRACTOR SAFETY REQUIREMENTS

31.1 Purpose

- 31.1.1 To provide subcontractors with the necessary information to allow them to perform their jobs in the safest manner possible.
- 31.1.2 By signature of the “Master Service Agreement” or the “Standard Terms and Conditions for Subcontractors” by the owner or his designate of the subcontract C&C, the subcontract C&C is bound to comply with all applicable C&C rules and regulations.

31.2 Scope

- 31.2.1 This standard applies to all subcontracts hired to perform work by C&C. Nothing in this section shall supersede any work practice or subcontractor rule that is more stringent than outlined in this manual.

31.3 Responsibility

- 31.3.1 It is the responsibility of the person in charge of the project to inform the subcontractor, either through the subcontract’s representative or the actual subcontract employees, of the potential hazards that may be present at the work site. These hazards may include flammability, toxicity, high pressures, or other operations that may affect the subcontract employees. The subcontractor shall be informed of emergency response plans, required PPE, and safety rules that apply to the assigned tasks. It is the duty of the subcontractor representative to inform all subcontractor employees of this information. It is the responsibility of the subcontractor to provide documentation that this information has been communicated.
- 31.3.2 The subcontractor is also required to inform C&C management of any Hazards that the subcontractor may bring to the work site. These hazards must be communicated to the person in charge of the project, and these communications must be documented.
- 31.3.3 It is the responsibility of the subcontractor to supply C&C management with trained personnel and to provide proof of training upon request.
- 31.3.4 It is the responsibility of the subcontractor to ensure that all equipment supplied, such as tools, cranes, backhoes, and safety equipment, is in good working condition. Equipment must meet or exceed all C&C, local, state, and federal standards. All heavy equipment must be supplied with inspection papers (on request) and, where operators are supplied, must show or display proof of qualification. The contractor must provide “competent person” documentation where required by applicable regulations.

31.4 Procedures

- 31.4.1 All subcontractors are required to read and comply with the applicable C&C safety rules. Some key provisions are:
 - 31.4.1.1 Work must not begin or continue if C&C objects to the safety of the site and vicinity.

- 31.4.1.2 Weekly safety training meetings, work permits, or other written records must be used to document the communication of the hazards to the subcontractor employees.
- 31.4.1.3 There must be no unauthorized hot work.
- 31.4.1.4 Work must not be done by anyone who is under the influence of illegal drugs, alcoholic beverages, or prescription medication that may interfere with judgment or coordination.
- 31.4.1.5 All persons performing any work must wear appropriate PPE such as hard hats, gloves, safety vests, proper footwear, splash goggles, face and eye protection, and respirators. Such items will be the responsibility of the subcontractor.
- 31.4.1.6 If the work requires a "Confined Space Entry Permit," the subcontractor is required to comply with that section of this manual.
- 31.4.1.7 Each work area that involves excavation must comply with the "Excavation Program" detailed in this manual.
- 31.4.1.8 Equipment brought into C&C controlled areas must be in good working condition and must be clean and maintained in full compliance with OSHA and other governmental regulations as well as the requirements of this manual.
- 31.4.1.9 Subcontractors must supply SDS sheets for all chemicals, treating agents, and other substances that they bring to C&C controlled property that could pose a safety or health risk to employees.
- 31.4.1.10 The subcontractor must understand that these rules are minimum requirements only and do not preclude the establishment or enforcement of any additional safety rules on the same or other subjects. This standard shall not lessen any rules that the subcontractor may have established.

31.5 Prequalification of Subcontractors

- 31.5.1 Subcontractors should be prequalified before being able to bid work for C&C.
- 31.5.2 C&C management will perform a post-job safety review of each subcontractor. This post-job review will be used in consideration for any future work for that subcontractor.

31.6 Safety program

- 31.6.1 Each subcontractor should have a written program for the job site. Any subcontractor who does not have a written program may elect to fall under the contractor safety requirement guidelines of the client or C&C. However, each subcontractor must tailor its' program to reflect the exposure encountered by workers.

31.7 Safety meetings

- 31.7.1 Every subcontractor is required to conduct safety meetings on the job as directed. At the discretion of C&C Management, the subcontractor may want to attend our regularly scheduled

safety meetings. All subcontractor employees must be identified in the safety meeting report, and each employee is required to sign the report to verify attendance.

31.8 Safety inspections

- 31.8.1 Each subcontractor is required to conduct job site inspections on a regular basis. While these inspections may confirm the requirements of the subcontractor's own safety audit program, the inspections will be subject to minimum standards established for the job site. In addition, C&C Safety Department will inspect each subcontractor for compliance with these standards during regularly scheduled job site surveys. Of extreme importance are the corrective measures taken to abate job site hazards that are discovered during the inspections.
- 31.8.2 C&C retains the right to immediately stop any unsafe work practices as a violation of the subcontract between C&C and the subcontractor, and to require an abatement of hazardous conditions as a condition of continuing work under the subcontract.

31.9 Accident investigations

- 31.9.1 Each subcontractor is expected to investigate and report to C&C Management and the client in writing any accident, near miss, or incident that occurs on the job site. C&C Safety Department may assist with the investigation.

31.10 Hazardous energy

- 31.10.1 C&C and its subcontractors will comply with the client's control of hazardous energy (lockout/tagout) procedures. C&C management requires an assured grounding program on all job sites or the use of GFCI protection.

31.11 Hazardous communication/employee right-to-know

- 31.11.1 C&C and its subcontractors are required to comply with the client's hazard communication program for process safety guidelines. Additionally, C&C and its subcontractors are required to exchange information concerning any hazardous chemicals brought to the job site. C&C will provide a copy of the SDS pertaining to job site chemicals and will require all subcontractors to do the same. During the job site orientation, the location of C&C SDS cards will be provided to subcontractors.

31.12 Fire protection

- 31.12.1 C&C and its subcontractors must comply with the client's fire protection procedures. Fire watches are required for all hot work procedures.

31.13 Safe work areas and housekeeping

- 31.13.1 All subcontractors will be required to clean up their immediate work areas on a regular basis and will be required to delineate their work area when required by C&C.

31.14 Subcontractor equipment

31.14.1 All subcontractor equipment will be subject to safety inspections by C&C. All unsafe equipment observed will be removed from the job site, tagged out of service, or repaired before use.

32 LIVE LINE BARE HAND

32.1 Live Line Bare Hand Activities

- 32.1.1 Prior to performing Live Line Bare Hand (LLBH) work the following documents SHALL be completed:
 - 32.1.1.1 Live Line Bare Hand Task Hazard Analysis
 - 32.1.1.2 Detailed, step by step, work procedure
 - 32.1.1.3 Personnel shall be assigned the following duties:
 - 32.1.1.3.1 Supervisor
 - 32.1.1.3.2 Lineman 1 and Lineman 2 for each insulated bucket/basket used
 - 32.1.1.3.3 Von Meter monitor for each insulated bucket/basket used
 - 32.1.1.3.3.1 Von Meter monitors are to be located on the trucks to monitor the meter and to operate lower controls during emergency situations
 - 32.1.1.3.4 Qualified Observer (QO) for each bucket/basket used
 - 32.1.1.4 Bucket truck set up, pre-flight, and testing procedure SHALL be completed
 - 32.1.1.5 Pre-flight inspection form SHALL be completed during set-up, preflight, and testing
 - 32.1.1.5.1 All covers SHALL be removed from the boom in accordance with manufacturers recommendations prior to performing any LLBH operation
 - 32.1.1.5.2 Ensure all components of the aerial device are effectively bonded together. A continuity test SHALL be performed in accordance with the manufacturers guidelines before performing LLBH work
 - 32.1.1.5.3 Prior to beginning work ensure the corona ring is properly installed and is not damaged
 - 32.1.1.5.4 Prior to beginning work, all atmospheric valves SHALL be properly tested. The bucket/basket SHALL not be used with an atmospheric valve that failed the test
 - 32.1.1.5.5 A MAD table SHALL be legible and located at both the upper and lower controls of the LLBH boom or be easily accessible to the person operating the controls
 - 32.1.1.6 The air gap and contact leakage current readings SHALL be entered into the bucket trucks arm current logbook
 - 32.1.1.7 A LLBH work procedure SHALL be developed and approved by the construction manager and/or client/client representative prior to beginning work
 - 32.1.1.8 The LLBH work procedure SHALL be directed step by step by the supervisor by some method of documentation such as "Circle Slash" or other similar method
 - 32.1.1.9 An "ALL STOP" SHALL be called for any deviation from the LLBH work procedure

32.1.1.10 Work may resume after the “ALL STOP” when issues that initiated the “ALL STOP” have been resolved and the LLBH work procedure has been revised

32.1.2 When performing live line bare hand (LLBH) work a qualified observer(s) (QO) shall be designated and documented during the Task Hazard Analysis. A single QO may be used to monitor multiple operations if the following requirements are met:

QO. 32.1.2.1 Operations and monitoring of all equipment and monitors are under visual control of the

32.1.2.2 The vehicle and or equipment in flight is limited to movement of one vehicle and or equipment at any given time with the other vehicle and or equipment stationary.

32.1.2.3 Three-way communication will be always maintained during the live line bare hand operations.

32.1.2.4 Any time these requirements cannot be met, or when identified during the Task Hazard Analysis, a second QO shall be designated and documented.

32.1.2.5 These designees shall be documented on the Task Hazard Analysis (THA).

32.1.3 The qualified observer (QO) is responsible for:

32.1.3.1 Knowing and understanding LLBH theory and work processes.

32.1.3.2 Maintaining visual inspection of equipment while the equipment is in use.

32.1.3.3 Monitoring the “Arm Current Leakage Meter.”

32.1.3.4 Monitoring the LLBH operations and the LLBH workers relationship to MAD.

32.1.3.5 Stopping the work process if any unsafe conditions emerge.

32.1.3.6 Qualified observer (QO) will have no other task while LLBH work is being performed.

32.1.3.7 Ensure all LLBH work activities aloft are conducted properly and that all safety requirements are not violated.

32.1.4 The QO shall be positioned to monitor the leakage current meter and the work aloft. When it is not possible for the QO to clearly monitor the leakage current meter and the work aloft, an additional QO shall be identified.

32.1.5 When working on or near energized lines and equipment, all personnel shall stay clear of the truck and equipment.

32.1.6 The full conductive suit shall be worn on voltages in accordance with the current ANSI standards. It may be worn on a voltage less than the minimum ANSI requirements when identified during the Task Hazard Analysis (THA).

32.1.7 No clothing or fabric of any type except full leather gloves shall be worn on the outside of the suit or be exposed from underneath the suit.

32.1.8 Bonding onto the conductors about 138kv phase to phase shall be accomplished using a wand or shotgun stick.

- 32.1.9 Two workers, at least one who is qualified in the live line bare hand technique, shall be in the work basket while performing LLBH work, except when approved by a supervisor and documented.
- 32.1.10 All tools and equipment used for LLBH work shall be suitable for exposure to arcs. For use of gasoline-powered equipment refer to the manufacturer's operator's manual or contact the manufacturer for adherence to their recommendations.
- 32.1.11 Ensure all components of the aerial device are effectively bonded together. A continuity test shall be performed in accordance with the manufacturers guidelines before performing LLBH work.
- 32.1.12 Prior to beginning work ensure the corona ring is properly installed and is not damaged.
- 32.1.13 Prior to beginning work, properly test all atmospheric valves.
- 32.1.14 A MAD table shall be legible and located at both the upper and lower controls the LLBH boom.
- 32.1.15 When working in areas where encroachment on the MAD is possible, a tested insulated measuring device shall be used to ensure proper distance is maintained.
- 32.1.16 All covers must be removed from the boom in accordance with manufactures recommendations prior to performing any LLBH operations.

32.2 OSHA requirements

- 32.2.1 Before using or supervising the use of the LLBH technique on energized circuits, employees shall be trained in the technique and in the safety requirements. Employees shall receive refresher training identified during annual inspections.
- 32.2.2 Before using the LLBH technique on energized high voltage conductors or parts, the following information MUST be gathered:
 - 32.2.2.1 The nominal voltage rating of the circuit on which the work is being performed.
 - 32.2.2.2 The minimum approach distances to ground of lines and other energized parts on which work is being performed.
 - 32.2.2.3 The voltage limitations of the equipment being used.
- 32.2.3 All work shall be personally supervised by a person training and qualified to perform LLBH work.
- 32.2.4 Work may not be performed when adverse weather conditions would make work hazardous.
- 32.2.5 A conductive bucket liner or other suitable conductive device shall be provided for bonding the insulated aerial device to the energized line or equipment.
- 32.2.6 The employee shall be connected to the bucket liner.
- 32.2.7 Where differences in potentials at the worksite pose a hazard to employees, electrostatic shielding designed for the voltage being worked will be provided.
- 32.2.8 The insulated equipment will be tested.
- 32.2.9 Before the boom is elevated, the outriggers will be extended and adjusted to stabilize the truck, and the body of the truck will be bonded to an effective ground or delineate a safety zone and consider the equipment as energized.

- 32.2.10 Before moving the aerial lift into the work position, all controls (ground level and bucket) will be checked and tested to determine they are in proper working condition.
- 32.2.11 Boom current test will be conducted.
- 32.2.12 All aerial lifts to be used for LLBH work will have dual controls (upper and lower).
- 32.2.13 Upper controls will be within easy reach of the employee in the basket. Two basket lift controls will be within easy reach of either basket.
- 32.2.14 Upper controls will be located near the base of the boom.
- 32.2.15 Ground level lift control will not be operated without permission from personnel in the lift, except in the case of an emergency.
- 32.2.16 Conductive bucket liner will be bonded to the conductor before personal contact is made.
- 32.2.17 This positive connection (bond) will remain attached until work on the circuit is complete.
- 32.2.18 Minimum Approach Distances (MAD) will be maintained.
- 32.2.19 When approaching, leaving, or bonding to an energized circuit, the MAD will be maintained.
- 32.2.20 When positioning the bucket alongside an energized bushing insulator string, the MAD shall be maintained.
- 32.2.21 Hand lines may not be used between the bucket and the boom or between the bucket and the ground.
- 32.2.22 No conductive materials over 36in. long will be placed in the bucket except:
 - 32.2.22.1 Appropriate length jumpers
 - 32.2.22.2 Armor rods
 - 32.2.22.3 Tools
- 32.2.23 Uninsulated equipment or material may not be passed between a pole or structure and an aerial lift while an employee working from the bucket is bonded to an energized part.
- 32.2.24 The bucket and upper insulated boom shall not be overstressed.
- 32.2.25 A MAD table shall be printed on a plate of durable non-conductive material and mounted to be visible to the operator of the boom.
- 32.2.26 A non-conductive measuring device shall be readily accessible to assist employees in maintaining the required MAD.
- 32.2.27 The distances shown in table 1 below take into consideration the highest switching surge an employees will be exposed to any system, with air as the insulating medium and with the maximum voltages shown. The clear live line tool distance shall equal or exceed the values for the indicated range.

32.3 MAD Table/Forms

Preflight Inspection Form

Name: _____ Date: _____

Description	Pass	Fail	Reading
Position truck for test			
Stabilize truck with outriggers			
Ground truck to system neutral or driven ground			
Clean/Inspect the fiberglass boom section			
Attach shunt across lower insulating pylon			
Test hydraulic holding valves			
Check hydraulic fluid			
Check for hydraulic leaks			
Complete a visual inspect of all grounding/bond straps. Look for broken or frayed cables. Verify that ground/bonding cable mount bolts are tight. Fix any broken or frayed cables before moving to next step.			
Inspect corona ring condition. Look for bent or damaged edges			
Verify that the mounting bolts for the corona are installed and tight			
Using a digital multimeter, measure resistance(Ohms) between all metal components at the boom tip including but not limited too. (control box, level frame, jib head, rotator, platform mount, boom tip, corona ring, platform, metal liner if equipped.) Mutimeter reading should be ≤ 1 Ohms. If reading is greater than 1 ohms check grounding/bonding straps attachment points. Loosen and clean grounding/bonding connections. Repeat this step until all components at boom read ≤ 1 ohms. If your reading is ≤ 1 ohms for all components the test is complete.			
Operate the aerial basket through its full range of motion using both upper and lower controls			
Connect leakage current meter (attach 7 pin lead across lower insulating pylon if necessary) and set alarm point			
Place selector switch on leakage current meter to "Meter Check". Meter should read no less than 23 and no more than 25			
Place selector switch on "Leveling" and press button to check for alarm			
Place selector switch on "Hoses" and press button to check for alarm			
Place selector switch on "Boom" and press button to check for alarm			
Place selector switch on "Total Test" and press button to check for alarm. Leave selector switch on "Total Test" for the duration of the work			
Test the atmospheric valve tester for proper operation			
Test the atmospheric valves for proper operation			
With no personnel in the aerial basket, move the basket within the Minimum Approach distance for the voltage being worked for 1 min			
Observe and record the arm current reading in the "Air Gap" column in the Arm Current Log Book			
If reading is not high compared to previous readings make contact with metal basket and conductor			
Observe reading for a minimum if three (3) minutes and record the reading in the "Contact" column			
If the arm current is less than that shown in the leakage current table, the equipment is safe for personnel using the bare hand method			

Conductive Suit Test Report

Test Date:--/ --/ -- Jacket Serial

Pants Serial Number _____

Visual Inspection:

Jacket_ Pass_ Fail Number of washings: __Pants ____ Pass __ Fail ____
Ohmmeter Serial #:

Number:-----

Continuity measured with garment on a person ____

Ohmmeter Reading

Tail of the suit and the bottom leg cuff of the suit.

Tail of the suit and the hood. _____

The hood and the bottom leg cuff of the suit.

A glove and a glove. _____

Notes:

While in use was there complaints of discomfort? ☐ Yes ☐ No If yes,

were undergarments worn? ☐ Yes ☐ No Other comments:

Signature:

Print: _____

33 BLOODBORNE PATHOGENS/EXPOSURE CONTROL

33.1 Purpose

- 33.1.1 C&C is committed to providing a safe and healthy environment for the entire staff. In pursuit of this endeavor, the following Exposure Control Plan (ECP) is provided to eliminate or minimize occupational exposure to bloodborne pathogens in accordance with OSHA standard 29 CFR 1910.1030, "Occupational Exposure to Bloodborne Pathogens".

33.2 Exposure Control Plan (ECP)

- 33.2.1 The ECP is a key document to assist our firm in implementing and ensuring compliance with the standard, thereby protecting our employees. This ECP includes:

- 33.2.1.1 Determination of employee exposure

- 33.2.1.2 Implementation of various methods of exposure control, including:

- 33.2.1.2.1 Universal precautions

- 33.2.1.2.2 Engineering and Work Practice Controls

- 33.2.1.2.3 Personal protective equipment

- 33.2.1.2.4 Housekeeping

- 33.2.1.2.5 Post-exposure evaluation and follow-up

- 33.2.1.2.6 Communication of hazards to employees and training

- 33.2.1.2.7 Recordkeeping

- 33.2.1.2.8 Procedures for evaluating circumstances surrounding an exposure incident.

- 33.2.1.3 The methods of implementation of these elements of the standard are discussed in the subsequent pages of this ECP.

- 33.2.2 Program administration:

- 33.2.2.1 Jobsite supervision is responsible for the implementation of the ECP. The Safety/Training Department will maintain, review, and update the ECP at least annually, and whenever necessary to include new or modified tasks and procedures.

- 33.2.2.2 Those employees who are determined to have occupational exposure to blood or other potentially infectious materials (OPIM) must comply with the procedures and work procedures and work practices outlined in this ECP.

- 33.2.2.3 Jobsite supervision will maintain and provide all necessary personal protective equipment (PPE), engineering controls (e.g., sharps containers), labels, and red bags as required by the standard. Jobsites audits will be conducted to ensure that adequate supplies of equipment are available in the appropriate sizes.

- 33.2.2.4 The Safety/Training department will be responsible for ensuring that all medical actions required are performed and that appropriate employee health and OSHA records are maintained.

- 33.2.2.5 The Safety/Training Department will be responsible for training, documentation of training and making the written ECP available to employees.
- 33.2.3 Methods of implementation and control
 - 33.2.3.1 All employees will utilize universal precautions and adhere to the ECP.
 - 33.2.3.1.1 Employees covered by the bloodborne pathogen's standard will receive an explanation of the ECP during their initial training session. It will also be reviewed in their annual refresher training. All employees have an opportunity to review this plan at any time during their work shifts by contacting his or her immediate supervisor.
 - 33.2.3.2 The Safety/Training Department is responsible for reviewing and updating the ECP annually, or more frequently if necessary to reflect any new or modified tasks and procedures which affect occupational exposure and to reflect new or revised employee positions with occupational exposure and to reflect new or revised employee positions with occupational exposure.
 - 33.2.3.2.1 PPE is provided to our employees at no cost to them. Training is provided by the Safety/Training Department in the use of the appropriate PPE for the tasks or procedures employees will perform.
 - 33.2.3.2.1.1 All employees using PPE must observe the following precautions:
 - 33.2.3.2.1.1.1 Wash hands immediately or as soon as feasible after removal of gloves or other PPE.
 - 33.2.3.2.1.1.2 Remove PPE after it becomes contaminated and before leaving the work area.
 - 33.2.3.2.1.1.3 Used PPE may be disposed of only in containers designated for biohazards.
 - 33.2.3.2.1.1.4 Wear appropriate gloves when it can be reasonably anticipated that there may be hand contact with blood or OPIM and when handling or touching contaminated items or surfaces; replace gloves if torn, punctured, contaminated, or if their ability to function as a barrier is compromised.
 - 33.2.3.2.1.1.5 Utility gloves may be decontaminated for reuse if their integrity is not compromised; discard utility gloves if they show signs of cracking, peeling, tearing, puncturing, or deterioration.
 - 33.2.3.2.1.1.6 Never wash or decontaminate disposable gloves for reuse.
 - 33.2.3.2.1.1.7 Wear appropriate face and eye protection when splashes, sprays, spatters, or droplets of blood or OPIM pose a hazard to the eye, nose, or mouth.
 - 33.2.3.2.2 Remove immediately or as soon as feasible any garment contaminated by blood or OPIM, in such a way as to avoid contact with the other surface.

- 33.2.3.2.3 Regulated waste is placed in containers that are closeable, constructed to contain all contents and prevent leakage, appropriately labeled or color-coded (see labels), and closed prior to removal to prevent spillage or protrusion of contents during handling.
- 33.2.3.2.4 Bins and pails (e.g., wash or emesis basins) are cleaned and decontaminated as soon as feasible after visible contamination.

33.3 Post-exposure evaluation and follow-up

- 33.3.1 Broken glassware that may be contaminated is picked up using mechanical means, such as a brush and dustpan.
- 33.3.2 Should an exposure incident occur; employees must contact their immediate supervisor.
 - 33.3.2.1 An immediately available confidential medical evaluation and follow-up will be conducted by a licensed healthcare professional and provided by C&C. Following the initial first aid (clean the wound, flush eyes, or other mucous membrane, etc.), the following activities will be performed:
 - 33.3.2.1.1 Document the routes of exposure and how the exposure occurred.
 - 33.3.2.1.2 Identify and document the source individual (unless the employer can establish that identification is infeasible or prohibited by state or local law).
 - 33.3.2.1.3 Obtain consent and plan to have the source individual tested as soon as possible to determine HIV, HCV, and HBV infectivity; document that the source individual's test results were conveyed to the employee's health care provider.
 - 33.3.2.1.4 If the source individual is already known to be HIV, HCV, and/or HBV positive, new testing need not be performed.
 - 33.3.2.1.5 Assure that the exposed employee is provided with the source individual's test results and with information about applicable disclosure laws and regulations concerning the identity and infectious status of the source individual (e.g., laws protecting confidentiality).
 - 33.3.2.1.6 After obtaining consent, collect the exposed employee's blood as soon as feasible after the exposure incident, and test blood for HBV and HIV serological status.
- 33.3.3 Administration of post-exposure evaluation and follow-up:
 - 33.3.3.1 The Safety/Training Department shall ensure health care professional(s) responsible for employee's post-exposure evaluation and follow-up are given a copy of OSHA's bloodborne pathogens standard.
 - 33.3.3.2 Safety/Training will also ensure the health care professional evaluating an employee after an exposure incident receives the following:
 - 33.3.3.2.1 A description of the employee's job duties relevant to the exposure incident.
 - 33.3.3.2.2 Route(s) of exposure

- 33.3.3.2.3 Circumstances of Exposure
- 33.3.3.2.4 If possible, results of source individual blood test.
- 33.3.3.2.5 Relevant employee medical records, including vaccination status.
- 33.3.3.3 The Safety/Training Department will provide the employee with a copy of the evaluating health care professional's written opinion within 15 days after completion of the evaluation.

33.4 Exposure Event Evaluation

- 33.4.1 A team comprised of safety, management and site supervision will review the circumstances of all exposure incidents to determine:
 - 33.4.1.1 Engineering controls in use at the time
 - 33.4.1.2 Work practices followed
 - 33.4.1.3 Description of the device being used (including type and brand)
 - 33.4.1.4 Protective equipment or clothing used at the time of exposure (gloves, eye shields, etc.)
 - 33.4.1.5 Location of incident
 - 33.4.1.6 Procedure being performed when the incident occurred
 - 33.4.1.7 Employee's training

33.5 Training

- 33.5.1 All employees who have occupational exposure to bloodborne pathogens receive training conducted by a Safety/Training representative who is authorized to instruct on First Aid/CPR and bloodborne pathogens.
- 33.5.2 All employees who have occupational exposure to bloodborne pathogens receive training on the epidemiology, symptoms, and transmission of bloodborne pathogen diseases in addition, the training program covers, at minimum, the following elements:
 - 33.5.2.1 A copy and explanation of the standard
 - 33.5.2.2 An explanation of our ECP and how to obtain a copy
 - 33.5.2.3 An explanation of methods to recognize tasks and other activities that may involve exposure to blood and OPIM, including what constitutes an exposure incident.
 - 33.5.2.4 An explanation of the use and limitations of engineering controls, work practices, and PPE.
 - 33.5.2.5 An explanation of the types, uses, location, removal, handling, decontamination, and disposal of PPE.
 - 33.5.2.6 An explanation of the basis for PPE selection.
 - 33.5.2.7 Information on the appropriate actions to take and people to contact in an emergency involving blood or OPIM.

- 33.5.2.8 An explanation of the procedure to follow if an exposure incident occurs, including the method of reporting the incident and the medical follow-up that will be made available.
- 33.5.2.9 Information on the post-exposure evaluation and follow-up that the employer is required to provide for the employee following an exposure incident.
- 33.5.2.10 An explanation of the signs and labels and/or color coding required by the standard and used at this facility.

33.6 Recordkeeping

33.6.1 Training records:

- 33.6.1.1 Training records are completed for each employee upon completion of training. These documents will be kept for at least three years in the C&C Safety Training Database, with a hard copy being maintained in the employee's personnel file.
- 33.6.1.2 The training records include:
 - 33.6.1.2.1 Dates of training sessions
 - 33.6.1.2.2 Contents or summary of the training sessions
 - 33.6.1.2.3 Names and qualifications of persons conducting the training
 - 33.6.1.2.4 Names and job titles of all persons attending the training sessions

33.6.2 Medical records:

- 33.6.2.1 Medical records are maintained for each employee with occupational exposure in accordance with 29 CFR 1910.1020, "Access to Employee Exposure and Medical Records".
- 33.6.2.2 Human Resources will maintain the required medical records.
- 33.6.2.3 Employee medical records are provided upon request of the employee or to anyone having written consent of the employee within fifteen working days.

33.6.3 OSHA recordkeeping:

- 33.6.3.1 An exposure incident is evaluated to determine if the case meets OSHA's recordkeeping requirements (29 CFR 1904).

34 DRUG AND ALCOHOL POLICY

34.1 Policy and scope

- 34.1.1 The Company has a vital interest in maintaining a safe, healthy, and efficient working environment. Employees who are under the influence of a drug or alcohol on the job pose serious safety and health risks to the user and to everyone on the job site. The use, sale, purchase, transfer, or possession of an illegal drug in the workplace, and the use, possession, or being under the influence of alcohol also poses unacceptable risks for safe, healthy, and efficient operations. The Company has the right and obligation to maintain a safe, healthy, and efficient workplace for its employees, and to protect the organization's property, information, equipment, operations, and reputation.
- 34.1.2 The Company recognizes its obligations to its employees, customers, and the public for the provision of services that are free of the influence of illegal drugs and alcohol and will endeavor through this policy to provide drug-and alcohol-free services. The Company further expresses its intent through this policy to comply with federal and state rules, regulations or laws that relate to the maintenance of a workplace free from illegal drugs and alcohol. As a condition of employment, all employees are required to abide by the terms of this policy and to notify Company management of any criminal drug statute conviction for a violation occurring in the workplace immediately after such conviction.
- 34.1.3 This policy applies to all departments, all employees and all job applicants of the Company including contracted employees.

34.2 Federal Regulations

- 34.2.1 The U.S. Department of Transportation and the Federal Motor Carrier Safety Administration, an agency within the DOT, have issued regulations (49 CFR Parts 40 & 382 hereinafter referred to as "**DOT Regulations**") which govern the use of the drugs and alcohol by employees who hold a CDL and drive a CMV. The FMCSA requires an employer to conduct drug and alcohol testing. The regulations apply to every person who operates a CMV for interstate, foreign, or intrastate commerce and to all employers of such persons and to all states.
- 34.2.2 It is the Company's intention to fully comply with DOT Regulations. In the event DOT regulations are amended or revised, the policy and the applicable terms, conditions, and/or requirements shall be deemed to have been amended automatically. The Company requirements shall be amended immediately, without giving prior notice to drivers and/or applicants or other employees covered by this Policy, unless DOT Regulations or other applicable law requires such notice.
- 34.2.3 The goal of the Company's Drug and Alcohol Policy is to ensure a drug and alcohol-free transportation and work environment, and to reduce and eliminate drug and alcohol related accidents, injuries, fatalities, and damage to Company property. For the purpose of this policy, any employee performing under the definitions described below will be referred to as a "driver/employee."

34.3 Criteria for drivers/employees

- 34.3.1 Under the FMCSA regulations, drivers who hold a CDL and drive a CMV are subject to drug and alcohol testing in accordance with federal regulations. CMV means a motor vehicle or a combination of motor vehicles used in commerce to transport passengers or property if the motor vehicle:
 - 34.3.1.1 Has a gross combination weight rating of 26,001 or more pounds; or
 - 34.3.1.2 Has a gross vehicle weight rating of 26,001 or more pounds; or
 - 34.3.1.3 Is designed to transport sixteen (16) or more passengers, including the driver; or
 - 34.3.1.4 Is of any size and is used in the transportation of materials found to be hazardous for the purposes of the Hazardous Materials Transportations Act and which require the motor vehicle to be placarded under the Hazardous Materials Regulations (49 CFR, Part 172, 1308).

34.4 Definitions

- 34.4.1 **Alcohol** means any beverage that contains ethyl alcohol (ethanol), including but not limited to beer, wine, and distilled spirits.
- 34.4.2 **Company Premises or Company Facilities** means all property of the Company including, but not limited to, the offices, facilities and surrounding areas on Company owned or leased property, parking lots, and storage areas. The term also includes Company owned or leased vehicles and equipment wherever located.
- 34.4.3 **Contraband** means any article, the possession of which on Company premises or while on Company business, causes an employee to be in violation of any Company work rule or law.
- 34.4.4 **Drug Testing** means the scientific analysis of urine, breath, or saliva for the purpose of detecting a drug or alcohol.
- 34.4.5 **Illegal Drug** means any drug which is not legally obtainable; any drug which is legally obtainable but has not been legally obtained; any prescribed drug not legally obtained; any prescribed drug not being used for the prescribed purpose; any over-the-counter drug being used at a dosage level other than recommended by the manufacturer or being used for a purpose other than intended by the manufacturer; and any drug being used for a purpose not in accordance with bona fide medical therapy. Examples of illegal drugs are cannabis substances, such as marijuana and hashish, cocaine, heroin, methamphetamine, phencyclidine ("PCP"), and so-called designer drugs and look-alike drugs.
- 34.4.6 **Legal Drug** means any prescribed drug or over-the-counter drug that has been legally obtained and is being used for the purpose for which it is prescribed or manufactured.
- 34.4.7 **Reasonable Suspicion** means a belief based on objective facts sufficient to lead a prudent person to conclude that a particular employee is unable to satisfactorily perform his or her job duties due to drug or alcohol impairment. Such inability to perform may include, but not be limited to, decreases in the quality or quantity of the employee's productivity, judgment, reasoning, concentration, and psychomotor control, and marked changes in behavior. Accidents, deviations from safe working

practices, and erratic conduct indicative of impairment are examples of “reasonable suspicion” situations.

- 34.4.8 **Under the Influence** means a condition in which a person is affected by a drug or by alcohol in any detectable manner. The symptoms of influence are not confined to those consistent with misbehavior, nor to obvious impairment of physical or mental ability, such as slurred speech or difficulty in maintaining balance. A determination of being under the influence can be established by a professional opinion, a scientifically valid test, such as urinalysis, and in some cases by the opinion of a layperson.
- 34.4.9 **Safety-Sensitive** function means all time, from the time a driver/employee begins to work, or is required to be in readiness to work, until the time he or she is relieved from work and all responsibility for performing work. For the purpose of this section, employees are considered to be performing a safety-sensitive function and subject to drug and/or alcohol testing at the following times and when management so advises:
- 34.4.9.1 All times at an employer or shipper plant, terminal, facility, or other property, or on any public property, waiting to be dispatched, unless the driver has been relieved from duty by the employer.
 - 34.4.9.2 All times inspecting equipment as required by 49 CFR, 392.7 and 392.8 or otherwise inspecting, servicing, or conditioning any commercial motor vehicle at any time.
 - 34.4.9.3 All times spent at the driving controls of a commercial motor vehicle in operation.
 - 34.4.9.4 All times, other than driving time, in or upon any commercial motor vehicle except time spent resting in a sleeper berth.
 - 34.4.9.5 All times loading or unloading a vehicle, supervising, or assisting in the loading or unloading, attending a vehicle being loaded or unloaded, remaining in readiness to operate the vehicle, or in giving or receiving receipts for shipments loaded or unloaded.
 - 34.4.9.6 All times repairing, obtaining assistance, or remaining in attendance upon a disabled vehicle.
- 34.4.10 **FMCSA Drug (5 Panel):** For purposes of this section, “drug” means controlled substance, as defined in Schedules I through V of Section 202 of the Controlled Substances Act, 21 USC, 812. The term includes prescribed drugs not legally obtained, prescribed drugs not being used for prescribed purposes, and any prescribed drugs not taken in accordance with a prescription. In other words, medications prescribed for someone other than the driver will be considered unlawfully used under any circumstances. Pursuant to DOT regulations, all DOT-required drug tests must test for the following substances identified in 49 CFR, 40.85: marijuana, cocaine, amphetamines, opiates (e.g., opium, heroin, morphine, or codeine) and phencyclidine. (i.e., PCP or “angel dust”) The Company reserves its independent authority and discretion to prohibit and test for other drugs, as defined above, within the limits of applicable law and the Company Drug and Alcohol Policies and Procedures.

- 34.4.11 **NON-FMCSA Drug (10 Panel or other as needed):** Required by the Company to determine fitness for duty or for other reasons that comply with local, state, and federal laws or other Company policies and procedures.
- 34.4.12 Confirmation of Test:
- 34.4.12.1 Alcohol: A second test, following a screening test with a result of 0.02 or greater, which provides quantitative data or alcohol concentration.
 - 34.4.12.2 Drugs: A second analytical procedure to identify and quantify the presence of a specific drug or metabolite that is independent of the screening test.
- 34.4.13 **CDL Driver/Employee:** Any person who holds a CDL and operates a CMV, which falls under the specific DOT criteria. This includes but is not limited to full-time or part-time regularly employed drivers, casual, intermittent, or occasional drivers, leased drivers, and independent owner-operator contractors.
- 34.4.14 **NON-CDL Driver/Employee:** Any employee who drives a Company vehicle. Non-regulated commercial, non-DOT, non-commercial or who drives any vehicle on company business.
- 34.4.15 **Refuse to Submit:** Refusal to submit to a required drug and/or alcohol test (also “refusal to test”) means any circumstance outlined in 49 CFR, 40.191 or 40.261, including circumstances in which a driver (applies to DOT and Non-DOT) refuses any and all substance testing designated by the Company approved MRO and DER.
- 34.4.15.1 Fails to appear for any test. This includes the failure of an employee (including an owner/operator) to appear for a test when called by the Company’s Consortium/Third Party Administrator (“C/TPA”) or its DER.
 - 34.4.15.2 Fails to remain at the testing site until the testing process is complete.
 - 34.4.15.3 Fails to provide a urine specimen for any drug test or fails to provide an adequate amount of saliva or breath for any alcohol test required by Part 382 or Company policy.

34.5 Use of legal drugs

- 34.5.1 The undisclosed use of any prescription medication or over-the-counter medication that may impair the ability of an employee or job candidate to perform his/her job or pose a direct threat to the safety of self, co-workers, or the public while performing Company business or on Company premises, is strictly prohibited. However, an employee may continue to work with proper written clearance from the Company's DER or MRO.
- 34.5.2 An employee whose medical therapy requires the use of a legal drug must report such use to his or her supervisor prior to the performance of Company business. The supervisor who is so informed will contact the Company's designated Human Resources officials for guidance. The Company at all times reserves the right to judge the effect that a legal drug may have on job performance and to restrict the using employee’s work activity or presence at the workplace in accordance with applicable law.

34.6 Illegal drugs and alcohol

- 34.6.1 The use, sale, purchase, transfer, or possession of an illegal drug or of alcohol by any employee while on Company premises or while performing Company business is prohibited.

34.7 Discipline

- 34.7.1 Any employee who possesses, distributes, sells, attempts to sell, or transfers illegal drugs on Company premises or while on Company business will be subject to discipline up to and including termination of employment. Any employee who is found to be in possession of or under the influence of alcohol in violation of this policy will be subject to discipline up to and including termination of employment. Any employee who is found to be in possession of contraband in violation of this policy will be subject to discipline up to and including termination of employment. Any employee who is found through drug and/or alcohol testing to have in his or her body a detectable amount of an illegal drug, an unapproved substance - including substances designated safety-sensitive by the company-approved MRO, or of alcohol, will be subject to discipline up to and including termination of employment. Please see the Rehabilitation and Employee Assistance section below for more information on circumstances where rehabilitation may be available.

34.8 Removal from safety-sensitive function

- 34.8.1 Employees and applicants shall not perform, nor be permitted to perform, a safety-sensitive function, including driving a commercial motor vehicle if any of the above prohibitions, or the drug and/or alcohol rule of another DOT agency and/or any Company policies, are violated. Employees and applicants who violate a DOT drug and alcohol regulation and/or any stipulation in the Company's Drug and Alcohol Policy will be advised by the Company of the resources available in evaluating and resolving drug and/or alcohol problems. This includes the names, addresses, and telephone numbers of Substance Abuse Professionals ("SAPs") and counseling/treatment programs approved by the Company's Designated Employer Representative ("DER") and Company approved Medical Review Officer(s) ("MRO").
- 34.8.2 All drug and alcohol testing under this policy will be conducted by a qualified person employed by a licensed or certified laboratory as defined by statute, which will obtain the individual's written consent prior to testing. The Company will pay for the full cost of the test. Employees will be compensated at their regular rate of pay for time spent submitting to a drug and alcohol test required by the Company.

34.9 Drug and alcohol testing of job applicants

- 34.9.1 All job applicants, including applicants for part-time and seasonal positions and applicants, who are former employees, are subject to drug and alcohol testing. All offers of employment with the Company are conditioned on the applicant submitting to and successfully completing and passing a drug and alcohol test in accordance with the testing procedures described in this policy.
- 34.9.2 An applicant will be notified of the Company's Drug and Alcohol Testing Policy prior to being tested; will be informed in writing of his or her right to refuse to undergo such testing; and will be informed that the consequence of refusal is termination of the pre-employment process.

- 34.9.3 All applicants will be provided written notice of this policy and by signature will be required to acknowledge receipt and understanding of the policy. If an applicant refuses to take a drug or alcohol test, or if evidence of the use of illegal drugs, unapproved safety-sensitive drugs, or alcohol by an applicant is discovered, either through testing or other means, the pre-employment process will be terminated.

34.10 Types of drug/alcohol testing

34.10.1 Testing based on reasonable suspicion

- 34.10.1.1 Employees may be asked to submit to a drug and alcohol test if an employee's supervisor or other person in authority has a reasonable suspicion, based on objective factors such as the employee's appearance, speech, behavior, or other conduct and facts, that the employee possesses or is under the influence of unlawful drugs, such as marijuana, or alcohol, or both. Employees who take over-the-counter medication or other lawful medication that can be legally prescribed under both federal and state law to treat a disability should inform the PCA Human Resources Department if they believe the medication will impair their job performance, safety, or the safety of others or if they believe they need a reasonable accommodation before reporting to work while under the influence of that medication. For more information on how to request reasonable accommodation, please refer to the Company's Reasonable Accommodations Policy.

34.10.2 Periodic/random testing

- 34.10.2.1 All employees are subject to drug and alcohol testing on a quarterly basis. Random selections must follow FMCSA drug and alcohol testing guidelines as well as other state, federal and local regulations, and the Company's Drug and Alcohol Policy. Employees who are randomly tested will be selected by a lottery-style, computerized method by the Company approved Third Party Administrator. Company employees will be placed in DOT and NON-DOT random pools according to Company policy, state, federal, and local laws. DOT testing includes a 5-panel screening and NON-DOT includes a 10-panel screening along with any other testing determined to be pertinent by the Company's DER and Company's MRO. Breath Alcohol testing will also be completed randomly according to Company requirements, state, federal, and local laws.

34.10.3 Post-incident testing

- 34.10.3.1 Employees involved in any work-related accident or incident involving the violation of any safety or security procedures may be required to submit to drug and alcohol testing. This applies even if the incident did not result in injury to any person or any property damage.
- 34.10.3.2 A CDL driver/employee who is performing a safety-sensitive function must submit to a post- accident drug and alcohol test as soon as possible after any occurrence that meets the description of a "DOT Accident." For purposes of this section and the Company's Drug and Alcohol Testing Program, a "DOT Accident" is defined as an occurrence involving a commercial motor vehicle operating on a public road in commerce which results in:

- 34.10.3.2.1 A loss of human life; or
- 34.10.3.2.2 The driver receiving a citation under state or local laws for a moving traffic violation arising from the accident if the accident involved:
- 34.10.3.2.3 Bodily injury to a person who, as a result of the injury, immediately receives medical treatment away from the scene of the accident; and/or
- 34.10.3.2.4 One or more motor vehicles incurring disabling damage as a result of the accident, requiring the motor vehicle to be transported away from the scene by a tow truck or other vehicle.
- 34.10.3.3 A driver/employee involved in an accident whether required to be tested for drugs and/or alcohol or not, is required to immediately contact his/her supervisor and the Company's DER. The employee must remain available to be tested under the Company policy.
- 34.10.3.4 All employees subject to Post-Incident or Reasonable Suspicion testing may be removed from safety-sensitive functions and receive a non-disciplinary suspension until the Company receives the test results. Hourly (non-exempt) employees will not be compensated for the time missed from work if the test is positive, adulterated, or substituted, but may be compensated if the tests are negative.

34.11 Appeal of drug screen result

- 34.11.1 An applicant or employee whose drug test reported positive may appeal the test result by contacting the Company's Approved MRO, a third party (National Toxicology Services – NTS). The MRO will explain the requirements for obtaining a split specimen test for drug screening.
- 34.11.2 An employee whose drug test is reported positive will be offered the opportunity to:
 - 34.11.2.1 Have an independent test, at the employee's expense, of the remaining portion of the urine specimen that yielded the positive result.
 - 34.11.2.2 Obtain the written test result and submit it for independent medical review at the employee's expense.
- 34.11.3 During the period of an appeal and any resulting inquiries, the pre-employment selection process for an applicant will be placed on hold, and the employment status of an employee may be suspended. An employee who is suspended pending appeal will be permitted to use any available annual leave in order to remain in an active pay status. If the employee has no annual leave or chooses not to use it, the suspension will be without pay.

34.12 Rehabilitation and Employee Assistance

- 34.12.1 Rehabilitation assistance may be offered under certain circumstances. Employees should contact the PCA Human Resources Department for more information. The Company will provide any employee, upon request and at no cost to the employee, information concerning approved resources that are available for the treatment of drug and alcohol-related problems.

34.13 Drug/alcohol inspections and searches

34.13.1 The Company may conduct unannounced general inspections and searches for drugs or alcohol on Company premises or in Company vehicles or Company equipment wherever located. Employees should have no reasonable expectation of privacy while on Company premises and are expected to cooperate with workplace searches. A search of an employee and his or her private property may be made when there is reasonable suspicion to conclude that the employee is in violation of this Drug and Alcohol Policy. An employee's consent to a search is required as a condition of employment, and the employee's refusal to consent may result in disciplinary action, up to and including termination of employment. Illegal drugs, drugs believed to be illegal, and drug paraphernalia found on Company property will be turned over to the appropriate law enforcement agency, and the full cooperation given to any subsequent investigation. Substances that cannot be identified as illegal drug by a layman's examination will be turned over to local law enforcement or a forensic laboratory for scientific analysis. An employee who is found to possess contraband on Company property or while on Company business will be subject to discipline up to and including discharge. If an employee is the subject of a drug-related investigation by the Company or by a law enforcement agency, the employee may be suspended pending completion of the investigation or immediately discharged.

34.14 Confidentiality

34.14.1 All information relating to drug or alcohol testing or the identification of persons as users of drugs and alcohol will be protected by the Company as confidential unless otherwise required by law, overriding public health and safety concerns, or authorized in writing by the persons in question.

The Company Approved DER:

PCA Department of Human Resources: 386-333-6441

The Company Approved MRO:

National Toxicology Screening: 615-353-1888

The Company Approved Certified Lab:

Quest Labs

35 DISCIPLINARY POLICY

35.1 Procedures

35.1.1 This three-step disciplinary policy may be followed to eliminate unsatisfactory and/or unsafe behavior at the Company. However, the Company retains the right to skip any step depending on the circumstances. The supervisor has the authority to place the employee on unpaid leave, suspension, or terminate the employee immediately for any violation.

35.1.1.1 **First Offense-** A verbal warning issued with written documentation.

35.1.1.2 **Second Offense-** Written warning plus a two-day suspension without pay.

35.1.1.3 **Third Offense-** Termination.

36 DOT CERTIFICATION AND MEDICAL CLEARANCE

36.1 CMVs

- 36.1.1 The Motor Carrier Act of 1935 and the Commercial Motor Vehicle Safety Act of 1986 mandate that all drivers of commercial motor vehicles meet the following requirements:
 - 36.1.1.1 Be at least 18 years of age.
 - 36.1.1.2 Always maintain and carry a current medical card.
 - 36.1.1.3 Successfully pass a Pre-employment/Pre-qualification drug test prior to operating commercial motor vehicles.
 - 36.1.1.4 Maintain a valid CDL license and be prepared to undergo drug and alcohol screening at any time.
 - 36.1.1.5 CDL drivers must “self-certify” with their individual state of licensure effective July 15, 2013. Each driver must verify their “driving category” (i.e., whether they operate in Intrastate or Interstate commerce and whether they are required to maintain a DOT Physical). Drivers must also provide validity of their DOT Medical Certification to their state of licensure.

36.2 Policy

- 36.2.1 Based upon these facts and the requirements for all non-administrative C&C employees to operate commercial vehicles and equipment, the following policy is established:
- 36.2.2 Drivers with CDL’s shall submit to a physical examination for a medical card prior to current expiration date so time does not lapse. Failure to pass DOT physical will result in suspension of C&C vehicle privileges until said physical can be passed.
- 36.2.3 Drivers shall cease to operate C&C vehicles and immediately notify their supervisor if:
 - 36.2.3.1 They are charged with DUI/DWI while operating any vehicle (private or commercial).
 - 36.2.3.2 They receive suspension or revocation of any driving privilege.
- 36.2.4 Commercial drivers must notify the state which issued their license of any violations received in any other state.
- 36.2.5 Drivers shall notify C&C of all traffic violations. C&C conducts annual driver’s license checks.
- 36.2.6 C&C equipment and vehicles are for official company business only. Any operation contrary to this MUST BE APPROVED IN ADVANCE by a designated C&C supervisor.
- 36.2.7 Operators and passengers of C&C vehicles equipped with seat belt and/or shoulder restraints SHALL wear them.
- 36.2.8 Drivers must perform vehicle inspections and complete a written report of daily inspection.
- 36.2.9 Drivers shall abide by the Federal Motor Carrier Safety Regulations.

36.3 Driver records

- 36.3.1 C&C receives official driver records that reflect the preceding seven (7) years on all drivers. Drivers may be subject to immediate termination of employment if records reveal a failure on their part to abide by any provision of this policy.

36.4 License suspension

- 36.4.1 Willful operation of a motor vehicle while under license suspension, revocation or influence of intoxicants or drugs can place the employee in a liability position should an accident occur and may result in the immediate termination of employment.

36.5 NON-CMV's

- 36.5.1 Personal use of company vehicles should be approved by the C&C supervisor or department head. The assignment and use of a C&C vehicle is a privilege, and it is the policy of C&C to insist that employees always operate company vehicles in a safe and economical manner. Personal use of company vehicles may result in taxable compensation to the employee.
- 36.5.2 Use of the company vehicle is restricted to the company-approved driver only, unless otherwise approved by the employee's supervisor.
- 36.5.3 A Motor Vehicle Record (MVR) will be obtained by the company initially, annually, and as needed for all potential drivers of company vehicles.
- 36.5.4 The driver of a C&C vehicle must conform to all traffic laws, signals, and markings and make proper allowance for adverse weather and traffic conditions.

37. Non-English-Speaking Personnel

- 37.1 It is incumbent upon all employees to perform all tasks with safety as their highest priority. To this end, when non-English speaking personnel are employed or present on-site, it is the supervisor's obligation and responsibility to ensure that all personnel understand all work area signage, emergency announcements via public address systems, user radios, cell and land-based phones, and computer or personal communications.
- 37.2 Non-English-speaking crews shall have at least one bilingual translator available at all times while work is being performed. In the event the translator leaves a work site where the work is being performed by non-English speaking personnel, the work being performed shall stop and the non-English speaking personnel shall vacate the work site areas until they have a translator.

38. Wire Stringing

Permanent system/structure grounds (pole grounds, ground rods, counterpoise, etc...) should be installed before commencing wire stringing operations. This ensures an adequate ground source for which to connect personal protective grounds. If permanent system grounds are not in place during wire stringing operations,

temporary driven ground rods and ground jumpers must be utilized at every structure to provide an adequate ground source to connect personal protective grounds. These temporary grounds may only be removed after permanent system grounds are installed.

38.1 Wire Stringing Plan

A wire stringing plan is required for all wire stringing activities. This includes all new wire installation, wire replacement, and wire removal activities.

The wire stringing plan must, at a minimum, address the following:

- Distance of wire pull
- Wire size
- Stringing block size (minimum 20:1, follow wire manufacturer's guidelines)
- Tension requirements for pulling and sagging
- Selection of adequately rated stringing equipment
- Inspection of all stringing equipment/components (condition of stringing rope/hard line, Kellem grips, swivels,) ALL tape must be removed from existing Kellem grips on ropes and hard line to inspect underneath prior to each use
- Break over approach/departure angle (minimum 3:1)
- Maximum pull-through angles & block size/spreader bar requirements
- Equipment set-up locations
- Energized line crossings
- Street crossings
- Hotline tag requirements
- Guard structures/equipment
- Permanent/Temporary anchor/guy wire tension, size, location
- Induced voltage risks
- Equal potential work zones around stringing equipment
- Temporary conductor grounding
- Temporary catch off/ safeties
- Rolling ground and grounded traveler locations
- Radio equipment/communication
- Traffic control plan

During all wire stringing operations, electrical hazards must be identified and mitigated through proper grounding and the creation of equal potential work zones.

The two most common electrical hazards are:

- Contact with energized lines
- Induced voltage from adjacent energized lines

38.2 Line and Road Crossings

Guard structures, equipment or other approved guard apparatus are required at all crossings where wire stringing operations take place above energized electrical circuits or roadways. Guards should be installed as close as possible to the circuit(s) or road being guarded.

If equipment such as bucket trucks are utilized as guard equipment, the equipment must be grounded and enclosed in a delineated equipment safety zone.

If energized lines being crossed are 69kv or lower, properly rated protective line guards must be installed.

Hotline tags (non-reclose) must be received on all energized lines which wire stringing operations will cross over. Adjacent energized lines may also require a hotline tag or line clearance based upon a hazard assessment.

Roadways being crossed must have proper signage, flaggers, and/or traffic control plans are required by local/state regulations.

38.3 Induced Voltage

Induced voltage comes from energized parallel line conductors. Factors such as current flow, horizontal/vertical distance, and distance the lines parallel each other greatly affect the quantity of voltage induced.

38.4 Grounding of wire stringing equipment

An equal potential zone must be constructed around all wire-stringing equipment such as pullers, tensioners, and wire reel support.

- All wire stringing equipment must be grounded via driven ground rods and a minimum of 2/0 copper ground jumpers.
- All equipment ingress, egress, and ground-level operator positions must utilize an insulated platform, and an approved ground mat connected back to the equipment frame with a minimum of 2/0 copper ground jumper. This should be arranged so the worker can step from the earth ground to the insulated step, then to the ground mat, and then onto the piece of equipment. The insulated platform and ground mat footprint must be of adequate size to ensure both feet of an employee are on the platform prior to stepping onto the approved ground mat. This limits touch/step potential issues by providing an equal potential between ground access points and the equipment. No physical contact shall be made from the ground to the equipment unless the worker is standing with both feet on the ground mat.
- Wire stringing equipment must be enclosed in a delineated equipment safety zone. Safety zone delineation materials such as snow fencing, cones, cone bars, etc. must provide a physical barrier to workers and the public.
- A rolling ground must be utilized on each wire pull.
- Grounded travelers must be used on each brake-over structure and on both sides of energized line crossings.
- During wire movement, sagging, dead-ending, and clipping operations, follow all grounding procedures outlined in Section 8 to eliminate dangerous differences in potential.