

SITE SPECIFIC HEALTH & SAFETY PLAN

DOT BUILDING OFFICE CONSTRUCTION PROJECT BUENOS AIRES, ARGENTINA

**On Behalf of
Contract Rent SA &
The General Electric Company**

20 / October/ 2011
rev. 0

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1 GENERAL

1.1 Objective

To establish a plan for implementing the CONTRACT Safety and Environmental Manual procedures on the Dot Project.

1.2 Responsibilities

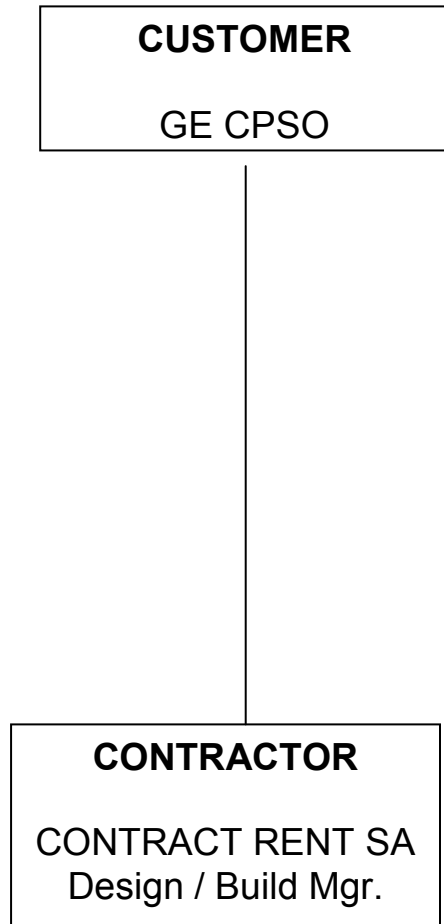
The CONTRACT representative that is coordinating the activities in the work is the direct responsible for the implantation of the Safety Plan.

In case of contract of companies, these should designate qualified representative to moderate representative to CONTRACT all of the actions that involve EHS.

The representatives of the contracted companies, subcontractors and/or participants of the consortium are responsible for the maintenance of the pertinent legal documents their respective companies. The Leader of the Consortium is reserved of the right of requesting the presentation and copies of these documents for inspection of legal conformities.

Additional measures of control should be implemented in agreement with local legislation, regulations, orders, ordinances, Contract, and GE-CPSO, seeking to protect the collaborators against risks of accidents in the workplace.

Organizational Chart



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Dot Building

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1.3 Environment Health and Safety Policy

Our vision is to be the leader in safety management and performance and our objective is that our health and safety goals be effectively communicated, understood and implemented in a consistent manner across our business and customers. We are committed to meet all regulatory requirements.

We will continue to place the most importance on health and safety awareness programs and we are determined to continue to improve our safety performance to realize our vision.

General Guidelines/Prohibitions

- Alcoholic beverages, recreational drugs and people under the influence of these substances are not permitted on site.
- Weapons and firearms are strictly prohibited.
- No food or drink will be allowed in the construction work area except in the designated eating area.
- Music radios/headsets are prohibited.
- No cameras or video equipment are permitted on site except as necessary to document the progress of the Work and as may be allowed under the specific Site Security guidelines.
- Smoking is not permitted in any building (including the building footprint and roof). Smoking is allowed in designated areas only.
- Horseplay and fighting is prohibited
- Gambling and sexually explicit materials are prohibited.
- No one will be allowed to enter the site without proper identification. All trade workers, vendors, and visitors must comply with the Owner's badge and access program.
- Do not prop exit doors.

1.4.Legal Documentation

The basic documentation that must be available at the Dot site is the following:

- Labor Inspection Book – Law 19.587
- Work Notice- Decree 911/79. Law 24.557
- Carnet of EHS responsibility
- Safety Prevention Plan (PCMAT) – Law 19.587.Decree 911/79
- PPE Register- Law 19.587. Res. 299/11
- Training register for workers- Law 19.587
- Regulatory EHS Department
- Workers ID Copy
- Accident Report Communication
- Accident Investigation Form
- Employee Qualification Certification

1.5.RISK ASSESSMENT

The recognition of risks in the work atmosphere can be made with the use of several different tools, each one with the objective of identifying a class or category of different risks.

1.5.1.Risks Identification Form

The Risk Identification Form is utilized to identify and document risks/concerns related to Health, Safety and the Environment. The Form will then be analyzed to determine the appropriate means to control and mitigate those identified risks. (See Attachment 2)

1.5.2.General and Specific Inspections

In addition to daily workarounds, the Site Safety Representative shall conduct a daily inspection of controlled work areas.

Inspection/audit results will be reported to the Site Manager for corrective action. Audits/Inspections and related actions will be documented and maintained on file at the site. As a GE requirement for this Project, all high risk findings will be closed within 24 hours; all other findings will be closed within 48 hours.

Inspections findings will be communicated daily to Contract Rent and GE and will be tracked through the weekly report until conclusion.

1.5.3.Risk Assessment

Risk Assessment will be conducted to identify the steps, hazards, and safe-working procedures associated with each job task. The following information will be evaluated:

- Nature of the tasks to be performed.
- Potential chemical hazards (e.g., inhalation, ingestion, and skin contact).
- Potential for physical hazards (e.g., heat, noise, and vibration).
- Potential for ergonomic stressors (e.g., repetitive motion, lifting, and awkward postures).
- Needed control measures (e.g., machine guarding, ventilation, isolation, worker rotation, lifting devices, and tool designs) to perform the job safely.
- Operational references and procedures (e.g., equipment shutdown, lockout/tagout procedures, and personal protective equipment [PPE]).
- Need and availability of personal protective equipment.
- Previous chemical monitoring data or prior assessments.
- Accident and injury records for prior years.
- Additional safety hazards such as falls, electrical, struck-by, fire

and explosion, machine guarding, and hand, eye and foot hazards.

The Risk Assessment process will include:

- Visual observation of job task.
- Interview(s) with affected employees.
- Job task/operation review.

During the development of the Risk Assessment, additional health and safety issues will be documented that require immediate attention (e.g., missing guard) or control measures (e.g., ventilation) outside the direct scope.

1.5.4. Work Permits/THA

Work Permits or Task Hazard Analysis shall be opened for high-risk activities for each work shift. High- Risk activities are defined as those that can result in serious injury or death if performed in an unsafe manner.

Work Permits are required for the following high-risk work activities and/or processes:

- Confined Space Entry
- Electrical Safety
- Fall Protection
- Hot Work
- Lockout/Tagout
- Radiation Health & Safety
- Trenching and Excavation
- Compressed Gases, Storage and Handling
- Liquid Filled Electrical Equipment

A Work Permit/THA Model is available in Attachment 03.

The methodology to complete a Work Permit/THA is detailed in Attachment 04.

1.6. Training and Orientation

The Contractor shall provide qualified employees with the training necessary to enable them to perform work assignments in a safe manner and comply with Contract Rent & GE safety requirements.

The Contractor Site Manager will designate a Competent Person as Site Safety Representative responsible for the proper administration of Contractor site safety activities.

All safety orientation and training conducted shall be documented and made available upon request.

Prior to performing activities or work at the site, a Project Safety Orientation for Customer employees, contract personnel, and site visitors shall be given by the Site Safety Representative. All Project Safety Orientations shall include a review of the Project's Safety Requirements and elements of this Health & Safety Plan. Acknowledgement of receipt of Orientation for site personnel will be documented and kept on-file.

1.7.Weekly Toolbox Meetings

Relevant Safety & HazCom Talks shall be reviewed with crews during weekly toolbox meetings.

Toolbox meetings will be conducted by the Safety Technician at the workplace for groups of 10-20 employees each time. All employees shall be trained. This meeting shall be registered through an attendees list.

Typical themes for the toolbox meetings are: PPE, Electrical Safety, High Risk Activities, Ergonomics, etc.

1.8.Weekly Meetings

A weekly safety meeting shall be held by the Site Safety Manager or his/her designee to coordinate related safety activities with Contract Rent and GE Representatives. A report shall be generated of the meeting minutes, discussion topics, and action items/follow-up.

1.9.Audits / Inspections

In addition to daily workarounds, the Site Safety Representative shall conduct a daily inspection of controlled work areas.

Inspection/audit results will be reported to the Site Manager for corrective action. Audits/Inspections and related actions will be documented and maintained on file at the site.

Inspection/audit results will be reported to the Site Manager for corrective action. Audits/Inspections and related actions will be documented and maintained on file at the site.

Inspections findings will be communicated daily to Contract Rent and GE by email and will be tracked through the weekly report until conclusion.

In case of imminent risks, the corrective action shall be implemented immediately. High Risk finding shall be concluded in 24 hours and other findings shall be addressed in 48 hours.

1.10.Disciplinary Actions

In case of violation of the Contractor Safety Policy , the criteria described below shall be applied and the contracted can be removed of the approved contracted list. All of the notifications should be formal, following the Attachment IV.

(a) If the identified violation has happened in an operation that IS NOT OF HIGH RISK, the following procedure is applied:

1st violation: The employee receives a formal warning (Copy for company)

2nd violation: The contractor is notified

3rd violation: The contractor is notified and the employee is excluded of the project

(b) If the identified violation has happened in an operation of HIGH RISK, the following procedure is applied:

1st violation: The contractor is notified

2nd violation: The contractor is notified and the employee is excluded of the service project

3rd violation: The contractor company is excluded of the List of Approved Companies

2 SAFETY

2.1.Safety Committee (CIPA) and Regulatory EHS Department (SESMT)

In order to determine whether a company needs to set up a SESMT, the degree of risk of its main activity and the total number of employees must be examined. Once the degree of risk and the number of employees is identified, Table II of the NR-04 lists the size requirements of an SESMT.

For the Dot Project the requirements are the following:

Safety Committee: A Safety Committee will be required if any company employees more than 50 fixed workers at the Dot Building. Otherwise, a designed Safety Representative shall be indicated by the company.

If required, the Safety Committee shall be represented by one elected employee and one employee indicated by the company. Monthly meetings shall be conducted and minutes shall be registered.

SESMT: An Employed Safety Technician will be required if any company employees more than 100 fixed workers at the Dot Building. This safety technician shall be the responsible to aware employees, investigate accidents, risk assessment and register safety actions and needs.

2.2.Accident Investigation

- a. Employees will report all incidents/accidents to their supervisor immediately.
- b. All incidents/accidents, including first-aid cases, will be investigated. The magnitude of the investigation will vary according to the severity or potential severity of the incident/accident.
- c. Upon notification of an incident/accident, Part 1 of the Incident/Accident Investigation Report will be completed. This report will be completed and submitted to Contract Rent and GE representatives by the end of the work shift. Part 1 of the Incident/Accident Investigation Report is presented as Attachment 15.

Part 1 Incident/Accident Investigation Steps

Reported Incident/Accident ---> Render Aid ---> Secure Scene --->
Abate Immediate Hazard(s) ---> Complete Part 1 of Incident/Accident
Investigation Report ---> Submit Form

- d. Part 1 of the Incident/Accident Investigation Report will be reviewed to determine the approach to the incident/accident investigation and allocation of appropriate personnel or teams.
- e. An investigation team will be assembled to complete the incident/accident investigation. The team will consist of management, health and safety representatives, and employees including Contract Rent and GE representatives.
- f. The investigation will determine the root cause(s) of the incident, and identify corrective action(s). The investigation will be started within 24 hours.
- g. Part 2 of the Incident/Accident Investigation Report will be completed to document the root cause and feasible corrective actions to prevent the reoccurrence of the incident/accident. Part 2 of the Incident/Accident Investigation Report is presented as Attachment 15.

Part 2 Incident/Accident Investigation Steps

Review Part 1 of Incident/Accident Investigation Report --->
Conduct Reporting Requirements (as applicable) --->
Complete Part 2 of Incident/Accident Investigation Report
(Gather Facts, Determine Root Cause, and Establish and Implement
Corrective Actions) ---> Notify Employees ---> Update Procedures --->
Follow Up

- h. Corrective actions will be implemented in a timely fashion with defined dates and responsible parties for completion and follow up. Corrective actions will be tracked to closure.
- i. The accident report, investigation, follow-up and closure will be provided to GE representatives for documentation in the GE Powersuite database.

2.3.PPE

Wear approved safety glasses/side shields, hard hats, and safety shoes through the project, except in office areas (Metal hard hats are prohibited). Wear an approved full body harness and two lanyards (100% "Tie-off") whenever there is an exposure to a hazardous condition such as working over moving machinery, or when working on platforms, walkways, scaffolding, etc. which are greater than 4' (h) and are not protected by a standard guardrail or equivalent. If in doubt, use a full body harness and lanyards attached to a proper anchorage.

The following Fire Retardant Clothing (FRC) is required when working at energized substation locations: FR long sleeve shirt (minimum *ATPV value 5) and 100% cotton jeans/pants. Additional FRC may be required depending on hazard category of task and available short circuit energy (e.g. FRC pants, lab coat, coveralls, or switching coat and hood).

*ATPV = Arc Thermal Performance Value. The higher the ATPV the more protected one is from second degree burn. The use of cotton underwear/T-shirts will increase the ATPV rating when worn in conjunction with FRC.

Designate all areas where approved hearing protection is required. Wear "Approved" Hearing Protection in "Designated Areas". When in doubt of noise levels, hearing protection shall be used.

Wear other PPE such as protective gloves, hearing protection, etc. where required. When working on or near energized equipment, Flame Retardant Clothing (FRC) is required as an outer layer. Only 100% natural fiber (cotton) garments are allowed for use in conjunction with FRC. Synthetic fibers or blends such as rayon, nylon, polyester are prohibited. Shirt sleeves must be rolled down and buttoned.

2.4.Housekeeping

Maintain work areas and walkways clear of obstructions and the accumulation of tripping hazards and combustible debris, good chemical storage and identification, storage area identification, avoid exposed nails and sharp objects, use of anti slippery devices in stairs are examples of good practices.

Corrective actions will be taken immediately, whenever possible, for all findings noted on a general or specific health, safety, and housekeeping inspection or during a job task observation. Appropriate corrective actions will be defined on the inspection or observation form.

2.5. Machines and Equipment

Equipment-specific workplace inspections will be conducted and documented as necessary to address certain equipment/issues within the construction area to verify that the hazards are recognized and controlled, and for regulatory compliance. Specific workplace inspections will be conducted in these equipments: cranes, hoists and lifting devices, powered industrial trucks, ventilation systems, and fire protection systems.

Permit only qualified operators to operate cranes and motorized equipment. Contractor supervision shall make available upon request, documentation establishing operator experience.

2.6. Manual Tools

In addition to checks prior to use, inspect rigging equipment, ladders, electrical equipment, welding leads and hoses for defects each quarter.

Defective equipment is to be tagged "Caution - Do Not Use" and removed from service until it has been repaired or discarded.

2.7. Chemical Management

All chemicals used or stored at the construction site will be reviewed and approved prior to use. As much as feasible, the most appropriate chemical(s) will be used in operations, with respect to employee safety, use and storage, regulatory requirements, chemical effectiveness, environmental concerns, waste (disposal), and cost

Informational health and safety documents, such as MSDSs, will be maintained for each chemical used or stored at the construction site. The inventory and these documents will be accessible to employees on binders, together with the safety documentation, at the construction site in the Safety Engineer's office.

A documented container labeling system will be developed and implemented. The system will address the following requirements:

- All employees are trained on the container labeling system.
- Primary and secondary containers are labeled with the following information:
 - appropriate hazard warnings;
 - contents of container

Chemicals shall be stored adequately considering compatibility and safety requirements.

2.8.Emergency Response

Emergency evacuation procedures, including a basic written incident response plan, will provide the information necessary to effectively notify and evacuate personnel from the construction site in the event of an emergency situation. The procedures will be reviewed periodically and after all layout changes or equipment moves.

Emergency evacuation route maps and emergency telephone numbers will be posted in designated areas around the construction site. These maps will be current and define a primary and secondary evacuation route.

All emergency exits will be clearly marked, identified with illuminated signs, and kept free of obstructions. Emergency lighting of all evacuation routes will be provided. Supplemental exit signs will be posted every 100 feet or at distances required by local law.

Emergency evacuation drills will be conducted on all shifts at least monthly. The results of the drill will be critiqued and documented. Procedures will be amended as necessary.

2.8.1.Emergency Evacuation Procedure

- 1) Any person who identifies the emergency situation shall press the alarm button, available at all floors.
- 2) In case of emergencies all the workers shall evacuate the construction site through the identified evacuation route.
- 3) All the workers, except the evacuation team, shall meet at the emergency meeting point, located externally to the building, in front of the parking lot entrance.
- 4) The fire brigade, formed by 8 members and the Safety Representative, shall evaluate the emergency and start a primary combat and seek any worker that remains on the site.
- 5) The Safety Representative shall call the building Fire Dept. through the cell phone, advising the location and type of emergency.
- 6) The Safety Representative shall verify, through the sign in sheet, that all the workers have evacuated and inform the Fire Dept.
- 7) GE and Contract Rent shall be informed about the emergency immediately and a report shall be generated in 24 hours.

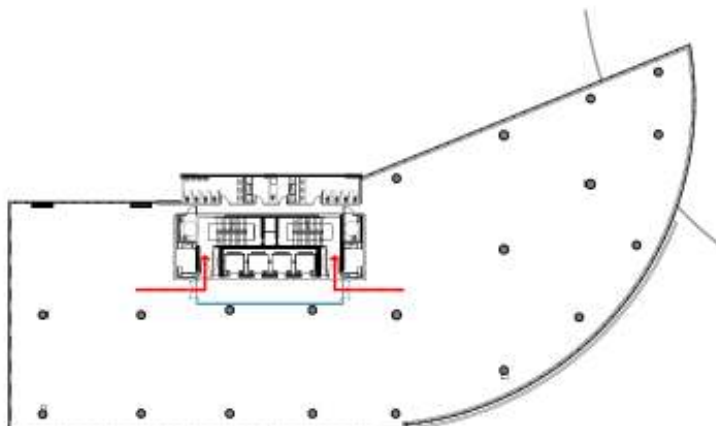
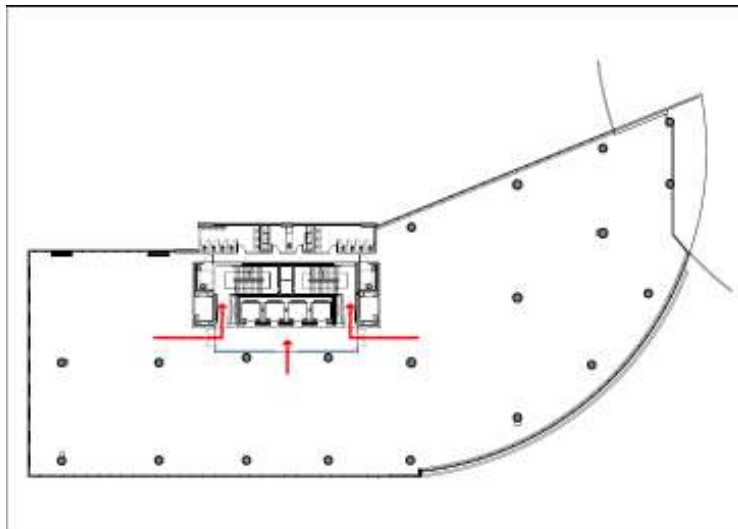
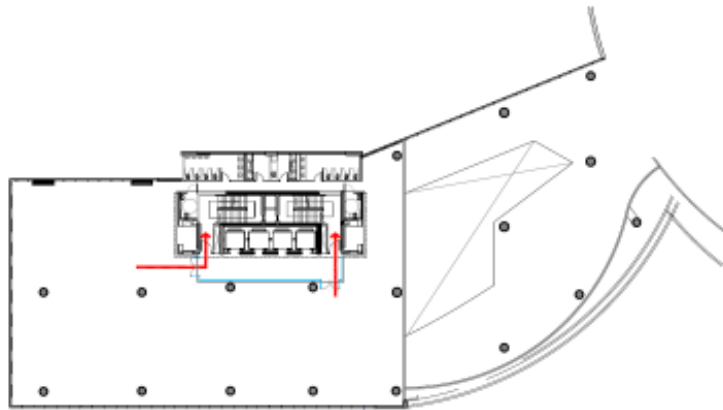
2.8.2.Emergency Phone Numbers Poster

The poster below shall be posted throughout the construction site:

SAFETY FIRST		
EMERGENCY PHONE NUMBERS		
Company	Name	Phone
Contract	Eliana Iglesias	54-11-66340394
Contract	Lucas Antunes	54-11-69880064
GE	Fabiana Perez	+55 11 8685-0104
FIRE DEPT. 100/ 4-542-2222		
AMBULANCE 107		
HOSPITAL		
Hospital Pirovano		
Monroe 3555. Saavedra. Ciudad Autónoma de Buenos Aires		
Phone # 4-542-5552/2772/9279		

2.8.3. Evacuation Routes

Evacuation Routes Maps shall be posted at the construction site entrance.



2.8.9.Hot Work

- A. Before "hot work" operations are started, the supervisor responsible for the work to be performed shall obtain a Work Permit from the Site EHS Representative. This Work Permit is available at the attachment 03.
- B. The supervisor responsible for the "hot work" shall thoroughly investigate the work area for hazards and establish the safety precautions to be used.
- C. The Site EHS Representative shall also investigate the "hot work" area if flammable or explosive materials are known or expected to be present. Safety precautions taken in such work areas shall be agreed upon by both the Site EHS Representative and the supervisor responsible for the work.
- D. The Site EHS Representative shall test the atmosphere where flammable or explosive materials or oxygen enriched conditions are known or expected to be present. Work in the area shall be PROHIBITED when the lower explosive limit (LEL) is greater than 10% and/or oxygen content is greater than 21.0%.
- E. After the above investigations have been completed, a "Hot Work and Flame" Permit shall be filled out and signed by the supervisor responsible for the "hot work" and approved by the Site EHS Representative.
- F. GE requirements for Hot Work are a one-hour fire watch, then a three-hour monitoring/control of the area after the initial one-hour fire watch. This three-hour monitoring can be achieved in one of 4 ways:
 - Active fire sprinkler system
 - Active smoke detection system
 - CCTV where remote monitoring of the area is performed
 - Roving security in area at least every 30 minutes for the 3-hour duration.

Minimum Precautions

- A. Since penetration of sparks or heat transfer can cause a fire hazard on the opposite side of a wall, floor or ceiling being welded, cut or heated; the same precautions shall be taken on the opposite side as on the side being welded.

- B. Sprinklers in service (where applicable).
- C. Cutting and welding equipment in good condition.
- D. Floor swept clean (and wet down when necessary).
- E. Combustibles at least 35' from the "hot work" area.
- F. Non-combustible covers used to protect nearby combustibles.
- G. Flammable or explosive liquids and other hazards removed.
- H. Appropriate separation of oxygen/acetylene compressed gas cylinders (when applicable)
- I. Verification that compressed gas cylinders are adequately secured within their carts (when applicable)

NOTE: No "hot work" shall be performed where the application of flammable paints or coatings, or the presence of other flammable or explosive compounds, or heavy dust concentrations create hazards.

- J. Containers, tanks, ducts, etc., cleaned and purged of flammable vapors, liquids, dusts, etc.
- K. Appropriate fire extinguisher equipment such as portable fire extinguishers and/or fire hoses shall be readily available for use in the work area.

2.9.Safety Procedures

2.9.1.Safety Identification

Observe and adhere to all warning signs, signals, and barricades. Post/erect signs, signals, or barricades necessary to advise personnel of hazardous conditions in work areas.

In order to uniformly identify particular hazards on the project, a barrier tape identification system will be used. The identification system has been developed so that any person working on the site, regardless of employer, can recognize and avoid a hazard when properly marked.

The following barrier tape identification system shall be used:

Yellow Tape (May have black in it) - *“Use Caution When Crossing”*. Used for open manholes, trenches, excavations, etc.

Red Tape (May have black in it) - *“Do Not Cross” unless authorized to do so.* Used for open wiring, switchgear, etc.

The person erecting the barrier tape shall hang a tag on the tape that indicates the hazard, name of Contractor, and name of person erecting the tape. The barrier tape shall be erected far enough back from the hazard to allow adequate warning and protection from the hazards. The barrier shall be so constructed to stand against adverse weather conditions and construction traffic. The barrier tape shall be maintained as long as the hazard is present.

Additional safety identification shall be provided to identify the construction area; PPE requirements; and access restriction.

2.9.2.Lock Out and Tag Out (LOTO)

Where Contract Rent LOTO Procedures are to be utilized, the Dot Building Procedure must be reviewed to ensure that it provides a level of protection equivalent to that of GE LOTO procedure.

The purpose of the LOTO procedure is to define the minimum requirements for affixing appropriate lockout and tagout devices to energy isolating means and to otherwise disable machines or equipment to prevent unexpected energization, start up or release of stored energy, thus preventing injury to employees and/or equipment damage during machine or equipment maintenance and servicing.

Lockout Tagout complete procedure is available at Attachment 8.

2.9.3.Work with electricity

A Work Permit/THA is required for any work with electricity. The complete procedure can be found in Attachment 10.

- a. Under no circumstances should anyone initiate work with or on a piece of equipment until they fully understand the operation and are confident that adequate safety precautions are in place.
- b. Unqualified personnel are not permitted to do any electrical switching or other work on electrical equipment where they may be exposed to unguarded/uninsulated electrical conductors (*even in a de-energized state*).
- c. Unqualified personnel may be “affected” by the Lockout/Tagout of a piece of electrical equipment by others. Such personnel shall be trained to have a fundamental knowledge of electrical equipment, allowing for awareness of the associated danger and need for additional training as required.
- d. Appropriate covers must be installed on all outlets, switches, junction boxes, pull boxes, panel boards, conduit fittings, etc. that are in service, even if some or all of the associated wiring is temporary.
- e. No work shall be accomplished in a wet or damp environment or in another hazardous environment.
- f. Circuits of less than 50 Vdc or 35 Vac may be worked on while energized, provided there is no exposure to electrical burns or potential of explosion from electric arcs.

CAUTION

Improper regard for safety while working on circuits of less than 50 Vdc or 35 Vac can cause severe injury up to and including death.

g. Re-closing of circuits after a protective device has been activated cannot be performed until a qualified individual has evaluated the cause of the activation and determined the system is safe to re-energize. Repetitive closure of breakers and replacement of fuses to energize circuits is prohibited.

2.9.4. Elevated Work

A Work Permit/THA is required for elevated work.

Protect elevated work areas (floors, platforms, walkways, roofs, etc.) which are 4' (h) or greater or whenever there is an exposure to a hazardous condition such as working over machinery, implement hazard etc, on all open sides with standard guardrails or equivalent. Where such protection cannot be provided, approved full body harness and lanyards attached to a proper anchorage shall be used.

Erect all scaffolding level, plumb and on a firm base. Where required and space permits, all scaffold platforms must be equipped with a standard 42" (h) guardrail rigidly secured, standard 21" (h) midrail, completely decked, and rigidly secured toe boards on all open sides (Except for needle beam and float scaffolds).

Provide a safe and convenient access to the working level.

Have a Competent Person verify, prior to use, that the scaffold has been properly erected and a "Competent Scaffold" (Green), or "Warning This Scaffold - Incomplete" (Orange), or "Caution - Defective Do Not Use" (Yellow) tag has been attached at the point of access.

Prohibit alteration of a scaffold via welding, burning, bending, etc.

Prohibit riding on mobile scaffolds.

Complete elevated work procedure can be found in Attachment 11.

Floor openings shall be protected with covers or barricaded. Open sides shall be secured with guardrails with 42" (h) and standard 21" (h) midrail with foot protection.

3. Occupational Health

3.1. Accident Investigation

All accidents, incidents and illnesses (e.g., injuries, property damage, spills, near misses) shall be investigated and reported. Copies of all injury and illness reports shall be provided to Contract Rent management and GE representatives responsible for the job, the injured employee's Manager, and the Project Mgr. within 24 hours.

3.2. Medical Service

Medical Services must be available through the emergency plan at job. All employees must be informed about the emergency services.

The Closed hospital is identified at the emergency poster.

3.3. Bio-Facilities

Brazilian legislation establishes the need of one toilet per 20 workers. Toilets will be available at the Dot Building Corporate Towers.

Lunch will be taken outside the constructions site.

3.4. Ergonomics

A. Hazard Identification and Information

1. All current and new employees shall be provided training and information about work-related musculoskeletal disorders (WMSDs) and WMSD hazards. Employees shall be given information on how to recognize the signs and symptoms of WMSDs and the importance of early reporting. An "Ergonomic Risk Checklist" (Appendix A) can be helpful to identify potential areas of concern or areas that may require further analysis.
2. Employees must report WMSD signs, symptoms, and hazards to Contract Rent and GE.

B. Evaluation of Ergonomic Hazards in the Workplace

1. All ergonomic hazards in the workplace shall be identified, prioritized and evaluated as part of the hazard assessment .
2. Ergonomic evaluations should be considered based on observations, employee complaints and a medical review of injuries.
3. If a hazard assessment is conducted for a particular job task, an evaluation of the employee's ergonomic stresses shall be completed.
4. Job-related stresses associated with ergonomic problems that should be considered include:
 - Repetitive motions,
 - Improper postures,
 - Improper lifting,
 - Poor tool design,
 - Working with bent wrists,
 - Poor lighting and glare,
 - Shift work, and
 - High-demand, low-control work.

C. Ergonomic Hazard Control Measures

1. Feasible measures (interim and permanent) to control the WMSD hazards shall be determined. Basic hazard control principles and strategies for typical ergonomic hazardous situations are provided in item F..
2. The preferred approach to prevent and control WMSDs is to design the job (including the workstation layout, selection and use of tools, and work methods) to take into account both the capabilities and limitations of the workforce.
3. Ergonomic controls should be developed with affected employees and investigated for feasibility, effectiveness and cost in the following order:
 - Engineering Controls
 - Work Practice Modifications
 - Administrative Controls
 - Personal Protective Equipment.

D. Ergonomic Injury Management

1. An employee shall report signs or symptoms of a WMSD to the Safety Representative
2. This report shall be investigated according to the Accident Reporting and Investigation requirements.

E. Training

1. Employees shall be instructed at the initial safety orientation training in the following items:
 - a) How to recognize WMSD signs and symptoms and the importance of early reporting.
 - b) How to report WMSD signs, symptoms, and make recommendations.
 - c) WMSD hazards in their jobs and the general measures they must follow to control WMSD hazards.
 - d) Job-specific controls and work practices that have been implemented in their jobs.

F. Ergo Guidelines

General Workstations

1. Make the workstation adjustable, enabling both large and small persons to fit comfortably and reach materials easily.
2. Locate all materials and tools in front of the worker to reduce twisting motions. Provide sufficient workspace for the whole body to turn.
3. Avoid static loads, fixed work postures, and job requirements in which operators must frequently or for long periods:
 - Lean to the front or the side.
 - Hold a limb in a bent or extended position.
 - Tilt the head forward more than 15 degrees.
 - Support the body's weight with one leg.
4. Set the work surface above elbow height for tasks involving fine visual details and below elbow height for tasks requiring downward forces and heavy physical effort.
5. Provide adjustable, properly designed chairs with the following features:

- Adjustable seat height.
 - Adjustable up and down backrest, including a lumbar (lower-back) support.
 - Padding that will not compress more than an inch under the weight of a seated individual.
 - Chair that is stable to floor at all times (5-leg base).
6. Allow the workers, at their discretion, to alternate between sitting and standing. Provide floor mats or padded surfaces for prolonged standing.
 7. Support the limbs. Provide elbow, wrist, arm, foot, and back rests as needed and feasible.
 8. Design the primary work area so that arm movements or extensions of more than 15 inches (38.1 centimeters) are minimized.
 9. Provide dials and displays that are simple, logical, and easy to read, reach, and operate.
 10. Eliminate or minimize the effects of undesirable environmental conditions such as excessive noise, heat, humidity, cold, and poor illumination.

Repetitive Hand and Wrist Tasks

1. Reduce the number of repetitions per shift. Where possible, substitute full or semi-automated systems.
2. Maintain neutral (handshake) wrist positions:
 - Design jobs and select tools to reduce extreme flexion or deviation of the wrist.
 - Avoid inward and outward rotation of the forearm when the wrist is bent to minimize elbow disorders (i.e., tennis elbow).
3. Reduce the force or pressure on the wrists and hands:
 - Wherever possible, reduce the weight and size of objects that must be handled repeatedly.
 - Avoid tools that create pressure on the base of the palm which can obstruct blood flow and nerve function.
 - Avoid repeated pounding with the base of the palm.
 - Avoid repetitive, forceful pressing with the fingertips.

4. Design tasks so that a power rather than a finger pinch grip can be used to grasp materials. Note that a pinch grip is five times more stressful than a power grip.
5. Avoid reaching more than 15 inches (38.1 centimeters) in front of the body for materials:
 - Avoid reaching above shoulder height, below waist level, or behind the body to minimize shoulder disorders.
 - Avoid repetitive work that requires full arm extension (i.e., the elbow held straight and the arm extended).
6. Provide support devices where awkward body postures (elevated hands or elbows and extended arms) must be maintained. Use fixtures to relieve stressful hand/arm positions.
7. Select power tools and equipment with features designed to control or limit vibration transmissions to the hands, or alternatively design work methods to reduce time or need to hold vibrating tools.
8. Provide for protection of the hands if working in a hot or cold environment. Heat and cold can cause loss of manual dexterity and increased grip strength requirements. Furnish a selection of glove sizes and sensitize users to problems of forceful over-gripping when worn.
9. Wear gloves that fit. Gloves reduce both strength and dexterity. Tight-fitting gloves can put pressure on the hands, while loose-fitting gloves reduce grip strength and pose other safety hazards (e.g., snagging).
10. Select and use properly designed hand tools (grip size of tool handles should accommodate majority of workers).

Hand Tool Use and Selection

1. Maintain straight wrists. Avoid bending or rotating the wrists. Remember; bend the tool, not the wrist. A variety of bent-handle tools are commercially available.
2. Avoid static muscle loading. Reduce both the weight and size of the tool. Do not raise or extend elbows when working with heavy tools. Provide counter-balanced support devices for larger, heavier tools.
3. Avoid stress on soft tissues. Stress concentrations result from poorly designed tools that exert pressure on the palms or fingers. Examples include short-handled pliers and tools with finger grooves that do not fit the worker's hand.
4. Reduce grip force requirements. The greater the effort to maintain control of a hand tool, the higher the potential for injury. A compressible gripping surface rather than hard plastic may alleviate this problem.
5. Whenever possible, select tools that use a full-hand power grip rather than a precision finger grip.
6. Maintain optimal grip span. Optimum grip spans for pliers, scissors, or tongs, measured from the fingers to the base of the thumb, range from 6 to 9 centimeters (2.4 to 3.5 inches). The recommended handle diameters for circular-handle tools such as screwdrivers are 3 to 5 centimeters (1.2 to 2.0 inches) for power grip and 0.75 to 1.5 centimeters (0.3 to 0.6 inches) when a precision finger grip is needed.
7. Avoid sharp edges and pinch points. Select tools that will not cut or pinch the hands even when gloves are not worn.
8. Avoid repetitive trigger-finger actions. Select tools with large switches that can be operated with all four fingers. Proximity switches are the most desirable triggering mechanism.
9. Isolate hands from vibration. Excessive vibration can cause reduced blood circulation in the hands, causing a painful condition known as white-finger syndrome.

Lifting and Lowering Tasks

1. Optimize material flow through the workplace by:
 - Reducing manual lifting of materials to a minimum.
 - Establishing adequate receiving, storage, and shipping facilities.
 - Maintaining adequate clearances in aisle and access areas.
2. Eliminate the need to lift or lower manually by:
 - Mechanically lift, if possible.
 - Palletizing handling of raw materials and products.
 - Using unit load concept (bulk handling in large bins or containers).
3. Reduce the weight of the lift:
 - Reducing the weight and capacity of the container.
 - Reducing the load in the container.
 - Limiting the quantity per container to suppliers.
 - Lifting with co-worker(s).
4. Optimize the lift:
 - Lift with back straight and legs bent versus legs straight and back bent.
 - Center of gravity should not be more than twenty inches from the body.
 - Changing the shape of the object or container so that it can be held closer to the body.
 - Providing grips or handles for enabling the load to be held closer to the body.
5. Convert load lifting, carrying, and lowering movements to a push or pull by providing:
 - Conveyors
 - Ball caster tables
 - Hand trucks
 - Four-wheel carts

Administrative Controls

1. Rotate workers through several jobs with different physical demands to reduce the stress on limbs and body regions.
2. Rotate workers through jobs that are physically tiring.
3. Train workers to recognize ergonomic factors and implement techniques to reduce the stress and strain associated with the work activity.

4. Environment

SSMA has the commitment to protect the environment and meet all legal requirements. This commitment shall be extended to all workers at the project.

4.1.Wastes

The following wastes are expected to be generated:

- Debris
- Paper
- Glass
- Metals
- Plastics
- Domestic wastes

At the Dot Building Project wastes will be stored at specific containers and disposed in approved landfills. The wastes are not considered hazardous, so no specific Permits will be necessary.

5. Attachments

Attachment 01 – Inspection Check List

Issue	Yes	No	N/A	Comments
1. General Safety: Housekeeping (good condition?) Clear working areas, walkways, and emergency exits? Dry floors? Work area access controlled? Fire extinguishers?	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	
2. Personal Protective Equipment (PPE): Safety glasses? Safety shoes? Hand/arm? Hard hat? Respiratory protection? Hearing protection? Others: _____	☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐	
3. Chemical Storage/Usage: Proper containers? Container labeling? MSDSs for chemicals brought on-site? Chemical dispensing? (bonding, grounding, and containment)	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	
4. Compressed Gases: Cylinders secured? Protective cap fastened? Incompatible cylinders separated? (oxygen/fuel)?	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	
5. Hot Work (Welding, Cutting, Sparking, etc.): Hot work permit? No fire hazards in area (flam. or comb. materials)? Fire watch? Welding screen in place? Fire extinguishers? Means to report fires? Welding leads and gas hoses in good condition? Appropriate PPE?	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐	
6. Electrical Safety: Lockout/tagout? Electrical equipment/extension cords in good condition? Grounding (GFCI)?	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	

Issue	Yes	No	N/A	Comments
7. Hand Tools: Good condition? Used safely? Guards in place?	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐	
8. Motorized Equipment (fork trucks, cranes, etc.): Good working condition? Inspected? Trained operators? Safe operating procedures? Seat belts worn?	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	
9. Confined Space: Entry permit? Air monitoring? Safe entry procedures? Appropriate safety equipment? Attendant/standby person? Rescue equipment and plans?	☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐	
10. Process Safety: Trained employees? Safe work procedures?	☐ ☐	☐ ☐	☐ ☐	
11. Excavations: Location of underground utilities? Appropriate sloping and/or shoring? Means of entry and egress? Competent person? Work area access controlled? Control of hazardous conditions (air toxics)?	☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐	
12. Ladders and Scaffolds: Good working condition? Used safely? Ladders secured and tied off? Scaffold railings (top and midrail) and toe boards? Work area access controlled?	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐	
13. Elevated Work Areas: Openings in floors and walls guarded? Appropriate fall protection?	☐ ☐	☐ ☐	☐ ☐	
14. Construction: Pre-phase safety meetings and approval (e.g., excavation, concrete, steel, erection, etc.)? Periodic phase inspections?	☐ ☐	☐ ☐	☐ ☐	

Inspection Conducted By: _____ Date: ____/____/____

Attachment 02 – Risk Assessment Form

[illegible]

Name:

Sign:

Name:

Sign:

Name:

Sign:

Name:

Sign:

Name:

Sign:

Attachment 03 – Work Permit/THA Model

 PERMISSÃO DE TRABALHO ESPECIAL - PTE			
Nº SEQUENCIAL: _____			
Data do início	Horário Início	Data Término	Horário Término
NATUREZA DE RISCOS			
 ☐ Trabalho a frio	 ☐ Trabalho a quente	 ☐ Eletrocidade	 ☐ Altura
 ☐ Escavações	 ☐ Espaço confinado	 ☐ Içamento	
EPI - EQUIPAMENTOS DE PROTEÇÃO INDIVIDUAL NECESSÁRIOS			
 Avental	 Óculos de segurança	 Proteção auditiva	 Proteção facial
 Proteção respiratória	 Macacão ou guantes	 Luvas	 Botas ou sapatos
 Capacete	OUTROS:		
LOCAL DE TRABALHO		EQUIPAMENTO / LINHA / TAG	
DESCRIÇÃO DO TRABALHO			
MÃO DE OBRA		NOME DA EMPRESA	
☐ Mecânicos ☐ Operadores ☐ Eletricistas ☐ Lubrificadores ☐ Outros		Nº COLABORADORES: _____ _____ _____ _____	
		NOME DO ENCARGADO/RESPONSÁVEL E ASSINATURA: _____ _____	
PERIGOS POTENCIAIS:			
☐ Produtos corrosivos ☐ Produtos tóxicos ☐ Produtos inflamáveis		☐ Poeira ☐ Gases e vapores ☐ Descargas Elétricas (choques)	
		☐ Pressões / Temperaturas Extremas ☐ Ruído Excessivo ☐ Queda de Altura	
RESPONSÁVEL PELA ÁREA		RESPONSÁVEL PELA EXECUÇÃO	
Precauções obrigatórias para qualquer natureza de riscos (Inclusive trabalho a frio e eletricidade) ☐ Parar, Despressurizar e Drenar Equipamentos/Linhas ☐ Limpar Equipamentos/Linhas ☐ Desenergizar, isolar e etiquetar equipamentos/Canais Elétricos ☐ Limpar/Isolar, Demarcar área de trabalho ☐ Proteger canais, engates e aberturas ☐ Informar pessoal da área e arredores		Precauções obrigatórias para qualquer natureza de riscos (Inclusive trabalho a frio e eletricidade) ☐ Registrar entrada e saída de fluidos ☐ Aplicar cadeados e etiquetas às fontes de energia potencial (LOTO) ☐ Retirar fusíveis/correntes/ cabos de transmissão ☐ Manter eletricamente equipamentos/ linhas/ ferramentas ☐ Verificar acesso e saída de pessoas/equipamentos	
Precauções obrigatórias para Trabalhos a Quente (Estas precauções devem ser intensificadas num raio de 10 metros do local onde será executado o trabalho a quente) ☐ Detectar a presença de materiais ou gases tóxicos/inflamáveis ☐ Prover equipamentos de combate a incêndio próximo ao local ☐ Verificar válvulas, corta-chamas de oxigênio e acetileno ☐ Líquidos inflamáveis, pós combustíveis e depósitos oleosos foram removidos ☐ Os sistemas automáticos de combate a incêndio estão em funcionamento (Sprinklers e Hidrantes)		Precauções obrigatórias para Trabalhos a Quente ☐ Isolar área de trabalho com água/sprays/chapoteiros ☐ Isolar equipamentos/linhas com Nitrogênio ou Argônio ☐ Verificar a existência de combustíveis do outro lado da parede ☐ Caso seja inevitável remover os combustíveis, cobrir com lonas resistentes a fogo ☐ Providenciar Presença permanente da Brigada (Ordem de Fogo) ☐ Há necessidade de permanência no local por 60 minutos após o término da tarefa ☐ Há extintores e/ou mangotes/mangueiras para suporte da brigada de emergência	
Precauções obrigatórias para trabalhos em local confinado ☐ Detectar explosividade ☐ Detectar teor de oxigênio/gases tóxicos ☐ Lavar equipamentos internamente (Sem adentrar) ☐ Realizar o equipamento ☐ Purga de Ar ☐ Nitrogênio		Precauções obrigatórias para trabalhos em local confinado ☐ Manter Observador permanente (Instrução e Equipado) ☐ Instalar ventilador / Exaustor ☐ Utilizar iluminação à prova de explosão ☐ Utilizar Ferramentas anti-falhas ☐ Ingerente necessita de equipamentos de proteção especiais	
NO VERSO HÁ ITENS DE COMPLEMENTO PARA ANÁLISE DE RISCOS EM ESPAÇO CONFINADO			
Precauções obrigatórias para Trabalhos em Altura / Içamento ☐ Analisar risco de quedas de objetos sobre pessoas/equipamentos		Precauções obrigatórias para Trabalhos em Altura / Içamentos ☐ Prover Estabilidade, Travamentos e Nivelamento dos Andares / Escadas ☐ Prover guarda corpo, rodapé e sapatas aos andaimes ☐ Plataformas intermediárias nos andaimes (a cada 4m) ☐ Condições das tábuas (rachaduras, buracos, nós, perfurações) ☐ Escadas de acesso aos andaimes (fixadas) ☐ Os rodízios possuem travas ☐ Instalar passarela de tábuas nos telhados ☐ Cabos de aço, cordões e correntes ☐ Capacidade de carga ☐ Conhecimento do equipamento pelo executor ☐ Gancho, manilha, tração, cintas ☐ O Guindaste/Montem não apresenta vazamento de óleo do sistema Hidráulico	
Precauções obrigatórias para escavações ☐ Verificar a existência de eletrodutos/tubos subterrâneos (Planos Baixos e Desenhos)		Precauções obrigatórias para escavações ☐ Manter escavações devidamente escoradas ☐ Manter observador em escavações profundas (Instrução e Equipado)	
Nome Responsável Execução		Duplo	Ramal
Nome Responsável Área		Duplo	Ramal
Nome Responsável EHS		Duplo	Ramal
1ª Reavaliação - Responsável pela Área		2ª Reavaliação - Responsável pela Área	
Data	Assinatura	Data	Assinatura

COMPLEMENTO DOS ITENS REFERENTES A ESPAÇO CONFINADO											
RESPONSÁVEL PELA ÁREA		RESPONSÁVEL PELA EXECUÇÃO									
☐ % O ₂ (Oxigênio) ☐ % LIE (Limite Inferior de Explosividade) ☐ CO ppm (Partículas de Monóxido de Carbono para cada milhão) ☐ H ₂ S (Ácido Sulfídrico)	Valor _____ _____ _____ _____	Líder dos Ingressantes _____ _____ _____									
Observações Gerais: _____ _____ _____ _____											
PESSOAL ENVOLVIDO NO TRABALHO											
Nome:		Ass:									
Nome:		Ass:									
Nome:		Ass:									
Nome:		Ass:									
Nome:		Ass:									
Nome:		Ass:									
Nome:		Ass:									
Nome:		Ass:									
Nome:		Ass:									
Nome:		Ass:									
Nome:		Ass:									
Nome:		Ass:									
INSTRUÇÕES PARA USO E PREENCHIMENTO											
1	Responsável pela ÁREA será o responsável pela instalação (normalmente o próprio Cliente) em atividades de manutenção, reforma, ampliação, modernização, e demais obras do mesmo genero. Em caso de novas construções será o responsável pela Execução do trabalho.										
2	Responsável pela EXECUÇÃO será sempre o responsável direto pela execução do trabalho (encarregado/supervisor) .										
3	As PTE são de incumbência do responsáveis pela execução, o qual deverá manter a primeira via Afixada no Local de Trabalho em Local Visível.										
4	Antes de emitir a PTE, o responsável pela Execução deverá certificar-se de as recomendações apontadas pelo responsável pela Área (inspecionar o equipamento / linha/ tag e a área), foram tomadas para garantir condições seguras de trabalho.										
5	A validade das PTEs se encerram ao fim de cada turno de trabalho de qualquer um dos responsáveis (Área / Execução). Nos casos em que os riscos inerentes a tarefa permanecerem os mesmos, a PTE pode ser reavaliada por até duas vezes. Caso os riscos se modifiquem, se faz necessário o preenchimento de uma nova										
6	PTEs para trabalhos com planta totalmente parada e sem a presença do responsável pela área deverão ser emitidas com antecedência e aprovadas pela supervisão										
7	Todos os itens da PTE deverão ser rigorosamente avaliados.										
8	A emissão de uma PTE em Branco, sem a definição do trabalho a serem feitos, sem a definição exata da área ou sem a prévia inspeção do local, constitui falta de										
9	No término do serviço ou final da validade da PTE o Responsável pela Execução deverá obrigatoriamente levar a primeira via para o Responsável pela Área assinar o recebimento. Nos dias em que não há responsável pela área, o Responsável pela Execução deverá preencher o campo destinado a Encerramento do Serviço, entregando-a ao responsável pela Área no primeiro dia de retomada das atividades normais da área.										
10	A primeira via da PTE deverá ser enviada ao representante da GEHI, após a conclusão e aval de encerramento do trabalho por parte do Responsável pela Área. O representante da GEHI é Responsável pela auditoria do sistema.										
11	No caso de dúvidas quanto ao preenchimento e /ou avaliação dos riscos existentes para tarefa, consulte o representante da GEHI .										
12	Caso, durante a liberação de Espaço Confinado, seja identificada alguma alteração, informar imediatamente o representante GEHI.										
EM CASO DE EMERGÊNCIA LIGAR NO RAMAL _____											
ATENÇÃO: ENCERRAMENTO DE SERVIÇO											
O serviço constante neste PTE foi :											
☐ Totalmente Concluído ☐ Parcialmente Concluído ☐ Continua na PTE nº _____											
OBS: _____											
<table border="1"> <tr> <td colspan="3">Nome</td> </tr> <tr> <td>Data</td> <td>Hora</td> <td>Assinatura</td> </tr> <tr> <td>-----/-----/-----</td> <td>-----:-----</td> <td>_____</td> </tr> </table>			Nome			Data	Hora	Assinatura	-----/-----/-----	-----:-----	_____
Nome											
Data	Hora	Assinatura									
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Attachment 04 – Work Permit/THA Manual

I.Objective

Establish procedures to open a Work Permit/THA for High Risk activities.

II.Application

The following activities required Work Permits (THA):

- Hazardous Chemical
- Hot Work
- Confined Spaces
- Elevated Work
- Excavations
- Electricity/LOTO
- Rigging

III.Instructions for the Work Permit (THA)

- The Worker, the Area Supervisor and the Safety Manager shall participate.
- Blank forms must be available
- The Work Permit/THA shall be issued in 2 copies. One copy must be archived in EHS and the second must be posted at the working area.
- The worker, the Area Supervisor and the Safety Manager shall participate to fill in the form. All items must be filled.
- The Work Permit/THA is valid for one shift and for the evaluated work only. The Permit must be reviewed and signed-off by workers and supervision for the next work shift's high-risk activities.

Attachment 05 – Project Orientation Attendee List

[illegible]

Attachment 06 – Safety Meeting Minutes



RELATÓRIO DE REUNIÃO DE SEGURANÇA

[illegible]

Attachment 07 – Weekly Safety Report

	Date:
Project:	
Developed by	
Copies:	
Contractors at jobsite:	
Prior Safety Plan Findings Update	
Safety Trainings Conducted	
Key actions taken	
Inspections Conducted	
Incidents / Accidents cases	

Attachment 08 – LOTO Program

I. PURPOSE & SCOPE

This policy defines the minimum requirements and identifies the practices and procedures necessary to shut down and lock out and tag out machines and equipment. It requires that employees receive training in their role in the lockout/tagout program, and mandates that yearly inspections be conducted to ensure that this procedure and the requirements of OSHA 29CFR147 are being followed. The objective is to ensure that employees and contractors working on machines or equipment are not injured due to the unexpected energization or startup or the release of stored energy.

This policy does not apply to work on plug and cord connected electrical equipment when the release of energy is totally controlled by unplugging the equipment from the energy source and by the plug being under the exclusive control of the person performing the servicing or maintenance.

II. DEFINITIONS

- A. Affected employee - An employee who performs the duties of his or her job in an area in which the energy control procedure is implemented and servicing or maintenance operations are performed. An affected employee does not perform servicing or maintenance on machines or equipment and, consequently, is not responsible for implementing the energy control procedure. An affected employee becomes an "authorized" employee whenever he or she performs servicing or maintenance functions on machines or equipment that must be locked or tagged.
- B. Authorized employee - An employee who performs servicing or maintenance on machines and equipment. These employees for their own protection use lockout or tagout.
- C. Capable of being locked out - An energy-isolating device is considered capable of being locked out if it meets one of the following requirements: It is designed with a hasp to which a lock can be attached; it is designed with any other integral part through which a lock can be affixed; it has a locking mechanism built into it; it can be locked without dismantling, rebuilding, or replacing the energy isolating device or permanently altering its energy control capability.
- D. Energized - Machines and equipment are energized when (1) they are connected to an energy source or (2) they contain residual or stored energy.
- E. Energy-isolating device - Any mechanical device that physically prevents the transmission or release of energy. These include, but are

not limited to, manually operated electrical circuit breakers, disconnect switches, line valves, and blocks.

- F. Energy source - Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
- G. Energy Control and Power Lockout (ECPL) "Procedure": - An individual step by step specific procedure which must be developed, documented, available and utilized for the control of potentially hazardous energy during the actual maintenance and servicing of a particular equipment or machine. It is the responsibility of the owner of the equipment/machine to prepare and make available this procedure.
- H. Lockout - The placement of a lockout device on an energy - isolating device, in accordance with an established procedure, ensuring that the energy - isolating device and the equipment being controlled cannot be operated until the lockout device is removed.
- I. Lockout device - Any device that uses positive means such as a lock, either key or combination type, to hold an energy - isolating device in a safe position, thereby preventing the energizing of machinery or equipment. When properly installed a blank flange or bolted slip blind are considered equivalent to lockout devices.
- J. Tagout - The placement of a tagout device on an energy - isolating device, in accordance with an established procedure, to indicate that the energy - isolating device and the equipment being controlled may not be operated until the tagout device is removed.
- K. Tagout device - Any prominent warning device, such as a tag and a means of attachment, that can be securely fastened to an energy - isolating device in accordance with an established procedure. The tag indicates that the machine or equipment to which it is attached is not to be operated until the tagout device is removed in accordance with the energy control procedure.
 - 1. RED "DANGER - Do not Operate" Tags are to be used to prevent personal injury.
 - 2. YELLOW "Do Not Operate" Tags are to be used to prevent inadvertent equipment/machine energization/startup. Yellow tags are to be applied only by the equipment/machine owner.

III. RESPONSIBILITIES

A. GE

1. Ensure that appropriate resources (budget, personal, etc.) are available to effect the requirements of this Policy.

B. CONTRACT RENT

1. Ensure this Policy is implemented within their LCT / Branch.

C. SSMA Representative

1. Act as the local "EHS Lead" in the implementation of this Lockout/Tagout policy within their LCT / Branch.
2. Obtain support from GE / Contract Rent as necessary.
3. Facilitate GE / Contract Rent the enforcement of this policy.
4. Inform GE / Contract Rent of any issues regarding this program.

IV. PROCEDURE

A. General Requirements

1. Locks will be used in all cases where the energy-isolating device is capable of accepting a lock for this purpose. If an energy device is not capable of being locked out, all parameters of the ECPL Program must be met with the exception of placement of the lock. At least one additional safety measure such as removing an isolating circuit element, blocking a controlling switch, opening an extra disconnecting device, removal of a valve handle or similar activity must be incorporated to reduce the likelihood of inadvertent energization in order to provide full worker protection.
2. After January 2, 1990, whenever replacement or major repair, renovation or modification of a machine or equipment is performed, and whenever new machines or equipment are installed, energy isolating devices for such machine or equipment shall be designed to accept a lockout device.
3. Lockout and/or Tagout shall be performed by all, and only by, the authorized employees who are performing the service or maintenance on the subject machine/equipment.
4. Any violation of the Energy Control and Power Lockout Program is considered a serious safety infraction. Enforcement of this Standard shall be handled in a manner similar to other serious safety violations.

B. Hardware

1. Lockout devices (Locks)
 - a) Locks shall indicate the identity of the employee applying the device. (OSHA has interpreted this requirement as not being necessary as long as another method is used to identify the lock such as sliding the tagout (tag) device over the hasp of the lock.)
 - b) Locks used for lockout purposes shall not be used for any other purpose.
 - c) Locks used for lockout shall be standardized within the department in which they are used.
 - d) Locks should be substantial enough to prevent removal without using excessive force or unusual techniques such as the use of bolt cutters.

- e) There must be only one key to a lock, and that key shall be retained by the employee using the lock

2. Tagout devices (Tags)

- a) Tags must withstand acidic, alkaline, and wet conditions without deterioration. The written information on the tags should also withstand the same conditions.
- b) Tags shall be standardized within the department in which they are used.
- c) Tags should be non-reusable, attachable by hand, self-locking, with a minimum unlocking strength of no less than 50lbs.
- d) Tags must indicate the identity of the person applying the device.

C. Periodic Inspections

- 1. Management will conduct an inspection of the ECPL program to insure this policy is being followed.
- 2. Every employee in FSO who is expected to perform ECPL will be inspected at least yearly.
- 3. The inspection will be done at the time and place a machine or piece of equipment is undergoing an actual ECPL.
- 4. As many employees as are involved in the actual ECPL can be inspected at that time.
- 5. The Safety Manager will certify the inspection of each employee inspected. The certification will identify the machine/equipment, on which the inspection took place, date of the inspection, and the person performing the inspection.
- 6. Additional retraining shall be conducted within 30 days whenever a periodic inspection under this policy reveals, or whenever the employer has reason to believe, that there are deviations from or inadequacies in the employee's knowledge or use of these energy control procedures

D. Application of Control the ECPL procedure shall cover the following elements and actions done in the following sequence.

- 1. Prepare for shutdown

- a) 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, the hazards of the energy to be controlled, and the method or means to control the energy.
- b) All affected employees will be notified of the application of lockout/tagout devices before such devices are applied.

2. Machine or equipment shutdown

- a) The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment by the owner of said device.

3. Machine or equipment isolation

- a) All energy isolating devices that is conducting external energy to the machine or equipment shall be operated in such a manner as to isolate the machine or equipment from the energy source(s).

4. Lockout and/or Tagout device application

- a) Authorized employees shall affix lockout or tagout devices to each energy-isolating device. Such devices will be attached such that the energy-isolating device will be in "safe" or "off" position.
- b) Where a tag only is used, it shall be attached at the same point that the lock would have been attached. Where the tag cannot be attached to the energy-isolating device, it shall be attached as close as safely possible where it will be immediately obvious to anyone attempting to operate the device.

5. Stored energy

- a) Following lockout/tagout device application, all internal - potentially hazardous stored or residual energies shall be relieved, disconnected, restrained, discharged, or otherwise rendered safe.
- b) If there is a possibility of a re-accumulation of stored energy to a hazardous level, (such as in a capacitive device), verification of isolation (next step) shall be continued until the work on the machine/equipment is completed, or until the possibility of such accumulation no longer exists.

6. Verification of isolation.

- a) Prior to starting work, an authorized employee (who has applied his/her lock or tag to the machine/equipment) shall verify that isolation and de-energization of the machine/equipment have been accomplished.

E. Release From Lockout or Tagout

- 1. Before lockout or tagout devices are removed and energy is restored to the machine or equipment, the following actions shall be taken by the authorized employee(s) to ensure the following:
 - a) The work area and machine/equipment shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.
 - b) All employees and other workers shall be safely positioned and/or safely removed.
 - c) The person who applied it shall remove each lockout/tagout device.
 - (1) If the employee who applied the device is not readily available, the following steps will be taken before the device is removed.
 - (a) The job leader will appoint a team of at least three knowledgeable persons to evaluate the existing conditions fully before removing the lock and/or tag.

- (b) The team will verify that the employee who applied the device is not at the machine/equipment facility. Such evaluations should include a telephone review with the absent person if possible. If the employee who applied the lock is located at the facility or within a reasonable distance, that employee shall be called upon to remove the lock.
- (c) Reasonable efforts should be undertaken to advise the employee that his/her device is about to be removed.
- (d) Ensure that the employee has this knowledge before he/she returns to the facility.

F. Additional requirements.

1. Whenever more than one entity (company, contractor, customer, etc) are to be engaged in work on the same machine/equipment at the same time, all such entities shall inform each other of their respective lockout/tagout procedures.
2. When work on a machine/equipment, involves several workers, a group lockout or tagout device can be used to allow the required number of locks/tags to be involved in the lockout/tagout procedure. Each worker shall affix his/her personal lockout/tagout device to the group lockout device, group lockbox or comparable mechanism; the same as it would be affixed to the energy-isolating device.
3. Shift Changes.
 - a) Whenever an employee leaves at the end of their shift, they will remove their own lock. If another employee is working the next shift, an orderly transfer of lockout/tagout devices must be assured to minimize exposure to inadvertent energy releases.
4. No employee shall attempt to start, energize or use a piece of equipment that has locked out or tagged out.
5. No employee shall attempt to remove a lock or tag except the employee who placed it.
6. In situations in which lockout or tagout devices must be temporarily removed from the energy isolating device and the machine or equipment energized to test or position the machine, equipment or component thereof, the following

sequence of actions shall be followed.

- a) Clear the machine or equipment of tools and materials in accordance with paragraph E, 1, a) of this policy.
- b) Remove employees from the machine or equipment area in accordance with paragraph E, 1, b) of this policy.
- c) Remove the lockout or tagout devices as specified in paragraph E, 1, c) of this policy.
- d) Energize and proceed with testing or positioning.
- e) De-energize all systems and reapply energy control measures in accordance with part D of this policy to continue the servicing and/or maintenance.

7. Energy Control Procedure.

- a) Each machine or piece of equipment owned by FSO in which the unexpected energization, startup or release of stored energy could cause injury to working personnel must have a written ECPL procedure unless all of the following elements exist:
 - (1) The machine or equipment has no potential for stored or residual energy or re-accumulation of stored energy after shut down which could endanger employees.
 - (2) The machine or equipment has a single energy source, which can be readily identified and isolated.
 - (3) The isolation and locking out of that energy source will completely de-energize and deactivate the machine or equipment.
 - (4) The machine or equipment is isolated from that energy source and locked out during servicing or maintenance.
 - (5) A single lockout device will achieve a locked-out condition.
 - (6) The lockout device is under the exclusive control of the authorized person performing the servicing or maintenance.

- (7) The servicing or maintenance does not create hazards for other employees.
 - (8) The machine/equipment owner, in utilizing this exception, has had no accidents involving the unexpected activation or re-energization of the machine or equipment during servicing or maintenance.
- b) The procedure shall clearly outline the steps to be taken to apply this Lockout/Tagout policy to the subject machine/equipment. It should include but not be limited to, the following:
- (1) Specific steps for shutting down, isolating, blocking and securing machines or equipment to control hazardous energy;
 - (2) Specific procedural steps for the placement, removal and transfer of lockout devices or tagout devices and the responsibility for them.
 - (3) The location of all external energy source disconnect/blocking devices
 - (4) The location of all internal devices capable of storing energy.
 - (5) Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures

Attachment 09 – Chemical Management

I. PURPOSE & SCOPE

The purpose of this policy/procedure is to outline minimum requirements to allow the Dot Building Construction Site to ensure full compliance with all applicable Chemical Management requirements. The program will include general information regarding policies/procedures on chemical storage and use.

II. RESPONSIBILITIES

A. GE

1. Evaluate the Program

B. Contract Rent

1. Ensure the Program is implemented at their site.
2. Act as “Chemical Management Lead” in the implementation of the Chemical Management Program at their site.
3. Obtain support from GE and Contract Rent as necessary.

III. PROCEDURES

A. Determine What Is A Hazardous Chemical

1. All chemicals utilized at Dot site sites shall be determined to be a hazardous or non-hazardous product. This responsibility primarily lies on the manufacturer; however, in the event the manufacturer fails to do so, the user will determine the hazard classification by referring to the MSDS or other reference materials.
2. Hazardous Chemical: A chemical having characteristics of a *physical hazard* and/or *health hazard in a liquid, solid, or gas state*.
 - a) Physical Hazard: A chemical with specific characteristics that usually displays evidence of immediate harm to an individual. Following are examples of these types:

(1) Combustible Liquids: Flash point at or above 100°F, but below 200°F.

(2) Flammable Liquid: Any liquid having a flash point below 100°F.

(3) Flammable Gas: A gas that, at ambient temperature and pressure, forms a flammable mixture with air.

(4) Flammable Solid: A solid that is liable to cause fire through friction, absorption of moisture, spontaneous chemical change, or retained heat from manufacturing or processing. The solid can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.

(5) Compressed Gas: A gas or mixture of gases within a container under pressures higher than atmospheric pressure. Sudden release can result in a number of physical hazards with the most serious being an explosion.

(6) Explosives: Chemical causes a sudden, almost instantaneous release of pressure, gas, and heat when subjected to sudden shock, pressure, or high temperature.

(7) Organic Peroxides: This type of chemical burns the skin.

(8) Pyrophorics: A chemical igniting spontaneously in air at a temperature below 130° F.

(9) Unstable: A chemical that may react when shook, pressurized, or heated.

(10) Water Reactive: A chemical that reacts with water to release a toxic gas, flammable agent, or heat.

(11) Oxidizer: A chemical that initiates or promotes combustion in other materials thereby causes fire either of itself or through the release of oxygen or other gases. Basically, the chemical causes rapid burning or increases the ability to burn.

b) Health Hazard: A chemical with evidence that acute or chronic health effects may occur in exposed employees.

(1) Carcinogens: Chemical that may cause cancer.

(2) Toxic: Chemical causing acute or chronic injury to the body or which is suspected to cause disease or injury under specific conditions.

(3) Irritants: Chemical that may cause reversible effects to the body part exposed. The product usually effects or irritates upon contact with skin, eyes, nose, or respiratory system.

(4) Corrosives: Chemical causing visible destruction or permanent changes to skin tissue at the point of contact.

(5) Sensitizers: A material that can cause allergic reaction of the skin or respiratory system.

B. Hazardous Chemical Routes of Entry

1. Absorption: Chemical contact and movement through the skin, into the bloodstream, lymphatic system, and/or mucous membranes (i.e. solvents).
2. Inhalation: The breathing in of a hazardous chemical into the respiratory tract. The contaminants may become lodged in the lungs (i.e. dust or asbestos), or pass through the lungs into the bloodstream and distributed to various body parts and/or organs (i.e. gases or vapors).
3. Ingestion: The consumption of contaminants orally and the absorption into the body through the gastro-intestinal tract. Also occurs when contaminated hands contact the mouth during eating or smoking.
4. Injection: Hazardous chemical entering directly into the bloodstream or under the surface of the skin. This can occur through contact of a chemical with an open wound or breaking of the skin with a sharp contaminated object.

C. Material Safety Data Sheets (MSDS)

1. MSDSs provide information concerning the specific hazards of the chemical and are furnished by the manufacturer and distributors. The manufacturer is responsible for producing the MSDS, while the distributors must issue the forms to any end users or other distributors.
2. The furnishing of MSDSs should be with each initial shipment of a particular chemical and with the first shipment after an MSDS revision.

3. MSDSs will classify the chemical as hazardous (i.e. specific physical or health hazards) or as non-hazardous.
4. MSDSs must list the following information:
 - a) Identity: Chemical name and common name must be listed;
 - b) Hazardous Ingredients: Typically listed by percentage and includes Permissible Exposure Limits (PEL's) and/or the Threshold Limit Values (TLV's) for each ingredient;
 - c) Physical Data: i.e. boiling point, vapor density, solubility, appearance, odor, specific gravity, and evaporation rate;
 - d) Fire & Explosion Data: i.e. flash point, extinguishing media, and fire fighting procedures;
 - e) Health Hazard Data: Information included should be routes of exposure; signs, symptoms, and effects of overexposure; and first aid procedures;
 - f) Reactivity Data: Information should indicate the stability of the chemical [and list chemicals to which it will react if contacted];
 - g) Spill & Leak Procedures: Steps to be taken should a spill or leak occur;
 - h) PPE: Type of PPE recommended should be included along with special protection information;
 - i) Storage & Handling Precautions: Information describing how to safely store and handle a chemical.
 - j) Regulatory Information: Specific regulatory information that may aid in determining the requirements for handling, storage, use, and disposal of the chemical product;
 - k) MSDS Date of Preparation: The most current publication of a MSDS.
5. Copies of MSDSs shall be made readily accessible to all employees at the site.
6. MSDSs must be current – no more than 3 years old if the manufacturer has updated the MSDS.

D. Hazardous Chemical Inventory List

1. The Dot Building site must maintain a formal inventory listing of ALL hazardous chemicals commonly used, handled, or stored among their offices and job sites. All chemicals having any of the characteristics listed within Section IV. A. Shall be included on the Hazardous Chemical Inventory List.
2. The chemical inventory should be maintained electronically so it is searchable and can be updated easily.
3. The Hazardous Chemical Inventory List shall contain the following information:
 - a) Chemical / product name or identity; and
 - b) Manufacturers' name, address and telephone number.
4. The Hazardous Chemical Inventory List will be utilized to ensure the MSDS is on file and available to all employees.
5. The chemical inventory will be the initial "Approved Chemical List (ACL)". New chemicals can be added to the ACL after they have been approved by the Safety Representative. Chemicals that are phased out will be deleted from the ACL when they are no longer needed and/or present.

E. Labeling & Other Forms of Warning:

1. Chemical Manufacturer:
 - a) The chemical manufacturer or distributor must ensure that each shipped container of hazardous chemicals is labeled, tagged or marked appropriately.
 - b) The labeling must include the following information:
 - (1) Identity of the hazardous chemical;
 - (2) Appropriate hazard warnings that provide at least general information regarding the hazardous chemicals and their physical and health hazards. The warning can be in the form of words, pictures, symbols, or any combinations.
 - (3) Name and address of the chemical manufacturer or other responsible party (i.e. distributor/vendor).
2. Hazardous Material Identification System (HMIS):

a) Container labeling that is missing, removed, defaced, or is illegible must be replaced with an appropriate label to include, at minimum, the following information:

(1) Identity of the hazardous chemical(s); and,

(2) Appropriate hazard warnings that provide at least general information regarding the hazardous chemicals and their physical and health hazards. The warning can be in the form of words, pictures, symbols or any combinations thereof.

b) HMIS is an acceptable means of complying with the labeling requirements. The Hommel diamond will be used to identify the chemicals at the site:



c) HMIS Ratings are generally available in the MSDS. If not, then the user must make the appropriate determination using the HMIS category definitions identified above.

d) HMIS Labels may be obtained from any Safety Supply Company.

F. Employee Protection:

1. As listed under Section III, employees must properly use PPE when so indicated in the PPE Assessment. In addition, it is the employee's responsibility to safely use the proper chemical for each task to be performed. Athie shall supply all PPE required to safely handle all hazardous chemicals.

2. It is the responsibility of the Site Manager to ensure that employees wear PPE and that they have been properly trained on the use and care of the PPE. Following is a list of the various types of personal protective equipment:

a) Respirators: shall be selected and used based on the hazards to which the employee may be exposed. Refer to the Respiratory Protection Policy/Procedure for selection and use.

b) Face shields & Goggles: these shall be used to protect the eyes from chemical splash, dripping, and spraying. When using a face shield, goggles should be worn at the same time. Face shields do not provide full eye protection (i.e. corrosive vapors potentially reaching the eyes).

c) Gloves & Aprons: these can be made of rubber, nitrile, neoprene, and PVC. The correct type of material should be chosen for the specific chemical handled. These items should be used when transferring or using strong chemicals.

d) Portable Eye Wash Stations: should be provided in close proximity to each area with hazardous chemicals that may burn, irritate, or otherwise be harmful to the skin or eyes. . Eyes should be flushed for a minimum of 15 minutes whenever any chemicals enter the eye.

G. Acquisition of New / Sample / Pilot Chemicals:

1. Prior to ordering or obtaining chemicals, approval must be received from Athie.

2. If not received upon delivery of the chemical, the user must obtain a MSDS (i.e. contact manufacturers, purchasing dept.,

sales rep., etc.) as soon as possible and supply a copy to the EHS Representative.

3. The approval shall consist of the following:
 - a) Determining the use or application of the chemical;
 - b) Determine if a less hazardous chemical can be substituted;

H. Spill Response / Clean-up Procedures:

1. All workers:
 - a) Avoid contact with spilled or released chemical dry, liquid or gas.
 - b) Notify Contract Rent and the EHS Representative.
 - c) Information provided during notification should include spill location, identity of hazardous chemical, persons injured or exposed, and quantity of release.
 - d) Keep others away from spill area (isolate or close off all exits or accesses to the area).
 - e) Stop release or shut off source, if possible, without personal risk or risking health and safety of others.
 - f) Obtain and make ready for use necessary PPE and spill supplies located at designated locations.
 - g) Isolate / eliminate all sources of ignition for flammables or combustibles released.
 - h) Refer to MSDS for additional information.
2. Employees Trained in Incidental Spill Response:
 - a) Use spill supplies and PPE to contain spill from further movement or migration. Divert the movement from floor drains or storm sewers. Absorb and clean up the released products.
 - b) Remove equipment and supplies from the path of the release that could be damaged/contaminated.

- c) Dispose of product(s) and spill supplies according to the EHS Representative recommendations.
- d) Decontaminate equipment and items, if possible. Properly dispose of all items and equipment that cannot be decontaminated.
- e) Disposal of any rinsate or byproduct from the decontamination should be done in the same manner as the cleaned-up products and spill supplies.
- f) The Region EHS Manager must be immediately notified for spill responses beyond the scope of training for employees in this policy/procedure.

I. Training

- 1. Training is required for the following instances:
- 2. Initial assignment or New Employee Orientation;
- 3. Introduction of a new hazardous chemical within an employee's respective work area that may be handled or interfaced;
- 4. Modification of process involving a hazardous chemical (i.e. modification alters means of exposure);
- 5. Upon identification of a lack in competency regarding the handling of a hazardous chemical (i.e. injury, observed actions, incident investigations, etc.).
- 6. Training must consist of the following topics or areas:
 - a) An overview of the HAZCOM Standard requirements, including how to read Material Safety Data Sheets and warning labels;
 - b) Employee rights under the HAZCOM Standard;
 - c) Employee responsibilities necessary for complete and successful implementation of the HAZCOM Program;
 - d) Location and availability of the written HAZCOM Program, MSDS's and operations in areas where hazardous chemicals are handled.
 - e) Information about the general nature of hazardous chemicals as required by federal law;

- f) The hazards associated with chemicals to which the employee may be exposed, including but not limited to physical and health effects.
- g) Control or protective measures that must be used for particular hazardous chemicals;
- h) Emergency and first aid procedures to follow if exposed to hazardous chemicals through spills, leaks, etc.

Attachment 10 – Work with Electricity

1.0 Purpose & Scope

- 1.1 The purpose of this procedure is to define the requirements and procedures necessary for safeguarding the Dot Building Site Workers who work near, with or on electrical equipment.

1.1 Definitions

1.1.1. Voltage Levels

For the purposes of this regulation are considered the following voltage levels:

a) Very low voltage (MBT)

Corresponds to voltages up to 50 V dc or rms values between phases equal to AC.

b) Low voltage (LV)

Corresponds to voltages above 50 V and 1000 V dc or rms values between phases equal to AC.

c) Medium Voltage (MV)

Corresponds to voltages above 1000 V and up to 33,000 V, inclusive.

d) High voltage (HV)

Corresponds to voltages above 33,000 V.

1.1.2. Voltage Security

In the dry and wet environments deemed safe voltage to 24 V relative to ground.

In wet or conductive liquids impregnated it will be determined in each case by the Chief of the Health and Safety at Work of the company.

1.1.3. Locking a device cutting or sectioning

The set of operations to prevent the maneuver and keep the apparatus in a given position of opening or closing, avoiding untimely drive. Such operations include appropriate signage to prevent the device can be operated by another person, locally or remotely.

Locking a device isolating court or in the open position, does not allow himself to work on it.

To do the installation shall be recorded as detailed in Section 1.1.4.

1.1.4. Provision of a facility or equipment online

Well be called the set of operations to:

- a) Separate visible by cutting installation, line or apparatus from any source of tension.
- b) Lock in open position the cutting or severing devices needed.
- c) Verify the absence of tension with the right elements.
- d) Make the grounded and shorted necessary at all points where stress could come to the facility as a result of a maneuver or system failure.
- e) Place the necessary signaling and delineate the work area.

1.1.5. Safety distances

To prevent flashovers in work on the proximity of uninsulated parts of electrical installations in service, minimum clearances, measured from any point with tension and the nearest part of the operator's body or uninsulated tools he used in the worst situation that may occur are as follows:

Minimum voltage level

0 to 50 V no

more than 50 V to 1 kV 0.80 m

More than 1 kV to 33 kV 0.80 m · (1)

more than 33 kV to 66 kV 0.90 m · (2)

more than 66 kV to 132 kV 1.50 m · (2)

over 132 kV to 150 kV 1.65 m · (2)

over 150 kV to 220 kV 2.10 m · (2)

over 220 kV to 330 kV 2.90 m · (2)

over 330 kV to 500 kV 3.60 m · (2)

(1) These distances can be reduced to 0.60 m, by placing objects on the screen voltage insulation adequate level of insulation and there are no grounded metal gates that stand between the element with tension and operators.

(2) For remote job will not be taken into account for potential jobs.

1.1.6. Works with tension

It defines three methods:

- a) Contact: Used in LV and MV installations, is to separate the operator from the live parts and ground elements and insulated tools.

b) Distance: This involves the application of techniques, elements and security arrangements, designed to ward off stress points of the operator, using appropriate equipment.

c) potential: Used for transmission lines over 33 kV nominal, is to isolate the operator from ground potential and put it at the same potential as the driver.

1.2. Personal Training

1.2.1. Overview

Staff performing the maintenance of electrical installations will be trained by the company for the proper performance of its function, informándosele about the risks it is exposed. You will also receive instructions on how to help an accident victim for shock, first aid, fire fighting and evacuation of premises on fire.

1.2.2. Works with tension

The work will be executed only with voltage by specially authorized by the enterprise for such purpose.

This authorization shall be countersigned by the Chief of the Health and Safety of the company. Be granted when certifying:

a) Knowledge of the task, the risks will be exposed and the security arrangements.

b) Experience in works of similar nature.

c) Consent of the operator to work with stress.

d) physical and mental fitness for the job.

e) low accident history.

1.2.3. For Labour

A single person, the job responsibilities, should ensure staff security and integrity of goods and materials that are used in the course of a maneuver, operation or repair.

2. Maneuvers Jobs and Electrical Installations

2.1. Jobs and maneuvers in LV installations

2.1.1. Overview

a) Before starting any work in BT will proceed to identify the driver or installation on which to work.

b) Any plant under stress will be considered, until proven otherwise with devices for the purpose.

c) No metal ladders are used, meters, oil and other conductive material in voltage installations.

d) Whenever possible, blood should be left the facility on which to work.

2.1.2. Material Safety

In addition to personal protective equipment to be used in each particular case (helmet, visor, shoe, etc.) are considered safety equipment for working at BT facilities, as follows:

- a) Insulating Gloves.
- b) Face shields.
- c) Stools or carpet inserts and isolated switching poles.
- d) insulating sheaths and caps.
- e) Voltage Detectors or verifiers.
- f) Insulated tools.
- g) Material signaling (disks, fences, ribbons, banners).
- h) Portable lamps.
- i) Safety transformers for 24 V output (maximum).
- j) Transformers relationship 1:1 (autotransformers are prohibited).
- k) high sensitivity RCDs.

They used these or other appropriate elements, depending on the type of work.

2.1.3. Execution of works without tension

a) In the supply points of the facility, responsible for the work must:

a.1.) Disconnect the part of the facility that will work, separating it from any possible food, by opening sectionalizing equipment closer to the work area.

a.2.) Lock in open position switching devices listed in a.1. Place in the control of such appliances a warning label, clearly visible, with the inscription "No Maneuvering" and the name of Job Responsible to order placement, plow the case that is not physically possible to immobilize switching devices.

a.3.) Verify the absence of tension in each of the parts of the facility that has been sectioned.

a.4.) Download the installation.

b) In the workplace, the Head of Labor shall in turn repeat the points a.1., a.2., a.3. and a.4. as indicated by checking voltage at the neutral and the driver of street lighting in the case of airlines. Short circuit and earth will all parts of the plant that may accidentally be energized and delimit the working area, if necessary.

c) The reinstatement of service after completion of work to do when the check personally responsible for the work:

c.1.) That all grounded and placed in short he has been withdrawn.

c.2.) tools have been withdrawn, surplus materials and components of signaling and was blocking switching devices in the closed position.

c.3.) personnel has moved away from the danger zone and has been trained in that area is no longer protected.

After carrying out the work and findings indicated, the Work Manager will proceed to unlock and close the isolation devices that had been opened by removing the signs markers.

2.1.4. Running Jobs with tension or in proximity to BT in service facilities

When working on live electrical installations or near, the staff will be trained to make these methods work to follow in each case and the use of safety equipment, tools and equipment listed in 2.1.2.

2.2. Jobs and maneuvers in MV and HV installations

2.2.1 General

a) All work or MT or AT maneuver must be expressly authorized by the Head of Labour, who will instruct you regarding safety requirements and operational forms.

b) Any plant of MT or AT is always considered as being in tension, until proven otherwise appropriate detectors and put ashore.

c) Each team must have the necessary safety equipment for the type of task to perform, rescue equipment and first aid kit in case of accidents. All materials shall be verified visually before each job, in addition to periodic inspections performed by the Service Personnel Health and Safety at Work. Anything you may not be suitable not be used.

2.2.2. Execution of works without tension

Perform the following operations:

a) In the supply points

a.1.) visible is cut open with all voltage sources, switches and disconnectors through which ensure the impossibility of its untimely closure. When the cut is not visible on the switch, disconnect switches should be opened on both sides of it, making sure all the blades are well open.

a.2.) will latch or lock devices and breaking. Where this takes place, signboards will be placed easily visible.

a.3.) Verification of the absence of tension with appropriate sensors on each of the parts of the line, plant or equipment to be appropriate.

a.4.) will be shorted to ground and, with appropriate elements, all the power points of the installation. It is prohibited to use the link chain as a ground or short. If the grounding is done by earthing, you must ensure that the blades of these appliances are all in the proper closed position.

b) In the workplace

b.1.) Verification of the absence of tension.

b.2.) installation will be downloaded.

b.3.) land will be made in short, all drivers and parts of the facility that could be accidentally energized. These operations were also made to airlines in separate building or any source of energy.

b.4.) delimit the area are protected.

c) Replacement of service

Service will be restored only when it is certain that there is no one working at the facility. Operations that lead to the commissioning of the facility, once the work shall be in the following order:

c.1.) In the workplace: It removed the grounding and additional protective equipment and work responsibilities, since the last survey, give notice that it has concluded.

c.2.) In the supply points: Upon receipt of the communication that has finished its work, the material will be removed and unlocked signaling devices and cutting maneuver.

2.2.3. Execution of works with tension

They should be made:

a) specific working methods, following the standards set forth in the instructions for this type of work.

b) security equipment, staff and tools.

c) With special permission from the professional designated by the company, who specifically detail the procedure to follow at work.

d) Under constant monitoring of job responsibilities.

In any case, this kind of work prohibited personnel are not trained for this purpose.

2.2.4. Execution of works in the vicinity of MV and HV installations in service

Should work be needed in the immediate vicinity of conductors or MV and HV equipment, unprotected, will be handled the instructions for each particular case of the job responsibilities, which are constantly kept busy as measures set up for him.

If the security measures were not enough, you must apply for authorization to work in the installation of high voltage and fill standards "Work in MV and HV installations."

2.3. Additional provisions relating to electrical circuits

2.3.1 Airlines

a) In the works were carried by different voltages, will be considered for purposes of security measures to be observed, the highest voltage it supports. This also applies in the event that any of these telephone lines either.

b) the work be suspended when there are storms coming.

c) On the lines of two or more circuits, no work is done in one of them being the other in tension, if for execution must be moved so that drivers can get in touch or come too.

d) work to be carried on poles, will be used in addition to the helmet with chinstrap, climbers and belts. Steps employed for this work will be of insulating material in its entirety.

e) When used in this work are vehicles equipped with winches and cranes, avoid contact with blood lines and excessive closeness that can cause a discharge through the air.

f) work and are barred by the procedural maneuvers of "pre-arranged time."

2.3.2. Underground pipes

a) All work shall comply with the provisions concerning the work and maneuvers in HT or MT and AT respectively, the voltage level of the facility.

b) To interrupt the continuity of a network circuit to ground, service, previously placed grounding conductor bridge in the place of court and the person performing this work will be fully insulated.

c) In trenching or excavation for repair of underground cables were previously placed barriers or obstacles, as well as appropriate signage.

d) In anticipation of hazardous atmosphere, if not vented to the outside or in case of risk of fire in the underground facility, the operator must enter it to take a protective mask and belt with cable life, to hold another workers from abroad.

e) In general networking grounding of electrical installations, suspended the work to test the lines and in case of storm.

2.4. Jobs and maneuvers in local devices and electrical

2.4.1. Cells and local facilities

a) It is forbidden to open or remove bars or doors to protect cells in a medium and high voltage installation before leaving without voltage conductors and apparatus thereof, on which will work. Conversely, these gates or doors must be closed

before energizing to those elements of the cell. The points of the remaining cells with voltage should be appropriately marked or protected by screens.

b) prohibits local store materials within facilities or appliances or beside them. The tools used in such premises shall be insulated and shall not use meters or metal oilers.

2.4.2. And breaking devices

a) The disconnectors are opened after removal or open the corresponding switch and before introducing or closing a switch should close the sections.

b) The elements of protection of personnel performing maneuvers include insulating gloves, insulated switching poles and insulators stools or carpets. Will need to use two types of them simultaneously, recommending all three at once. The characteristics of the elements correspond to the voltage.

c) The cutting apparatus with no manual control, must have a latch or lock that prevents untimely operation. It is forbidden to override the locks or interlocks and all defects in the same shall be repaired immediately.

d) The minimum blocking, binding, will be given by a visible sign that read "No maneuver" and the name of the Head of Labor is in charge of the task.

2.4.3. Transformers

a) For a transformer out of service will open the corresponding switch to the connected load, or outlets will be opened first and then secondary cutting apparatus of the primary. Then proceed to download the installation.

b) The secondary of a current transformer should never be opened.

c) Not be near flames or sources of calories risky oil cooled transformers. The manipulation of oil should always be done with care to avoid spills or fires. For these cases will be on hand combat elements of fire, adequate in quantity and type. In the case of transformers located inside buildings or other places where its explosion or combustion may cause damage to property or persons, should be used as insulating fluids noncombustible, prohibiting the use of toxic substances or pollutants.

d) Should have fixed fire protection, shall ensure that the same during the maintenance, not work your drive suddenly and can be done manually.

e) transmission or distribution systems with grounded neutral, the neutral must be attached rigidly to land at least one of the generation processors or machines. Disconnect is prohibited, except that it automatically ensures the grounding of the neutral point on another machine or installation and no current flow between them at the time of opening.

Any opening or closing an earthing will be done with appropriate safety features.

f) Disconnection of the neutral of a distribution transformer will be done after removing the burden of secondary and open primary cutting apparatus. This trip will only be allowed for checks insulation levels and transformer replacement.

2.4.4. Remote Control Devices

Before starting work on a device, all organs that command remote control operation shall be locked in open position. Should open the exhaust valves to the environment, the compressed air tanks belonging to tire and placed command signaling in each of the controls.

2.4.5. Static capacitors

a) In the supply points, the capacitors should be grounded and shorted with appropriate elements after they have been disconnected from their food.

b) In the workplace, should await the time required for the capacitors to discharge and then put them ashore.

2.4.6. Alternators and

In alternators, dynamos and electric motors, before working inside the same should be checked:

a) That the machine is not running.

b) That the output terminals are short-circuited and grounded.

c) Keep it locked fire protection.

d) fuses are removed power from the rotor, if he holds the machine in permanent tension.

e) That the atmosphere is not flammable or explosive.

2.4.7. Battery rooms

a) Where they are highly dangerous, it is forbidden to work with stress, smoking and using unsafe sources of calories within the premises, and any handling of flammable or explosive.

b) All operations must be done with electrolytes and protective clothing appropriate and in perfect condition.

c) It is forbidden to eat or drink in these places.

3. Conditions of Electrical Installation Safety

3.1. Constructive Characteristics

Be completed as provided in the Regulations for the execution of electrical installations in buildings, the Association of Electrotechnical Argentina.

For the installation of overhead and underground lines, shall follow the directives of the Regulations for overhead power lines and general exterior of the association.

The materials, equipment and appliances used, shall be constructed according to national or international standards.

3.1.1. Drivers

Should be selected according to the stress and the conditions in the places where installed. The temperature taken by the electrical equipment in normal operation should not compromising your privacy.

3.1.2. Switches and low voltage shorts

Shall be located so as to prevent accidental contact of persons or things and be able to interrupt the circuit without the projection of molten materials or arcing lasting. Protections will be in line with local conditions where they are installed and environments in the case of flammable or explosive nature, be placed outside the danger zone. When this is not possible, be kept in sealed boxes or flameproof, as appropriate, which can not be opened unless the power is off.

3.1.3. Electric motors

Be located or constructed so that it is impossible to contact people and objects with live parts during operation and will not cause or spread of fires. The structural characteristics respond to the environment where they will be installed, therefore their protection is Against: casual contact or intentional entry of solid objects, ingress of dust, drip, spray, rain and water jets, explosions and other.

3.1.4. Portable electric tools and equipment

Be selected according to the hazardous characteristics of the workplace.

Accessible metal parts on hand will be attached to a grounding conductor.

Power cables are double insulated type, strong enough to avoid damage by friction or mechanical stress of normal use and limit its spread, using nearby power outlets.

They must remain connected when not in use.

3.2. Protection against risk of direct contact

For the protection of persons against direct contact shall be adopted in one or more of the following measures:

3.2.1. Isolation Protection

Will depart the active parts of the installation at a sufficient distance from the place where people are or circulate regularly to prevent inadvertent contact. It should take into account all movements of isolated conductive parts, and roll movements of people, downed tools and other causes.

3.2.2. Isolation Protection

The active parts of the facility, will be coated with proper insulation that retains its properties during its life and limit contact current to a safe value.

3.2.3. Protection by obstacles

Items be brought to prevent any accidental contact with live parts of the installation. The effectiveness of the barriers shall be secured by its nature, extent, or layout, mechanical strength and, if necessary, for their isolation. Is prohibited without protection barriers, before he set off load carrying parts. If there are reasons of force majeure, it shall take all safety measures for working with stress.

3.3. Risk Protection against indirect contacts

To protect people against risks of accidental contact with energized placed masses, they should be grounded and also take one of the safety devices listed in 3.3.2.

3.3.1. Grounding of the masses

The masses must be electrically bonded grounding jacks or a set of interconnected ground.

The grounding circuit shall be: continuous, permanent, have the capacity to conduct the fault current and proper strength.

The values of the resistance of the grounding of the masses shall be in accordance with the voltage threshold of safety and cutting devices chosen, so as to avoid bringing or keeping dangerous potential mass in relation to land or another body nearby.

3.3.2. Safety Devices

In addition to the grounding of the masses, the equipment shall have at least one of the following protective devices:

3.3.2.1. Active Protection Devices

Electrical installations will have automatic devices that indicate the existence of any defect in isolation or taken out of service the damaged facility or part thereof.

Protective devices shall be in the first defect in facilities with unearthed neutral or grounding impedance, and intervene quickly pulling out of the facility or part of whose masses are capable of taking a potentially dangerous, in cases of first defect in facilities with direct neutral ground and second flaw in systems with isolated neutral or grounding impedance.

To this end may choose the following devices:

a) devices first fault signaling in plants with isolated neutral or grounding impedance: safely flagged insulation failure and will not cause the cutting of the

installation. Also not be modified by their presence the electrical characteristics of the network.

b) Voltage Relays: Monitor voltage taken by a line mass relative to the earth than the installation and will be regulated to take action when a potential mass equal to or greater than the safety voltage. The use of these devices is being studied in each particular case and should be taken into account: the number of devices to install, set diversion points interconnected mass, daily verification of performance, lack of selectivity, possibility of drying earth connections, protections complement sensitive and all other aspects which need to be considered.

c) Residual current relays or differential: You can ensure the protection of persons and the installation using these devices to control the leakage current through the grounding of the masses, or by control vector sum of currents polyphase circuits, or algebraic sum of currents in single-phase circuits.

In the first case, the device must operate with a leakage current such that the product of current by resistance grounding of the masses is less than the safety voltage. In this case also requires that all masses associated with the same relay, should be connected to the same grounding.

In the second case, differential circuit breakers must act when the earth leakage current calibration takes the value (300 mA or 30 mA depending on their sensitivity), whatever their nature or origin and in a time of no more than 0.03 seconds.

3.3.2.2. Passive restraint

Prevent a person comes in contact with two masses or conductive parts with hazardous potential differences.

It can use any of the following devices or modes:

a) The separate masses or conductive parts that can take different potentials, so that it is impossible to contact them simultaneously (either directly or through regular handling objects).

b) all bodies or interconnect conductive parts, so that no differences between them appear dangerous potential.

c) were isolated conductive bodies or parts with which man can come into contact.

d) separate circuits using energy sources by means of transformers or converters groups. The separate circuit shall have no point connected to earth, is of limited extent and have a good level of insulation.

The insulation should be checked daily at the operating temperature of the transformer.

If one isolated circuit connecting multiple materials simultaneously, the masses of these must be interconnected.

The mass of the machine separation circuit should be grounded.

e) use safety voltage.

f) be protected by double insulation equipment and electrical machinery.

Periodically check the insulation resistance.

3.4. Places with special electrical hazards

3.4.1. The premises dusty, humid, wet, impregnated with conductive liquids or corrosive vapors, comply with additional requirements for special local regulation for the execution of electrical installations in buildings, Argentina Electrotechnical Association.

3.4.2. In premises where manufactured, handled or stored flammable materials such as detonators or explosives in general, ammunition, refineries, oil depots or their derivatives, ether, flammable gases, film, films, grains and flours, electrical installation must be contained in special envelopes specifically selected according to each risk.

In addition they should adopt some of the following security systems:

a) Protection by the use of explosion-proof devices. All parts of an electrical installation must be within the pipe and flameproof devices capable of withstanding the explosion is spreading it's own environment without the external environment.

The structural characteristics of the boxes, motors, lighting fixtures and accessories, such as minimum joint width, maximum gaps, entrance cables, bushings and other, will meet the requirements of the applicable national or international standards relating to such material.

The meetings will be the type perfectly machined metal to metal and does not support the use of garrisons in them.

For explosion-proof electric motors, the output shaft through mazes or will spark bushings. The separation between the shaft and the hub or the maze will be a function of length.

The operating temperature of the system parts, especially engines and lighting fixtures will be lower than the ignition temperature of the medium external explosive.

The connection between devices will in all cases through blast-resistant pipes, being used for sealing vertical and horizontal partitioning of the installation. The joints between elements must be threaded through with a minimum of 5 fillets in touch.

The devices approved for a particular class and explosion group will not be eligible for another class or group, whichever achieve the relevant approval.

The tasks of inspection, maintenance, repairs and upgrades of these facilities will be made only without tension.

3.4.3. The artifacts, equipment and materials used in special electrical installations, according to 3.4.1. and 3.4.2., must be approved by government agencies.

The approval tests are conducted under the rules that apply to each case. Prototype will be approved by the execution of all tests indicating the norm. The approval will be set up.

Manufacturers of electrical equipment for use in special environments, wet, wet, corrosive or explosive supplied to users, copy of certificate of type approval and departure, and maintenance instructions.

3.4.4. It is the responsibility of the user, the selection of material for each type of environment, taking into account the risk.

3.5. Local electric storage batteries

The rooms containing electric batteries, will be of adequate size, made in terms of voltage and capacity of the facility (number of elements connected row number and arrangement of them).

In these places will be taken following precautions:

- a) The floor of the service corridors and walls up to 1.80 m in height shall be electrically insulated in relation to the voltage of the battery set.
- b) The bare parts with tension, shall be installed so that it is impossible for the worker and inadvertent simultaneous contact with the former.
- c) Maintain adequate ventilation to avoid the existence of a flammable atmosphere or harmful.

3.6. Static Electricity

In premises where it is impossible to avoid the generation and accumulation of electrostatic charges, measures of protection in order to prevent the formation of electric fields in discharging sparks capable of causing fires, explosions and accidents to persons caused by side effects . Protective measures aimed at facilitating the elimination of static electricity will be based on any of the following methods or combination thereof:

- a) humidification of the environment.
- b) Increased electrical conductivity (bulk, surface, or both) of the insulating bodies.
- c) Discharge into the land of the loads generated through grounding and interconnection of all conductive parts likely to make potential directly or indirectly.

Preventive measures need to be very local in the risk of fire or explosion, in which the floors are antistatic and antichispazos. The staff wear clothing made from fabrics, synthetic fibers, to prevent generation and accumulation of electric charges and anti-static shoes will be of type. Prior to access to these premises,

staff will contact unloaders grounded bars placed expressly for the purpose of removing the electrical charges that have accumulated.

When handling liquids, gases or dusts must take into account the value of its electrical conductivity, special care being taken of products in case of low conductivity.

5.0 Protective Equipment & Safety Tool Requirements for the Qualified Employee

5.1 PPE

5.1.1 General Requirements

5.1.1.1 Non-conductive safety glasses with side shields shall be worn at all times when working on, inspecting, or testing equipment.

5.1.1.2 Conductive articles of jewelry and clothing (*such as watch bands, belt buckles, bracelets, rings, key chains, necklaces, cloth with conductive thread, or metal headgear*) shall not be worn.

5.1.1.3 Employees shall not wear clothing which, if exposed to flash or arcs, could increase the extent of injury. Any clothing made either entirely of, or blends of, acetate, nylon, rayon, or polyester is prohibited. 100% cotton clothing is recommended at a minimum.

5.1.1.4 Employees working in areas where there are potential electrical hazards shall be provided with, and shall use, electrical protective equipment that is appropriate for the specific parts of the body to be protected and for the work to be performed per Appendix A or Appendix B. This must include (*as applicable*):

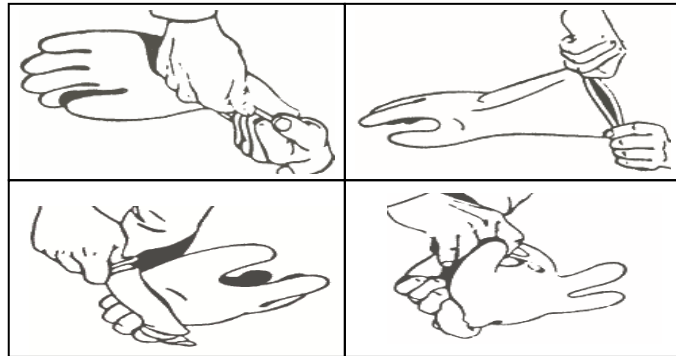
- A face shield,
- Fire-retardant long sleeved clothing (*switching jacket, lab coat or coveralls*),
- Insulated voltage gloves appropriate for the work being performed,
- Non-conductive hard hat and
- Dielectric Footwear.

5.1.1.5 If the insulating capability of protective equipment may be subject to damage during use, the insulating material shall be protected. (*For example, an outer covering of leather is used for the protection of rubber insulating gloves.*)

5.1.2 Electrical Safety Gloves

- 5.1.2.1 Except for Class 0 and 00 gloves as discussed elsewhere in this procedure, always wear protective gloves over rubber gloves. Any direct contact of a rubber glove with sharp or pointed objects may cut, snag or puncture the glove and reduce the protective qualities normally provided.
- 5.1.2.2 Always wear rubber gloves right side out (*serial number and size to the outside*). Turning gloves inside out places a stress on the preformed rubber.
- 5.1.2.3 Always keep the cuffs up. Rolling them down sacrifices a valuable area of protection.
- 5.1.2.4 Always store gloves in a protective case where they cannot come in contact with sharp or pointed tools that may cut or puncture them.
- 5.1.2.5 Before rubber gloves are used, a visual inspection must be made at least once every day and at any other time necessary during the progress of the job. This inspection shall be accomplished by stretching a small area at a time, checking to be sure that no defects exist, such as: embedded foreign material, deep scratches, pin holes, cuts or punctures. In addition, look for signs of deterioration caused by oil, tar, grease, insulating compounds, or any other substances which may be injurious to rubber. Inspect the entire glove including the cuff, thoroughly. Gloves or other equipment that are found to be defective must be destroyed. Check the inside of the protectors for any bits of metal or short pieces of wire that may have fallen into them.

5.1.2.6 Before rubber gloves are used a field air test should be made at least once every day and at any other time necessary during the progress of the job. After visually inspecting the glove, other defects may be observed by applying an air test, by holding the glove cuff with both thumbs and forefingers, twirling the glove around quickly to fill it with air and subsequently to trap the air



by squeezing the cuff with one hand. Then use the other hand to squeeze the palm, fingers, and thumb of the inflated glove while looking/listening for weaknesses and escaping air (*as per the below depiction*).

5.1.2.7 Rubber insulating gloves must be "Dielectric Tested" at least every six months, or more often if appropriate, in accordance with ATM requirements. Gloves that have not been tested within six months shall not be used. Records of such tests shall be tracked via the Service Center EHS Compliance Calendar.

5.1.2.8 Rubber insulating gloves used during electrical work must comply with ANSI/ASTM std. D 120/77. Gloves covered under this specification are designated Type I or Type II: Class 00, Class 0, Class 1, Class 2, Class 3, or Class 4. "Type," in general, refers to the characteristics of the material from which the glove is made, and "Class" refers to certain electrical properties, as follows:

- Type I: Non-resistant to ozone; made from a high-grade cis-1.4-polyisoprene rubber compound of natural or synthetic origin, properly vulcanized.
- Type II: Ozone-resistant; made of any elastomer or combination of elastomeric compounds.
- Classes;

GLOVE CLASS	MAXIMUM USE VOLTAGE
00	500
0	5,000
1	7,500
2	17,500
3	26,000
4	36,000

Notes

Maximum use voltage is the voltage classification of the protective equipment that designates the maximum nominal design voltage of the energized system that may be safely worked.

Protector gloves need not be used with Class 00 and Class 0 gloves, during LV testing, where instrument/tool manipulation necessitate high finger dexterity insofar as the requirements of Appendix A & B are maintained.

The minimum under-lap of the protector gloves shall be the glove class in inches or one (1) inch, which ever is greater.

6.1.Alerting Techniques

6.1.1.The following alerting techniques shall be used to warn and protect employees from hazards which could cause injury due to electric shock, burns, or failure of electrical equipment and associated components by keeping unqualified and unauthorized employees a safe distance (*as described in Section 3.0*) from the equipment to be worked on:

6.1.1.1.Safety signs, safety symbols, safety barricade tape or accident prevention tags shall be used where necessary to warn employees about electrical hazards which may endanger them. Safety Signs and Tags shall meet the requirements of ANSI Z535, Series of Standards for Safety Signs and Tags, 1991. Examples of such signs are provided below - the minimum size of which must approximate a standard 8.5 X 11" document page. In this regard the first sign below may be utilized for high and low voltage situations - while the second figure must be utilized for high voltage applications.

6.1.1.2. Barricades shall be used in conjunction with safety signs where it is necessary to prevent or limit employee access to work areas exposing employees to un-insulated energized conductors or circuit parts. Barricades constructed (either partially or in total) of conductive materials may not be used where they might cause an electrical contact hazard.

6.1.1.3.If signs and barricades will not provide sufficient warning and





6.1.1.4. protection from electrical hazards, a Safety Watch shall be stationed to warn and protect employees.

7.0 Electrical LOTO for Qualified Employee

CAUTION

Until all Lock-Out/Tag-Out steps have been accomplished, equipment is to be considered energized.

NOTE

The steps of Lock-Out/Tag-Out: Prepare for Shutdown, Shutdown, Isolate, Apply Locks and Tags, Control Hazardous Energy and Verify - remain applicable - though increased emphasis and change of sequence is required relative to the Control and Verification steps as described in this section. Additionally, Personal Protective Equipment (*Clothing*) and clearance requirements, as required throughout electrical Lockout/Tagout processes, are of greater concern, as described in this procedure.

7.1 De-energizing/Isolating/LOTO'ing Electrical Equipment

7.1.1 An Equipment Specific LOTO & Energy Control Procedure, wherein all sources of dynamic/potential energy sources have

been identified, a method of Lock-Out/Tag-Out or control for each source has also been identified and all associated affected personnel to be notified are listed, shall be prepared. Electrical schematic "One-Line" diagrams must be reviewed towards completion of this step.

CAUTION

Backfeeds, "Sunday" feeders and auxiliary/emergency generation sources must be accounted for as part of Step 7.1.1.

- 7.1.2 PPE shall be selected and applied as per guidance of Appendix A. Alerting techniques shall be installed so as to keep unauthorized/unqualified personnel a safe distance (*as described in Section 6.2*) from the equipment to be worked.
- 7.1.3 The equipment shall be unloaded and shut-down (*de-energized*) and then isolated (disconnected) from all energy sources in accordance with OEM instructions and each source shall be properly locked and tagged out at the point of isolation, by a qualified individual, or otherwise controlled in accordance with the Lock-Out/Tag-Out procedures. The following points are pertinent to the isolation of electrical equipment:
- Electrical isolation is to be accomplished by physically opening all associated feeder circuits. Except in the instances of low voltage bolted circuit breakers or snap-in low voltage lighting panel type circuit breakers - the isolating devices must be visually observed as being physically open and as such (*excepting for these particular devices*) position indicators shall not be used to verify that the isolating device is open.
 - Draw-out equipment, such as circuit breakers or power fuses, shall be completely withdrawn. Normal (by OEM design) racking out of open breakers/switch-gear from an energized line (*in so far as proper PPE and OEM methods are employed*) is permitted.
 - Stationary (*bolted-in*) type circuit breakers (*non-drawout*) shall not be worked on unless both the line and load sources are de-energized/isolated/LOTO'ed and grounded as applicable.
 - When such isolating devices are not provided, instrumentation, control, and power fuses must be

removed (*with a suitable fuse puller*) and stored in a controlled place so that they cannot be reinstalled without the knowledge of personnel working on the equipment. The empty fuse holders shall be tagged to prevent inadvertent or premature installation of the original or replacement fuses. Fuse replacement, when any involved termination is energized is considered an activity for which specific approval via an employee's RWA is required.

- Control devices such as push buttons and selector switches shall not be used as isolating means.

7.1.4 Operational verification checks such as attempts to activate on/off switches must be completed at this time.

7.1.5 Additional verification checks, via electrical tests for zero voltage, must be performed for all associated electrical sources of energy upstream of the equipment to be worked. Two independent verifications for zero volts must be made by two different qualified personnel using separate detection devices. Check voltage detectors for proper operation prior to, and immediately after, use.

CAUTION

Test equipment shall be checked for proper operation immediately before and after testing. Instrument assisted "Verification" on High Voltage systems can only be accomplished with remote reading inductive type instruments such as Tic Tracers and Hotliners (*on appropriate insulated extension equipment*) that give only a relative range of voltage (*i.e. "go/no-go"*) and not "exact" readings. For such instruments be certain that the reading is unaffected by cable shielding, limitations on proximity or voltage type (*i.e. AC or DC*). For certain of such instruments, conductor contact is not permitted.

7.1.6 All stored sources of electrical energy shall be dissipated and verified as such. Capacitors shall be discharged in accordance with the OEM instruction manual for the involved equipment. The de-energized lines or equipment to be worked on shall be grounded as necessary to achieve an equipotential zone around the worker(s), near as practicable to the work location.

NOTE

If grounding is impractical or the conditions resulting from the installation of a ground would present greater hazards than

working without grounds, the lines and equipment may be treated as de-energized provided the lines and equipment have been de-energized as defined above, there is no possibility of contact with another energized source and there is no hazard of induced voltage present.

7.2 *Equipotential Safety Grounding On De-energized/Isolated/LOTO'ed Electrical Equipment*

- 7.2.1 Safety grounds are installed to provide an effective "bolted" connection from ground to the circuit and/or equipment to be serviced. The ground is for the purpose of draining off static and induced electricity but most importantly, to protect the worker in the event that the equipment becomes accidentally energized by a source external to the circuit or system being worked.
- 7.2.2 Safety Grounds shall meet the requirements of ASTM F855, Standard Specification for Temporary Grounding Systems to be Used on De-energized Electric Power Lines and Equipment, 1996.
- 7.2.3 Before safety grounds are attached, the cable, bus or equipment must be de-energized, isolated, tagged out, and locked out. It must then be definitely established that the equipment to be grounded is de-energized/isolated by testing the circuits and/or equipment with voltage detectors. Installation of grounds is considered work on energized equipment and proper personal protective equipment is required.
- 7.2.4 Safety grounds shall be placed at such locations and arranged in such a manner so as to prevent the employee from being exposed to hazardous differences in electric potential. As such, safety grounds shall be installed so as to establish an equipotential zone around the worker(s).
- 7.2.5 Safety ground cables are first attached to ground and then to the each phase of the circuit being worked. A shotgun/hot stick is used to connect the ground clamp solidly and firmly onto the conductors. Follow-through action is used to hold the ground clamp tightly against the conductor under any condition.
- 7.2.6 The selection of the ground cables and associated grounding clamps to be used must be based on the physical configuration and the electrical capacity (*i.e. sized to withstand the thermal and mechanical stresses that develop under short-circuit conditions until the protective equipment*

operates) of the equipment to be grounded as per the following table. Ground cables used for safety grounding power circuits must be a flexible insulated copper conductor. Fabricated arrangements using ordinary C-clamps and cable or battery jumper cables shall not be used for safety grounding. Several conductors (*one for each phase*) terminating in a cluster must be employed so as to function as a grounding cable to carry the current.

- 7.2.7 A necessity for establishment of an equipotential zone is properly sized ground conductors and terminations for the estimated potential short circuit fault current (I_{sc}) and thoroughly cleaned and sufficiently tightened connections, including at the system ground connection surface, towards the establishment of the lowest possible ground conductor resistance - on the order of 10 milli-ohms or less - are required.

COPPER GROUNDING CABLES SIZES AS A
FUNCTION OF THE MAXIMUM ESTIMATED SHORT
CIRCUIT FAULT CURRENT AS DETERMINED IN
SECTION 7.2.7.1 BELOW

[illegible]

Note: This assumes that the primary power source has infinite capacity, and as such, will provide a conservatively higher value than actual.

7.3 Working On De-energized/Isolated/LOTO'ed Equipment

- 7.3.1 The circuit(s)/system(s) being worked shall have been de-energized/isolated/LOTO'ed/verified at zero voltage and safety grounded via Sections 7.2 and 7.3 (*previous*).
- 7.3.2 All exposed conductors in the vicinity of the subject isolated circuits/systems not locked and tagged per the LOTO policy, shall be considered energized.
- 7.3.3 If such exposed conductors in the vicinity of the subject

isolated circuits/systems not locked and tagged per the LOTO policy are in the High Voltage range, they must be de-energized and Locked-Out/Tagged-Out as per Sections 7.1 and 7.2 at this time or must be separated from employees by permanently installed OEM supplied grounded conductive barriers.

- If such conductors are in the Low Voltage range, and if employees would otherwise be in harm's way of these exposed energized conductors (*i.e., if it cannot be ensured that inadvertent body motions cannot be prevented from coming in contact with energized parts*), barriers (*per Section 5.3*) shall be installed as necessary to prevent contact with the energized equipment or the conductors must be de-energized and Lockedout/Taggedout per this procedure.

CAUTION

Exposed conductive parts are defined as those physically accessible to any part of the body or hand-held tool. (*Examples of "exposed" conductive parts are metal-enclosed switch-gear with a cover removed, a starter with the door open, a terminal board with exposed terminations, etc.*)

- 7.3.4 A qualified individual shall ensure that all safety precautions taken during de-energizing of the equipment have remained in effect following shift changes and at the beginning of each day.

7.4 Equipment Start-Up After Completion Of LOTO

- 7.4.1 Personal protection equipment shall be used.
- 7.4.2 A visual inspection shall be conducted to ensure the equipment can be safely re-energized. (*All tools and equipment removed and all interlocks, covers, guards restored as per equipment OEM requirements.*)
- 7.4.3 Any non-essential employees shall be instructed to stay clear of involved circuits and equipment.
- 7.4.4 Remove all safety grounds by first removing the bus side connectors and concluding with removal of the system ground-side connectors.

- 7.4.5 All locks and tags shall be cleared in strict compliance with the Lockout/Tagout Program.
- 7.4.6 Visually verify all personnel are clear of equipment and circuits.
- 7.4.7 Communicate with all affected personnel of the intent to, and timing for the, return of the equipment to service (*i.e. via the re-energization of same*).
- 7.4.8 Re-energize equipment from remote controls if possible and/or per OEM recommendations. Do not stand in front of the equipment if at all possible.
- 7.4.9 Remove protective area barricades, signs and tags as applicable.

8.0 Testing & Inspection Permitted by Qualified Employees on Energized Equipment

8.1 *Inspection, Testing & Trouble Shooting On Energized Low Voltage Equipment*

CAUTION

Use of (*appropriately rated*) VOM's and other direct reading instruments is permitted on LV circuits only and shall not be used when the voltage range is unknown. These limitations on the use of VOM's and other direct reading instruments, apply regardless of contrary information provided by the OEM for the device.

- 8.1.1 All work, including inspection, testing, and adjustment on energized Low Voltage equipment requires the development of a Safety Plan. Testing with appropriate local reading test equipment (*such as VOM's, clamp on ammeters, etc.*) or minor (insulated) screw-driver type electrical equipment adjustments (*e.g. potentiometer/reostat/relay tweaking, etc.*) per Original Equipment Manufacturer (OEM) Instructions on energized LOW VOLTAGE APPLICATIONS ONLY is permitted per this Section of the procedure. The prepared Safety Plan shall include the following:
 - 8.1.1.1 All OEM requirements for the accomplishment of the involved testing/trouble-shooting and an evaluation of the job to be performed to identify all potential hazards (*e.g. energized parts, confined spaces, rotating parts, voltage of lines and equipment, etc.*).

8.1.1.2 Establishment of the safety equipment and PPE necessary to safely perform the work. (*e.g. PPE as per Appendix A or Appendix B, temporary electrical barriers, etc.*). In this regard the following additional requirements must be met:

- Class 00 or higher electrical Safety gloves shall be worn.
- Temporary electrical barriers shall be used to protect each employee from shock, burns, or other electrically related injuries while that employee is working near exposed energized parts which might be accidentally contacted or where dangerous electric heating or arcing might occur.

CAUTION

The only barriers permitted to be used to separate energized low voltage equipment (*being tested*) from high voltage equipment in the vicinity are permanently installed OEM grounded metal barriers or OEM installed permanent non-conductive barriers.

8.1.1.3 The identification/selection of appropriate calibrated test instruments and electrical equipment that is rated for the equipment to be tested (*e.g. proper voltage rating, etc.*) and designed for the environment (*i.e. hazardous or damp conditions, intrinsically safe for potential explosive environments, etc.*) in which they will be used. Furthermore the plan shall identify all insulated tools (*rated for the equipment voltage*) that are required.

8.1.1.4 OEM requirements, relative to the defeating of electrical safety interlocks and for the removal of bolted panels/covers, to perform required tests or inspections. Panel/cover removals should be undertaken only after careful review and only by using the following procedure:

- Use at least two threaded guidepins (*suitably "stopped" so that penetration will not exceed that of the removed bolt*) to position the panel or cover during its removal from the equipment. (*Do not use drift pins, screwdrivers, etc. for guidepins. They might penetrate too far and contact energized parts, or pull out as the cover is removed and allow the cover to drop.*)

- Insert a suitably-sized insulating shield behind the cover as it is moved slightly away from the equipment. The size of the shield shall be such as to prevent the cover, as it is being removed, from falling into the equipment.
- After the cover and shield have been removed, the live parts clearance shall be observed until the equipment is de-energized and grounded, or until the cover is reinstalled.

8.1.1.5 The review of equipment for hazards in the placement of test leads and the positioning of test instruments. Leads must be proper for the involved voltage level and existing physical constraints.

8.2 Visual Inspection/Infrared Testing Of Energized HV/LV Equipment

CAUTION

Inspection/Testing of Energized HV Equipment is limited to visual inspection and infrared testing as per the requirements of this section.

8.2.1 Inspection/Infrared Testing of energized LV/HV equipment must be done only by Electrically Qualified employees certified by their RWA to perform such inspection/testing. All test equipment used must be calibrated and NRTL certified.

8.2.2 All PPE required shall be selected and worn. All minimum approach distances shall be met.

8.2.3 OEM requirements, relative to the removal of bolted panels/covers, to perform required tests or inspections must be followed. Panel/cover removals should be undertaken only after careful review and only by using the following procedure:

- Use at least two threaded guidepins (*suitably "stopped" so that penetration will not exceed that of the removed bolt*) to position the panel or cover during its removal from the equipment. (*Do not use drift pins, screwdrivers, etc. for guidepins. They might penetrate too far and contact energized parts, or pull out as the cover is removed and allow the cover to drop.*)
- Insert a suitably-sized/rated/tested insulating barrier behind the cover as it is moved slightly away from the equipment. The size of the shield shall be such as to prevent the cover, as it is being removed, from falling into the equipment.

- After the cover and shield have been removed, the live parts clearance shall be observed until the cover is reinstalled.

8.2.4 Perform visual and infrared inspection in accordance with the developed Safety Plan and infrared test equipment OEM requirements.

9.0 Electrical Testing Of De-energized/Isolated/LOTO'ed HV/LV Equipment With Energized Test Equipment by Qualified Employees

- 9.1 Electrical testing of de-energized/isolated/LOTO'ed HV/LV equipment with energized test equipment must be done only by Electrically Qualified employees certified by their RWA to perform such testing. This testing is limited to High Current Injection testing, LV/HV Megohmmeter testing, Hi-Pot testing, Turns Ratio testing, and Doble testing. All test equipment used must be calibrated and NRTL certified.
- 9.2 Equipment tested per the requirements of this section must not be capable of being inadvertently energized by an outside source during the testing.
- 9.3 All other requirements of this procedure relative to safe approach distances and use of PPE apply during actual equipment testing.

10.0 Training

10.1 Electrical Safety training is classified into two levels: 1) Unqualified Employees, and 2) Qualified Employees.

10.2 Unqualified Employees will be trained in:

- Terminology,
- Circuit Fundamentals,
- Physiological Affects,
- Safe Work Practices,
- LOTO Awareness,
- Use of Electrical Equipment in Hazardous Environments,
- Safe Distances For Unqualified Employees,
- Portable Electric Power & Lighting Equipment & Tool Inspection and Use,
- GFCI/Assured Equipment Grounding Program and,
- Causes of Accidents and,
- Prohibitions of restarting and energizing equipment that is locked or tagged out.

10.3. Qualified Employees will be trained in all "Unqualified" subjects above plus:

- Recognition of applicable hazardous energy sources,
- Type and magnitude of energy for the equipment and machinery with which they work,
- Specific methods and means to isolate and control electrical energy,
- All associated electrical safety aspects of the OSHA General Industry Standard,
- The installation and removal of safety grounds,
- PPE selection based on calculated arc/blast potential,
- Safe Working distances,
- Proper use of voltage detection equipment for verification of circuit isolation,
- Electrical circuit isolation verification,
- Preparation of an Equipment Specific LOTO & Energy Control Procedure and,

10.4. Complete training/re-training for the Qualified and Un-Qualified employee will be required upon initial assignment.

Attachment 11 – Elevated Work Procedures

I - OBJECTIVE

To define the requirements for the use of fall protection.

II - GENERAL

A. Application

A means of fall arresting protection shall be used whenever there is an exposure to falls from 4 feet or more. Exposure includes any elevation, platform, roof, hole, pit, excavation, etc. which does not have an OSHA approved guardrail system or if the guardrail fails to provide adequate protection.

Lifelines, harnesses, and lanyards shall be used only for employee safeguarding, never for material handling. Any lifelines, harnesses, or lanyards subjected to shock or impact loading (being subjected to the forces experienced in a fall) shall be immediately and permanently removed from service, destroyed and disposed.

Personal Fall Arrest - A system used to arrest an employee in a fall from a working level. It consists of an anchorage, connectors, body harness and may include a lanyard, deceleration device, lifeline, or suitable combinations of these.

Positioning Device - A body belt or harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning.

B. Lifelines

1. Lifelines shall be secured above the working level to an anchorage or structural member capable of supporting a minimum dead weight of 5,000 pounds.
3. Lifelines shall be protected against being cut or abraded. All lifelines shall have a minimum diameter of 1/2-inch and be made of high strength twisted nylon rope or equivalent with a minimum breaking strength of not less than 5,000 pounds.

C. Harnesses, Lanyards and Anchorages

1. Safety belts are forbidden for use in personal fall arrest systems. A Safety belt may be used for work positioning only. If a safety belt is used for work positioning, a full body harness and other personal fall arrest system components must also be used if a fall is possible greater than 4 feet. Fall arrest anchorage points must be separate from work positioning anchorage and attachment points.
2. All harnesses, lanyards and anchorage devices shall consist of at least 1/2-inch diameter high strength twisted nylon rope or equivalent nylon webbing, and shall have a minimum breaking strength of 5,000 pounds. Anchorage attachment webbing and lanyards shall be protected from cutting or abrading action at the anchor point.
3. All harness, lanyard and anchorage hardware shall be capable of withstanding a tensile loading of 5,000 pounds without cracking, breaking, or taking a permanent deformation.
4. All harness and lanyard snap hooks must be of the locking type. (Requires a dual action to open the snap hook)
 5. All deceleration devices used with a harness will limit the maximum arresting force on an employee to 1800 pounds and the maximum deceleration distance will be limited to no more than 3.5 feet.
 6. The anchorage point for fall arrest shall be chosen to avoid swing falls and positioned to protect the employee from injury for falls greater than four feet and to assure that no employee shall free fall more than six feet before the deceleration device activates. Fall arrest anchorage points must be rated 5000 pounds or greater. Guardrail systems must not be selected as an anchorage point unless certified by a licensed, registered professional mechanical or civil engineer to be rated greater than 5000 pounds.
 7. Employee training is required before any employee uses personal fall protection equipment.

D. Inspection

All safety belts, harnesses, lanyards, connectors, anchorage devices, and lifelines shall be inspected before each use. Cleaning shall include lightly brushing sand, gravel or grit from rope or webbing and washing in mild soap and water before air-drying. No bleach, industrial solvents or detergents are to be used for cleaning fall protection equipment.

E. Inspection - continued

All lines, rope, belting, webbing, hooks, fasteners, and other parts should be checked for tears, breaks, pulled stitching, fraying, cracks, signs of heat stress, damage, heavy wear, deformation, deterioration, and missing parts. If any defects are found, the equipment must be immediately removed from service until the defective parts are appropriately repaired or replaced.

F. Aerial Lifts and Scaffolds

A body harness shall be worn with the lanyard attached to the authorized anchorage point located on the boom or basket when working from an aerial lift.

When working from a scaffold, a body harness shall be worn with the lanyard attached to the building structure or similar external anchor. The lanyard should not be attached to the scaffold.

G. Safety Net Systems

1. Safety nets shall be provided in areas where workers are working more than 25 feet above a floor, ground, or water where safety belts and life lines, guarded platforms and scaffolds, or temporary floors are not feasible.
2. Where safety net protection is required, operations shall not be performed until the net has been installed and tested.

3. Safety Net Specifications

- a. The mesh size of nets shall not exceed 6 inches by 6 inches. All new nets shall meet accepted performance standards of 17,500 foot-pounds minimum impact resistance as determined and certified by the manufacturers, and shall bear a label of proof testing. Edge or border ropes shall provide a minimum breaking strength of 5000 lbs.
- b. Forged steel safety hooks or shackles shall be used to fasten the net to its supports.
- c. Connections between net panels shall develop the full strength of the net.

4. Installation

- a. Safety nets shall extend 8 feet beyond the edge of the work surface where employees are exposed and shall be suspended as close under the working level as practicable but in no case more than 25 feet below the work surface. Nets shall be hung with sufficient clearance to prevent contact

with surfaces or structures below. Such clearances shall be determined by impact load testing.

- b. When workers are required to work below safety nets, a net of wire or fiber meshing of not over 1" mesh should be provided between the safety net and the workers to catch falling objects.
- c. When two or more nets are fastened to form a larger unit the perimeter ropes should be wrapped (i.e., laced) at not over 8" intervals with a lacing rope of a diameter equal to the mesh rope and securely tied off at every 4 ft. interval of the net perimeter. Otherwise small shackles, connectors or safety hooks may be used for securing the net at intervals of not over 6 inches.
- d. Testing after safety net installation, after impact loading, or when there is evidence of abuse or damage should be by use of a 500 lb. weight (approximately 5 cubic feet in size) dropped from a height of not less than 25 ft. into the center of the net. This may be reduced to 400 lbs. for smaller nets or those that are tautly hung. The test should be satisfactory if there are no broken members and no appreciable distortion of the test pattern.
- e. Perimeter suspension nets should follow the work upward and should be level or sloped toward the structure so as to protect or contain a rebounding load. When wire rope net supports are tied to a structure, tying intervals should not exceed 30 ft.

5. Care & Storage

- a. Materials, scrap pieces, equipment, and tools which have fallen into the safety net shall be removed as soon as possible from the net and at least before the next work shift.
- b. Dust and grit are abrasive and should be removed by washing with clean water.
- c. Nets should be stored in a hanging position or folded on pallets in a dry location.
- d. Care & Storage – continued
- e. The low melting point of nylon and polypropylene make them vulnerable to heat. Care should be taken to avoid damage from hot slag or open flame.

Attachment 13 – PPE Procedures

I. PURPOSE & SCOPE

This procedure outlines the GE comprehensive Personal Protective Equipment (PPE) program. It includes guidance for specific types of PPE and situations where the proper use of PPE is required. The objective is to minimize and control the potential for injury through the proper selection and use of PPE. This procedure is applicable to all Dot Building workers and visitors. In addition to this procedure, the following procedures contain more PPE details about their specific topic.

II. DEFINITIONS

- A. Administrative Controls – Use of a procedure or guidance to prevent employee exposure.
- B. ANSI – American National Standards Institute; a private organization that provides a mechanism for creating voluntary industry safety standards through consensus and coordinates the development of such standards.
- C. Attenuation – Reduction of noise level.
- D. A” Weighting (or A Scale) – Measurement of sound from 31.5 Hertz (Hz) to 16,000 Hz with less value or ‘weight’ given to low frequencies and extremely high frequencies. Most industrial noise is measured in dBA.
- E. Decibel (dB) – A logarithmic unit of measurement expressing the relative intensity of sound on a scale from 0 (average least perceptible) to 130 (average pain level) or higher.
- F. Engineering Controls – Use of equipment or a system (i.e. ventilation) to prevent employee exposure.
- G. Face Shield – Secondary protection for eyes and face, which must be worn with primary protectors, such as safety spectacles or goggles, to shield the wearer’s face from chemical splash, impact, heat or optical radiation.
- H. Goggles – A wraparound protective device that fits the contours of the upper face, surrounding the eyes in order to protect them from impact, splash or vapor hazards. Primary protection for eyes; available in an ‘eyecup’ type, which covers only the eye sockets, and the ‘cover’ type, which protects the eyes and part of the face around the eyes. Some goggles are ventilated, which are usually more comfortable and cooler, but may allow the intrusion of smaller foreign bodies and liquids.

- I. Hazard Assessment – The gathering of information in the workplace in order to determine which hazards or potential hazards can be associated with a particular job, job classification or work area.
- J. Impervious – Incapable of being passed through or penetrated.
- K. IS-SB – Industrial Systems – Services Businesses
- L. Material Safety Data Sheet (MSDS) – Information, typically prepared by the manufacturer or distributor of chemicals, which provides physical and chemical characteristics and handling precautions for a material.
- M. Primary Protector – Protective device that may either be worn alone or with a secondary protector. Safety Glasses – Primary protectors used to shield eyes from a variety of hazards, including radiation and flying particles such as chips, sparks and splinters. Secondary Protector – Protective device that must be worn with a primary protector.
- N. Safety Glasses – Primary protectors used to shield eyes from a variety of hazards, including radiation and flying particles such as chips, sparks and splinters.
- O. Secondary Protector – Protective device that must be worn with a primary protector.
- P. SBET – Service Businesses EHS Team.
- Q. Site – For purposes of this policy/procedure, a site is defined as follows:
 - 1. A fixed facility (i.e. offices, manufacturing, other location), or
- R. Welding Helmet – Special type of face shield that protects the eyes and face from flying particles and UV radiation created by welding processes. Welding helmets are designed to accept filters of varying optical densities; the proper filter should be used for the type of welding being performed.

III. PROCEDURE

A. General PPE Requirements

1. In most circumstances, PPE should not be the sole method of hazard exposure control. PPE should be used when engineering and administrative controls such as equipment shutdown are not feasible, or to provide additional protection.
2. All PPE must be inspected prior to use, cleaned regularly and maintained in usable condition. Any PPE equipment that is damaged must (in most cases) be destroyed immediately. Equipment that does not fit properly shall not be worn, but replaced or re-fit.
3. Employee input should be solicited in PPE selection, when appropriate.
4. All workers shall wear eye and foot PPE, as outlined in this procedure, at all times while at construction site and “on the floor” at manufacturing sites, (except in administrative areas and designated aisles). This applies whether a particular eye or foot hazard exists or not. Appendix A shall be used as a guide for the selection of eye and face protection for the operations and hazards listed. Additionally, employees shall wear head protection (hard hats) at most customer sites.
5. The Dot Building must have available the necessary quantity and sizes of PPE to meet job requirements. Additionally, the PPE that is in stock and currently in use must be of the appropriate type as identified by the individual hazard assessments.

B. PPE Distribution

1. Appropriate PPE will be available to each affected employee according to the findings of the PPE hazard assessment and job assignment JSAs.
2. Visitors to the Dot Site will be provided with the appropriate PPE for their activities.
3. PPE needed for the normal type and flow of assignments will be available by a combination of being in the affected employee’s personal possession and local site storage.
4. PPE will be available to only those employees that are physically capable of and appropriately trained in properly using the equipment.

5. Where medical clearance for PPE use is required (i.e. respirator use), employee PPE evaluations will be conducted by qualified medical services personnel and documented, as applicable.

C. PPE Enforcement and Verification

1. Employees are provided with, and shall wear identified PPE for their job task.
2. All personnel will be responsible to ensure that they use the proper PPE for designated job tasks.
3. The lack of signage for any reason must not be construed as an excuse for not wearing appropriate PPE.
4. Use of PPE will be verified via job/site audits.

D. Body Protection

1. A wide variety of natural and synthetic materials are used in protective clothing. The major types of protective clothing and their functions are:
 - a) Neoprene, Nitrile, Polyethylene, Polyurethane and PVC (Vinyl) are resistant to various chemicals and are waterproof,
 - b) Synthetic rubber is resistant to oil, grease, organic solvents, and petroleum products,
 - c) Plastics are resistant to oil, grease, many solvents, mild acids and alkalis,
 - d) Natural rubber items are designed for electrical insulation,
 - e) Aluminized fabrics are designed to provide reflective insulation against heat,
 - f) Cotton (or other natural material) clothing should be worn while welding or performing other 'hot work' where sparks or welding slag is a potential or when working in the vicinity of energized electrical conductors,
 - g) Kermel, Nomex, PBI Kelvar, or FR Treated Cotton are fire retardant fabrics that are used in making fire retardant garments (FRC) that should be worn when working in areas where there is a danger of electrical arcing and/or thermal ignition.
2. Protective clothing may be reusable or disposable, depending on the needs of the operation and/or the nature of the hazards

involved.

3. Protective clothing is available for body and leg protection including aprons, boots, coats, coveralls, gloves, hats, hoods, jackets, knee pads, leggings, overalls, pants, shirts and sleeves.
4. Protective clothing may be required to be worn by employees for any job, as determined by this Plan.
5. Certain types of clothing are inappropriate for particular uses. Cotton clothes are not impervious and, therefore, must not be worn where such protection is required. Polyester or other synthetic materials must not be worn while welding, performing other 'hot work' where sparks or welding slag is a potential, or when working on or near energized conductors.
6. For chemical handling, including loading and unloading, employees shall wear protective clothing as dictated by the MSDS for that material.
7. For protection from cuts, bruises and abrasions, special protectors made of padded leather, fabric, plastic, hard fiber, or metal should be worn. These protectors are available for almost all parts of the body and are designed to allow freedom of movement.
8. It is important that the proper protective clothing materials be selected and used based on the chemicals and environmental conditions to which the employee will be exposed.

E. Eye and Face Protection

1. Safety glasses with permanent side shields must be worn in all industrial environments. Such as construction, assembly, mining and maintenance operations and wherever equipment, processes, or other operations present eye hazards like flying particles, molten metal, liquid chemicals or caustic liquid, chemical gases or vapors or potentially injurious light radiation. Safety glasses must also be worn whenever/wherever dictated by our customer. Appendix A shall be used as a guide for the selection of eye and face protection for the operations and hazards listed.
2. All safety glasses, chemical goggles and face shields shall meet ANSI specification Z87.1 requirements and shall be imprinted by the manufacturer as such. Safety glasses must have plastic frames and impact resistant lenses.
3. Employees who wear prescription glasses shall wear safety glasses that incorporate their prescription into the lens or shall wear protection over their prescription glasses. Over protection shall be plastic, impact resistant and shall display the Z87.1

stamp. Normal street glasses, even if made of plastic or tempered glass, do not conform to the ANSI standard.

4. Eye and face protection, aside from prescription safety glasses, will be provided at Company expense. The purchase of prescription safety glasses by employees is with the approval of the Site Manager.
5. In cases where potential electrical hazards exist, metal frame glasses or metal neck chains must not be worn.
6. Where atmospheric conditions present a fogging hazard to eye and face protection, the EHS Representative may use their discretion in determining the type of protection to be worn to provide the best protection while avoiding fogging. In all cases, adequate care must be taken to provide full and complete protection.
7. For clarity, a few activities and the required eye and face protection (in addition to safety glasses) are explicitly stated here:
 - a) Employees engaged in, or in proximity to, heavy chipping, heavy grinding, or activities with similar exposure severity shall wear goggles and a face shield. If fogging is a problem, see IV-E-6.
 - b) Chemical goggles and face shields shall be worn by employees engaged in, or in proximity to, chemical handling operations that present eye hazards such as acid or caustic burns or fumes.
 - c) Face shields shall be worn by employees engaged in, or in proximity to, activities causing exposure hazards to the face, such as working with grinding equipment or generating flying particles, sprays of hazardous liquids, and splashes of hot solutions.
8. Welding helmets, hand shields and face shields do not provide adequate eye protection on their own and shall only be used over primary eye protection.
9. The wearing of contact lenses should be avoided in industrial environments, such as maintenance, construction, assembly, mining and wherever equipment, processes or other operations present eye hazards such as flying objects, hazardous radiation (including weld flash), chemical vapors, liquids or glare. This contact lens guidance is due to the following risks:
 - a) Small foreign bodies, which normally are washed away by tears, sometimes become lodged beneath contact lenses,

where they may cause injury to the cornea,

- b) Chemicals splashed into the eyes may be trapped under a contact lens and cause extensive corneal damage before the lens can be removed and the eye adequately irrigated,
 - c) Removal of a contact lens for urgent irrigation after injury may be difficult due to eyelid spasms.
10. In all cases, care should be taken to recognize the possibility of multiple and simultaneous exposure to different eye and face hazards. Adequate protection should be provided against the highest level of hazard.

F. Foot Protection

1. Safety shoes provide protection against such hazards as:
 - a) Rolling objects (e.g. barrels, rolls, heavy pipe, etc.),
 - b) Accidentally kicking hard -sharp objects,
 - c) Impacts from falling objects.
2. Safety shoes must meet ANSI Z41 requirements. Safety shoes for use in the industrial environment must have a minimum height of 6" from the bottom of the heel to the top of the ankle guard. Newly purchased safety shoes must have metal toe protection. Safety shoes should have metatarsal protection where there is danger of falling sharp edged objects such as sheet metal.

G. Hand Protection

1. Appropriate hand protection shall be worn when an employee's hands are exposed to hazards, such as those from skin absorption of harmful substances, severe cuts, abrasions or lacerations, punctures, chemical burns or thermal burns, and electrical potential.
2. When selecting hand protection, employees must take into consideration the task to be performed, duration of use, and the actual or potential hazards to which they may be exposed. Any chemical's MSDS must always be followed for specific hand protection requirements. Appropriate rubber gloves, as determined by the manufacturer's selection guide, must be worn when acids and caustics are handled.

3. Work gloves should be worn whenever possible, except when wearing the gloves is either impractical or would create a greater hazard, such as in the vicinity of moving parts.
4. For material handling, employees shall wear, at minimum, general-purpose gloves. Gloves will prevent many minor injuries when handling rough materials or substances that can irritate the skin. Cloth gloves afford adequate protection when handling pipe. Leather or leather-palm gloves should always be worn when handling wire rope.
5. Rubber gloves are necessary in certain situations involving electrical work.
6. Insulated or heat-resistant gloves must be worn when handling steam hoses or when performing other duties in which regular work gloves do not afford adequate protection against burns.
7. Cut-resistant (i.e. Kevlar, leather, etc.) gloves and wrist protection shall be worn by employees while handling particularly sharp objects.
8. Vibration absorbing or reducing gloves shall be worn whenever possible to reduce employee exposure to vibrating or repetitive hand tools. This includes, but is not limited to use of a peening gun, continuous grinding using a hand held grinder and repetitive hammering.
9. Gloves should be worn when the hands would otherwise be wet from any substance causing a slippery grip.

H. Head Protection

1. Employees shall be provided with and shall wear head protection (hard hat) whenever they are engaged in jobs in which there is a reasonable probability of head injury.
2. Hard hats shall conform to ANSI Standard Z89.1, Type I, Class E. The helmets must be identified on the inside of the shell in letters at least 0.6" (1.5 mm) high with the name of the manufacturer, the ANSI designation and the class. In cases where more than one class is indicated, the higher voltage rating shall govern.
3. Chin straps and nape straps are listed as accessories in the ANSI standard, therefore, their use is optional.
4. 1 – 1.25 inches (2.5 – 3 centimeters) are required to be maintained between the top of the head and the underside of the hard hat shell. The suspension is the 'shock absorber' between the head and the shell and is integral to the hat's overall

effectiveness. Hard hat suspension systems should be replaced when they signs of wear.

5. Objects shall not be carried inside the helmet, as proper clearance is needed for the protective system to be effective.
6. Hard hats shall be replaced when the hard hat displays physical damage (cut, cracked, dented, etc.) that would compromise the integrity of the hard hat protection.
7. The shell of the hard hat should be cleaned regularly. Stains or dirt may hide hairline cracks or a defect that requires the hard hat to be replaced.
8. Hard hats should be stored where they will not become deformed by excessive heat or be damaged by objects tossed onto them. Shells of hard hats must never be painted. Solvents in the paint may cause thermal plastic to become brittle. Numbers or symbols can be applied with reflective tape.
9. Hard hats should be inspected before they are worn. If there are any holes, cracks, fraying of suspension materials or other signs of damage or alteration, they should be replaced.
10. Hard hats must be worn as the manufacturer intended, front to back, not backwards or sideways. They should be adjusted as necessary to comfortably fit the wearer.
11. Individuals with long hair must protect their hair from contact with moving parts, particularly rapid spinning machinery (i.e. lathes, boring mills, drill press). Securing the hair with ties, braids or the application of a protective cap that completely covers the hair can do this. Hair nets, bandannas and turbans do not completely cover the hair, and therefore may not be used as a primary form of protection.

I. Hearing Protection

1. Employees shall wear approved hearing protection under any of the following conditions.
 - a) When exposed to noise levels greater than 90 dBA.
 - b) Wherever hearing protection signs are displayed.
 - c) Whenever the employee has any doubts as to whether or not hearing protection is required.

2. Hearing protection will be provided to employees at Company expense.
3. The type of hearing protection to be used depends on the preference of the prospective user. Ear protectors fall into two main groups:
 - a) Ear Plugs (Insert Type) – Available in a variety of materials. Plugs must fit properly and remain correctly seated to provide the rated attenuation. Employees should wash their hands prior to handling or inserting earplugs.
 - b) Ear Muffs – Proper fit is important. Seal must not be compromised by hair or glasses frames.
4. Disposable hearing protection is designed for one use only and should be disposed of after use. Re-useable earplugs should be cleaned prior to reuse.
5. Employees who are exposed to noise levels over 85dba over an 8hr time weighted average (TWA) must be entered into a Hearing Conservation Program.

J. Training

1. All employees required to wear PPE will participate in initial PPE training, which will cover the following topics, at minimum:
 - a) When is PPE is necessary,
 - b) What PPE is necessary,
 - c) How to properly don, doff, adjust and wear PPE,
 - d) The limitations of the PPE,
 - e) The proper care, maintenance, useful life and disposal of the PPE.
2. Personnel utilized to evaluate and select PPE will be provided with the training necessary to perform their duties. Qualified vendors may be used to provide various PPE training, options and guidance on proper use of the equipment they provide.
3. PPE training will be tracked in the weekly report.

K. Auditing

1. PPE program updates will be made consistent with the assessment findings, employee feedback, injuries and current regulatory requirements.

VI. REFERENCES

ANSI Z41 – 1991 ANSI Standard for Protective Footwear

ANSI Z87.1 – 1989 ANSI Standard for Eye and Face Protection

ANSI Z89.1 – 1997 ANSI Standard for Personal Protection – Protective Headwear for Industrial Workers Requirements

Attachment 13 – Accident Investigation Form

Date: _____	Time: (am/pm) _____	Case No. _____
Employee(s) Involved: ☐ Employee: _ ☐ Contractor: _ ☐ Visitor: _ ☐ Other: _ Name: _ Age: _ Job Title: _ Home Address: ____ Home Phone: _ Company (Contractor/Visitor): ____ Company Address: ____ Business Phone: _ Sex: ☐ Male ☐ Female Work Area: _ SS No: _ Incident/Accident Category: ☐ Employee Injury, Illness or Fatality ☐ Product or Property Damage ☐ Chemical Spill or Release ☐ Other: _ ☐ Explosion or Fire ☐ Business Interruption ☐ Near Miss Accident Incident/Accident Information: Incident/Accident Date: _____ Incident/Accident Time: _____ Shift: _____ Incident/Accident Location: ____ - - General Electric Premises: _____ ☐ Yes ☐ No (Location): _ Brief Description of Incident/Accident (Who, What, Where, When, and Why?) _____ _____ _____ _____ Controls in Place during Incident/Accident: _____ Specific Results of Incident/Accident: ____ Medical Attention Received: ____ Immediate Corrective Actions: ____ _____ Witness(s): - _____ - Signatures: Investigator (Name): _ Employee (Name): _ (Signature): _ (Signature): _		

Date:	Time: (am/pm)	Case No.	
Detailed Sequence of Events:			
1._	5._		
2._	6._		
3._	7._		
4._	8._		
Employee Interviewed: _	Area: _		
Employee Interviewed: _	Area: _		
Gathered Information:			
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—			
—			
Description of Root Cause(s):			
—			
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—			
Corrective Action(s):			
—			
—			
—			
—			
Schedule, Milestone, and Follow Up:			
Corrective Action:	Responsible Person:	Projected Date:	Completed YesDate
-	-	-	☐ .
-	-	-	☐ .
-	-	-	☐ .
Investigation Team:			
—		—	
—		—	
Distribution:(Check all applicable boxes)			
☐ _		☐ _	
☐ _		☐ _	