

Allies & Ross Management and Development Corporation 200 Ross Street Pittsburgh, PA 15219

412-456-5000

May 27, 2022 Allies & Ross Management and Development Corporation

IFB #2022-38 4 Prime Contractors for Manchester Redevelopment

ADDENDUM NO. #3

This addendum issued May 26, 2022 becomes in its entirety a part of the Invitation for Bid IFB #2022-38 4 Prime Contractors for the Manchester Redevelopment as is fully set forth herein:

Item 1: The following are additions, deletions, and clarifications to the original drawings and shall become a part of the Contract Documents. They are intended to supersede and supplement the set of Construction Documents and Specifications originally dated May 06, 2022. All Contractors and Suppliers shall read all Revision items and their relation to each portion of the work. This item is being provided as a supplement to the originally issued drawings and specifications.

Specifications: Division 01

- a) Section Added Temporary Facilities and Controls
- b) Section Added Lockout Tagout Information

Item 2: The proposal due date is changed to June 14, 2022; time and location remain unchanged at 10:00AM, at the HACP Procurement Dept., 100 Ross St. 2nd Floor, Suite 200, Pittsburgh, PA 15219.

Item 3: The Allies & Ross Management and Development Corporation will only be accepting physical proposals dropped off in person from 8:00 AM until the closing time of 10:00 AM on June 14, 2022 in the lobby of 100 Ross St. Pittsburgh, PA 15219. Proposals may still be submitted electronically: https://www.dropbox.com/request/Ln19qAcIzBtOgFjuhmO2 and may still be mailed via USPS at which time they will be Time and Date Stamped at 100 Ross Street 2nd Floor, Suite 200, Pittsburgh, PA 15219. All proposals must be received at the above address no later than June 14, 2022 at 10:00 a.m., regardless of the selected delivery mechanism.

END OF ADDENDUM NO. #3

n Detrick (May 27, 2022 13:50 EDT)

May 27, 2022 Date

Mr. Kim Detrick Agent

Manchester Scattered Sites

Existing Repairs and Level Two Alterations Manchester, Pittsburgh, Pennsylvania 15233 FARPC Project No. 2006

Fukui Architects PC

205 Ross Street Pittsburgh, PA 15219 412.281.6001

Housing Authority of Pittsburgh

200 Ross Street Pittsburgh, PA 15219 412.456.5020

PA Housing Finance Agency

211 N. Front Street PO Box 8029 Harrisburg, PA 17105-8029 717.780.3800



DOCUMENT 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2 PROJECT CONDITIONS
 - A. This Section is not intended to limit types and amounts of temporary construction facilities and controls required. Omission from this Section will not be accepted as an application that such temporary activity is not required for successful completion of the work and compliance with requirements of the Contract Documents.
 - B. Provide and maintain each temporary construction facility and control when required for proper performance of the work. Terminate and remove when no longer needed or when permanent facilities, with proper authorization, are available for use.
 - C. Obtain and pay for all required applications, fees, permits and inspections required for temporary construction facilities and controls.
 - D. Install, operate, maintain and protect temporary construction facilities and controls in a manner and at locations which are safe, non-hazardous, sanitary and adequately protect project work, workmen and the public.
 - E. The building will be occupied during construction. Provide temporary barriers to restrict access to the area(s) of construction for the health, safety and welfare of the Occupants and other members of the Public, to only those individuals that need for access to the area to complete the Work. Temporary barriers shall be required to coordinate with the Demolition and Construction Phasing Schedule, provided by the General Prime Contractor, updated on a weekly basis and as approved by HACP. Access to individual apartment units on a daily basis is required. Maintain means of egress at all times.

1.3 REQUIREMENTS OF REGULATORY AGENCIES

- A. Provide and maintain all temporary facilities off-site in compliance with governing rules, regulations, codes, ordinances and laws of agencies and utility companies having jurisdiction over work involved in project.
- B. Be responsible for all temporary work provided and obtain any necessary permits and inspections for such work.
- C. Confine equipment, storage of materials, and operation of workmen to the limits indicated or directed and shall abide by law, ordinances, conditions stated in permits and directions of the Construction Manager/HACP's Representative.
- D. Do not interfere with normal use of roads in vicinity of project site, except as absolutely necessary to execute required work, and then only after proper arrangements have been made with authorities having jurisdiction, including permits, approvals and temporary traffic control as applicable.

1.4 TEMPORARY FIELD OFFICES AND TRAILERS

- A. Each Prime Contractor to provide an off-site construction trailer for field office.
- B. Locate trailer in close proximity to site and as approved by HACP.

- C. Copies of permits, approved submittals, plans and specifications marked up-to-date with all revisions and all addenda shall be kept at said offices ready for use at all times.
- D. All expenses in connection with Contractor's field offices shall be borne by the Contractor, including utility installation costs to the field office.

1.4 TEMPORARY SANITARY FACILITIES

A. No facilities are available on site. Provide temporary portable toilets, acceptable to public health authorities, as required to service the project. Maintain in a clean, sanitary condition; provide all supplies. Locate as directed by Construction Manager/HACP's Representative within secure construction area.

1.5 TEMPORARY LIGHT AND POWER

- B. Extend temporary service from public utility service. Provide meter and extend service with disconnect to central location on site. Provide system sized as required to service project construction needs.
- C. Remove temporary service when no longer required.
- D. Electrical work for construction purposes shall conform to Federal, State and local safety requirements, as well as requirements of the National Electrical Code. Obtain and pay for required applications, permits and inspections pertaining to this work.
- E. Pay all costs for installation, maintenance, supervision and removal of temporary light and power systems.
- F. Temporary use of on-site electrical power for construction shall be made available for use.

1.6 CONSTRUCTION AIDS

- A. Shoring and Bracing: Provide all shoring and bracing required for safety and proper execution of their work. Remove these items when the work is completed.
- B. Barriers: Provide protective barriers and fencing as required to protect the public from demolition operations, including demolition preparation work, and construction activities for the duration of the Work.
 - 1. Provide and maintain OSHA approved barriers where required by OSHA.
- C. First Aid Facilities: Provide a minimum of one (1) 16-unit first-aid kit (or equivalent) for each 25 persons (or fraction thereof) on the worksite.

1.7 WATCHMAN SERVICE

A. If Contractor considers watchman services necessary or desirable for protection of their own interest, such services may be employed at their own complete expense.

1.8 SAFETY

- A. Safety requirements shall be in accordance with the General Conditions.
- B. Provide and maintain guard lights at all barricades, railings, obstructions in the roadways or sidewalks.
- C. Strict attention and full adherence must be given the Williams-Steiger Occupational Safety and Health Act of 1970, U.S. Department of Labor.

- 1.9 TEMPORARY SIGNS
 - A. Temporary Signs: Provide as required to adequately direct traffic, personnel and the public regarding the project.
- 1.10 STREETS AND TRAFFIC
- A. Cleaning and Repair
 - 1. Contractors shall remove mud and spillage from public walks, streets and sewers without delay. Failure to clean areas promptly will result in areas being cleaned by HACP at the responsible Contractor's expense.
 - 2. Damage to roads or other facilities on the grounds, resulting from hauling, storage of materials, or other activities in connection with the work shall be repaired or replaced, at no expense to HACP, by the Contractor causing the damage. Repairs or replacements shall be made to the satisfaction of the Construction Manager/HACP's Representative and the Architect.
- B. Traffic
 - 1. Notify City of Pittsburgh Police Department at least two weeks in advance of any anticipated work affecting traffic flow.
 - a. To assure maintenance of flow and to safeguard all parties involved in planning to maintain flow, a field inspection should be made jointly by the Construction Manager/HACP's Representative, the Architect and Contractor personnel before performing any work which would interrupt normal traffic patterns.
 - b. Re-routing of traffic shall be planned, as to route and direction, in cooperation with the City of Pittsburgh Police Department.

1.11 PARKING

A. There are no on-site or assigned parking for employees of Contractors and subcontractors. Parking on streets or in restricted areas is prohibited. Specific parking plans will be discussed at the Pre-Construction Meeting.

1.12 USE CHARGES

- A. General: Shall be as dictated by the General Conditions for Construction Contracts Public Housing Programs and agreed upon between HACP and each Prime Contractor.
- 1.13 INFORMATIONAL SUBMITTALS
 - A. Off-Site Plans: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.
 - B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire- prevention program.
 - C. Moisture-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage.
 - 1. Describe delivery, handling, and storage provisions for materials subject to water absorption or water damage.
 - 2. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.

- 3. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
- D. Dust- and HVAC-Control Plan: Submit coordination drawing and narrative that indicates the dust- and HVAC-control measures proposed for use, proposed locations, and proposed time frame for their operation. Identify further options if proposed measures are later determined to be inadequate. Include the following:
 - 1. Locations of dust-control partitions at each phase of work.
 - 2. HVAC system isolation schematic drawing.
 - 3. Location of proposed air-filtration system discharge.
 - 4. Waste handling procedures.
 - 5. Other dust-control measures.
- 1.14 QUALITY ASSURANCE
- A. Accessible Temporary Egress: Comply with applicable provisions in the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Chain-Link Fencing: Minimum 2-inch (50-mm), 0.148-inch- (3.8-mm-) thick, galvanized- steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized-steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top rails.
- B. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry."
- C. Polyethylene Sheet: Reinforced, fire-resistive sheet, 10-mil (0.25-mm) minimum thickness, with flamespread rating of 15 or less per ASTM E 84.
- D. Dust-Control Adhesive-Surface Walk-off Mats: Provide mats minimum 36 by 60 inches (914 by 1624 mm).
- E. Gypsum Board: Minimum 1/2 inch thick by 48 inches wide by maximum available lengths; regular-type panels with tapered edges. Comply with ASTM C 36/C 36M.
- F. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.
- G. Paint: Comply with requirements in Division 9 painting Sections.

2.2 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

2. Heating Units: Listed and labeled for type of fuel being consumed, by a qualified testing agency acceptable to authorities having jurisdiction, and marked for intended location and application.

PART 3 - EXECUTION

3.1 TEMPORARY UTILITY INSTALLATION

- A. Water Service: Use of HACP's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to HACP. At Substantial Completion, restore these facilities to condition existing before initial use.
 - 1. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.
- B. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.
- C. Heating: Provide temporary heating required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
 - 1. At all times during demolition and construction, Occupied Apartments are required to maintain a temperature as determined by HACP.
 - 2. All occupied apartments, offices and occupied areas are required by the end of the work day to be airtight, watertight, secure and able to be occupied at standard typical room temperatures of 72 degrees.
- D. Isolation of Work Areas in Occupied Facilities: Prevent dust, fumes, and odors from entering occupied areas.
 - 1. Prior to commencing work, isolate the HVAC system in area where work is to be performed according to coordination drawings.
 - a. Disconnect supply and return ductwork in work area from HVAC systems servicing occupied areas.
 - b. Maintain negative air pressure within work area using HEPA-equipped air- filtration units, starting with commencement of temporary partition construction, and continuing until removal of temporary partitions is complete.
 - 2. Maintain dust partitions during the Work. Use vacuum collection attachments on dustproducing equipment. Isolate limited work within occupied areas using portable dustcontainment devices
 - 3. Contractors are required to continuously clean floor areas to keep areas not under demolition and construction clean.
 - 4. Perform daily construction cleanup and final cleanup using approved, HEPA-filterequipped vacuum equipment.
- E. Ventilation and Humidity Control: Provide temporary ventilation required by construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- F. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

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- 1. Connect temporary service to HACP's existing power source, as directed by HACP.
- G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
 - 2. Install lighting for Project identification sign.
- 3.2 SUPPORT FACILITIES INSTALLATION
 - B. Traffic Controls: Comply with requirements of authorities having jurisdiction.
 - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
 - 2. Maintain access for fire-fighting equipment and access to fire hydrants.
 - C. Parking: Use designated areas of HACP's existing parking areas for construction personnel.
 - D. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."
 - E. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.
 - F. Existing Elevator Use: Use of HACP's existing elevators will be permitted, provided elevators are cleaned and maintained in a condition acceptable to HACP. At Substantial Completion, restore elevators to condition existing before initial use, including replacing worn cables, guide shoes, and similar items of limited life.
 - 1. Do not load elevators beyond their rated weight capacity.
 - 2. Provide protective coverings, barriers, devices, signs, or other procedures to protect elevator car and entrance doors and frame. If, despite such protection, elevators become damaged, engage elevator Installer to restore damaged work so no evidence remains of correction work. Return items that cannot be refinished in field to the shop, make required repairs and refinish entire unit, or provide new units as required.
 - G. Existing Stair Usage: Use of HACP's existing stairs will be permitted, provided stairs are cleaned and maintained in a condition acceptable to HACP. At Substantial Completion, restore stairs to condition existing before initial use.
 - 1. Provide protective coverings, barriers, devices, signs, or other procedures to protect stairs and to maintain means of egress. If stairs become damaged, restore damaged areas so no evidence remains of correction work.

3.3 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.
- B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

- C. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to undisturbed areas and to adjacent properties and walkways, according to requirements of authorities having jurisdiction
 - adjacent properties and walkways, according to requirements of authorities having jurisdiction.
 - 1. Inspect, repair, and maintain erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
 - 2. Clean, repair, and restore adjoining properties and roads affected by erosion and sedimentation from Project site during the course of Project.
 - 3. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.
- D. Tree and Plant Protection: Provide measures to prevent damage to existing tree and plants.
- E. Site Enclosure Fence: Before demolition and construction operations begin, furnish and install work area enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
 - 1. Extent of Fence: As required to enclose entire portion determined sufficient to accommodate construction operations and public access to the tenant occupied areas.
 - 2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to HACP.
- F. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
- G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- H. Temporary Egress: Maintain temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction.
- I. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.
- J. Temporary Partitions: Provide floor-to-ceiling dustproof partitions to limit dust and dirt migration and to separate areas occupied by HACP and Residents from fumes and noise.
 - 1. Construct dustproof partitions with gypsum wallboard with joints taped on occupied side, and fireretardant-treated plywood on construction operations side.
 - 2. Construct dustproof partitions with two layers of 3-mil polyethylene sheet on each side. Cover floor with two layers of 3-mil polyethylene sheet, extending sheets 18 inches (460 mm) up the sidewalls. Overlap and tape full length of joints. Cover floor with fire-retardant-treated plywood. This shall occur in the existing lobbies where adjacent to the units under construction.
 - 3. Insulate partitions to control noise transmission to occupied areas.
 - 4. Seal joints and perimeter. Equip partitions with gasketed dustproof doors and security locks where openings are required.
 - 5. Provide walk-off mats at each entrance through temporary partition.
- K. Existing exterior wall mural:

- 1. Protect temporary protection for existing exterior wall mural during cleaning of building and demolition and construction with materials and methods as required.
- L. Temporary Fire Protection: Maintain existing fire-protection systems.
 - 1. Smoking is prohibited on site and within construction areas.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.4 MOISTURE AND MOLD CONTROL

- A. Contractor's Moisture-Protection Plan: Avoid trapping water in finished work. Document visible signs of mold that may appear during construction.
- B. Exposed Construction Phase: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:
 - 1. Protect porous materials from water damage.
 - 2. Protect stored and installed material from flowing or standing water.
 - 3. Keep porous and organic materials from coming into prolonged contact with concrete.
 - 4. Keep deck openings covered or dammed.
- C. Partially Enclosed Construction Phase: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:
 - 1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
 - 2. Keep interior spaces reasonably clean and protected from water damage.
 - 3. Periodically collect and remove waste containing cellulose or other organic matter.
 - 4. Discard or replace water-damaged material.
 - 5. Do not install material that is wet.
 - 6. Discard, replace, or clean stored or installed material that begins to grow mold.
 - 7. Perform work in a sequence that allows any wet materials adequate time to dry before enclosing the material in drywall or other interior finishes.

3.6 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

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- 1. Materials and facilities that constitute temporary facilities are property of Contractor. HACP reserves right to take possession of Project identification signs.
- 2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

DOCUMENT 016000 - LOCKOUT TAG OUT INFORMATION

BY STANDARD NUMBER 1910.147 - THE CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT).

Part Number:	1910
Part Number Title:	Occupational Safety and Health Standards
Subpart:	1910 Subpart J
Subpart Title:	General Environmental Controls
Standard Number:	1910.147
Title:	The control of hazardous energy (lockout/tagout).
Appendix:	A
GPO Source:	e-CFR

PART ONE - SCOPE, APPLICATION, AND PURPOSE

- 1.1 SCOPE
 - A. This standard covers the servicing and maintenance of machines and equipment in which the unexpected energization or start up of the machines or equipment, or release of stored energy, could harm employees. This standard establishes minimum performance requirements for the control of such hazardous energy.
 - B. This standard does not cover the following:
 - 1. Construction and agriculture employment;
 - 2. Employment covered by parts 1915, 1917, and 1918 of this title;
 - 3. Installations under the exclusive control of electric utilities for the purpose of power generation, transmission and distribution, including related equipment for communication or metering;
 - 4. Exposure to electrical hazards from work on, near, or with conductors or equipment in electricutilization installations, which is covered by subpart S of this part; and
 - 5. Oil and gas well drilling and servicing.

1.2 APPLICATION

- A. This standard applies to the control of energy during servicing and/or maintenance of machines and equipment.
- B. Normal production operations are not covered by this standard (See Subpart O of this Part). Servicing and/or maintenance which takes place during normal production operations is covered by this standard only if:
 - 1. An employee is required to remove or bypass a guard or other safety device; or
 - 2. An employee is required to place any part of his or her body into an area on a machine or piece of equipment where work is actually performed upon the material being processed (point of operation) or where an associated danger zone exists during a machine operating cycle.

Note: Exception-Minor tool changes and adjustments, and other minor servicing activities, which take place during normal production operations, are not covered by this standard if they are routine, repetitive, and integral to the use of the equipment for production, provided that the work is performed using alternative measures which provide effective protection (See Subpart O of this Part).

- C. This standard does not apply to the following:
 - 1. Work on cord and plug connected electric equipment for which exposure to the hazards of unexpected energization or start up of the equipment is controlled by the unplugging of the equipment from the energy source and by the plug being under the exclusive control of the

employee performing the servicing or maintenance.

- 2. Hot tap operations involving transmission and distribution systems for substances such as gas, steam, water or petroleum products when they are performed on pressurized pipelines, provided that the employer demonstrates that
 - i. continuity of service is essential;
 - ii. shutdown of the system is impractical; and
 - iii. documented procedures are followed, and special equipment is used which will provide proven effective protection for employees.

1.3 PURPOSE

- A. This section requires employers to establish a program and utilize procedures for affixing appropriate lockout devices or tagout devices to energy isolating devices, and to otherwise disable machines or equipment to prevent unexpected energization, start up or release of stored energy in order to prevent injury to employees.
- B. When other standards in this part require the use of lockout or tagout, they shall be used and supplemented by the procedural and training requirements of this section.

1.4 DEFINITIONS APPLICABLE TO THIS SECTION

- A. <u>Affected Employee:</u> An employee whose job requires him/her to operate or use a machine or equipment on which servicing, or maintenance is being performed under lockout or tagout, or whose job requires him/her to work in an area in which such servicing or maintenance is being performed.
- B. <u>Authorized Employee:</u> A person who locks out or tags out machines or equipment in order to perform servicing or maintenance on that machine or equipment. An affected employee becomes an authorized employee when that employee's duties include performing servicing or maintenance covered under this section.
- C. <u>Capable of Being Locked Out:</u> An energy isolating device is capable of being locked out if it has a hasp or other means of attachment to which, or through which, a lock can be affixed, or it has a locking mechanism built into it. Other energy isolating devices are capable of being locked out, if lockout can be achieved without the need to dismantle, rebuild, or replace the energy isolating device or permanently alter its energy control capability.
- D. <u>Energized:</u> Connected to an energy source or containing residual or stored energy.
- E. <u>Energy Isolating Device:</u> A mechanical device that physically prevents the transmission or release of energy, including but not limited to the following: A manually operated electrical circuit breaker; a disconnect switch; a manually operated switch by which the conductors of a circuit can be disconnected from all ungrounded supply conductors, and, in addition, no pole can be operated independently; a line valve; a block; and any similar device used to block or isolate energy. Push buttons, selector switches and other control circuit type devices are not energy isolating devices.
- F. <u>Energy Source:</u> Any source of electrical, mechanical, hydraulic, pneumatic, chemical, thermal, or other energy.
- G. <u>Hot Tap:</u> A procedure used in the repair, maintenance and services activities which involves welding on a piece of equipment (pipelines, vessels or tanks) under pressure, in order to install connections or appurtenances. it is commonly used to replace or add sections of pipeline without the interruption of service for air, gas, water, steam, and petrochemical distribution systems.
- H. <u>Lockout:</u> 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. <u>Lockout Device:</u> A device that utilizes a positive means such as a lock, either key or combination type, to hold an energy isolating device in the safe position and prevent the energizing of a machine or equipment. Included are blank flanges and bolted slip blinds.
- J. <u>Normal Production Operations:</u> The utilization of a machine or equipment to perform its intended production function.
- K. <u>Servicing and/or Maintenance :</u> Workplace activities such as constructing, installing, setting up, adjusting, inspecting, modifying, and maintaining and/or servicing machines or equipment. These activities include lubrication, cleaning or unjamming of machines or equipment and making adjustments or tool changes, where the employee may be exposed to the unexpected energization or startup of the equipment or release of hazardous energy.
- L. <u>Setting Up:</u> Any work performed to prepare a machine or equipment to perform its normal production operation.
- M. <u>Tagout:</u> 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.
- N. <u>Tagout Device:</u> A prominent warning device, such as a tag and a means of attachment, which can be securely fastened to 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.

PART 2 - GENERAL

- 2.1 ENERGY CONTROL PROGRAM.
 - A. The employer shall establish a program consisting of energy control procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source and rendered inoperative.

2.2 LOCKOUT/TAGOUT

- A. If an energy isolating device is not capable of being locked out, the employer's energy control program under paragraph (c)(1) of this section shall utilize a tagout system.
- B. If an energy isolating device is capable of being locked out, the employer's energy control program under paragraph (c)(1) of this section shall utilize lockout, unless the employer can demonstrate that the utilization of a tagout system will provide full employee protection as set forth in paragraph (c)(3) of this section.
- C. 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.

2.3 FULL EMPLOYEE PROTECTION.

A. When a tagout device is used on an energy isolating device which is capable of being locked out, the tagout device shall be attached at the same location that the lockout device would have been attached, and the employer shall demonstrate that the tagout program will provide a level of safety equivalent to that

obtained by using a lockout program.

B. In demonstrating that a level of safety is achieved in the tagout program which is equivalent to the level of safety obtained by using a lockout program, the employer shall demonstrate full compliance with all tagout-related provisions of this standard together with such additional elements as are necessary to provide the equivalent safety available from the use of a lockout device. Additional means to be considered as part of the demonstration of full employee protection shall include the implementation of additional safety measures such as the removal of an isolating circuit element, blocking of a controlling switch, opening of an extra disconnecting device, or the removal of a valve handle to reduce the likelihood of inadvertent energization.

2.4 ENERGY CONTROL PROCEDURE.

A. Procedures shall be developed, documented, and utilized for the control of potentially hazardous energy when employees are engaged in the activities covered by this section.

Note: Exception: The employer need not document the required procedure for a particular machine or equipment, when 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 deenergize 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 employee performing the servicing or maintenance.
- 7. The servicing or maintenance does not create hazards for other employees; and
- 8. The employer, in utilizing this exception, has had no accidents involving the unexpected activation or reenergization of the machine or equipment during servicing or maintenance.
- B. The procedures shall clearly and specifically outline the scope, purpose, authorization, rules, and techniques to be utilized for the control of hazardous energy, and the means to enforce compliance including, but not limited to, the following:
 - 1. A specific statement of the intended use of the procedure.
 - 2. Specific procedural steps for shutting down, isolating, blocking, and securing machines or equipment to control hazardous energy.
 - 3. Specific procedural steps for the placement, removal and transfer of lockout devices or tagout devices and the responsibility for them; and
 - 4. Specific requirements for testing a machine or equipment to determine and verify the effectiveness of lockout devices, tagout devices, and other energy control measures.

2.5 PROTECTIVE MATERIALS AND HARDWARE.

- A. Locks, tags, chains, wedges, key blocks, adapter pins, self-locking fasteners, or other hardware shall be provided by the employer for isolating, securing or blocking of machines or equipment from energy sources.
- B. Lockout devices and tagout devices shall be singularly identified; shall be the only devices(s) used for controlling energy; shall not be used for other purposes; and shall meet the following requirements:
 - 1. Durable

- i. Lockout and tagout devices shall be capable of withstanding the environment to which they are exposed for the maximum period of time that exposure is expected.
- ii. Tagout devices shall be constructed and printed so that exposure to weather conditions or wet and damp locations will not cause the tag to deteriorate or the message on the tag to become illegible.
- iii. Tags shall not deteriorate when used in corrosive environments such as areas where acid and alkali chemicals are handled and stored.
- 2. Standardized.
 - i. Lockout and tagout devices shall be standardized within the facility in at least one of the following criteria: Color; shape; or size; and additionally, in the case of tagout devices, print and format shall be standardized.
- 3. Substantial
 - i. Lockout devices. Lockout devices shall be substantial enough to prevent removal without the use of excessive force or unusual techniques, such as with the use of bolt cutters or other metal cutting tools.
 - ii. Tagout devices. Tagout devices, including their means of attachment, shall be substantial enough to prevent inadvertent or accidental removal. Tagout device attachment means shall be of a non-reusable type, attachable by hand, self-locking, and non-releasable with a minimum unlocking strength of no less than 50 pounds and having the general design and basic characteristics of being at least equivalent to a one-piece, all environment-tolerant nylon cable tie.
- 4. Identifiable.
 - i. Lockout devices and tagout devices shall indicate the identity of the employee applying the device(s).
 - ii. Tagout devices shall warn against hazardous conditions if the machine or equipment is energized and shall include a legend such as the following: Do Not Start. Do Not Open. Do Not Close. Do Not Energize. Do Not Operate.

C. Periodic inspection.

- 1. The employer shall conduct a periodic inspection of the energy control procedure at least annually to ensure that the procedure and the requirements of this standard are being followed.
 - i. The periodic inspection shall be performed by an authorized employee other than the ones(s) utilizing the energy control procedure being inspected.
 - ii. The periodic inspection shall be conducted to correct any deviations or inadequacies identified.
 - iii. Where lockout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized employee, of that employee's responsibilities under the energy control procedure being inspected.
 - iv. Where tagout is used for energy control, the periodic inspection shall include a review, between the inspector and each authorized and affected employee, of that employee's responsibilities under the energy control procedure being inspected, and the elements set forth in paragraph (c)(7)(ii) of this section.
 - v. The employer shall certify that the periodic inspections have been performed. The certification shall identify the machine or equipment on which the energy control procedure was being utilized, the date of the inspection, the employees included in the inspection, and the person performing the inspection.

- D. Training and communication.
 - 1. The employer shall provide training to ensure that the purpose and function of the energy control program are understood by employees and that the knowledge and skills required for the safe application, usage, and removal of the energy controls are acquired by employees. The training shall include the following:
 - i. Each authorized employee shall receive training in the recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace, and the methods and means necessary for energy isolation and control.
 - ii. Each affected employee shall be instructed in the purpose and use of the energy control procedure.
 - iii. All other employees whose work operations are or may be in an area where energy control procedures may be utilized, shall be instructed about the procedure, and about the prohibition relating to attempts to restart or reenergize machines or equipment which are locked out or tagged out.
 - 2. When tagout systems are used, employees shall also be trained in the following limitations of tags:
 - i. Tags are essentially warning devices affixed to energy isolating devices, and do not provide the physical restraint on those devices that is provided by a lock.
 - ii. When a tag is attached to an energy isolating means, it is not to be removed without authorization of the authorized person responsible for it, and it is never to be bypassed, ignored, or otherwise defeated.
 - iii. Tags must be legible and understandable by all authorized employees, affected employees, and all other employees whose work operations are or may be in the area, in order to be effective.
 - iv. Tags and their means of attachment must be made of materials which will withstand the environmental conditions encountered in the workplace.
 - v. Tags may evoke a false sense of security, and their meaning needs to be understood as part of the overall energy control program.
 - vi. Tags must be securely attached to energy isolating devices so that they cannot be inadvertently or accidentally detached during use.
 - 3. Employee retraining.
 - i. Retraining shall be provided for all authorized and affected employees whenever there is a change in their job assignments, a change in machines, equipment or processes that present a new hazard, or when there is a change in the energy control procedures.
 - ii. Additional retraining shall also be conducted whenever a periodic inspection under paragraph (c)(6) of this section reveals, or whenever the employer has reason to believe that there are deviations from or inadequacies in the employee's knowledge or use of the energy control procedures.
 - iii. The retraining shall reestablish employee proficiency and introduce new or revised control methods and procedures, as necessary.
 - 4. The employer shall certify that employee training has been accomplished and is being kept up to date. The certification shall contain each employee's name and dates of training.
- E. Energy isolation. Lockout or tagout shall be performed only by the authorized employees who are performing the servicing or maintenance.
- F. Notification of employees. Affected employees shall be notified by the employer or authorized employee of

the application and removal of lockout devices or tagout devices. Notification shall be given before the controls are applied, and after they are removed from the machine or equipment.

- G. Application of control. The established procedures for the application of energy control (the lockout or tagout procedures) shall cover the following elements and actions and shall be done in the following sequence:
 - 1. Preparation for shutdown. Before an authorized or affected employee turns off a machine or equipment, the authorized employee shall have knowledge of the type and magnitude of the energy, the hazards of the energy to be controlled, and the method or means to control the energy.
 - 2. Machine or equipment shutdown. The machine or equipment shall be turned off or shut down using the procedures established for the machine or equipment. An orderly shutdown must be utilized to avoid any additional or increased hazard(s) to employees as a result of the equipment stoppage.
 - 3. Machine or equipment isolation. All energy isolating devices that are needed to control the energy to the machine or equipment shall be physically located and operated in such a manner as to isolate the machine or equipment from the energy source(s).
- H. Lockout or tagout device application.
 - 1. Lockout or tagout devices shall be affixed to each energy isolating device by authorized employees.
 - 2. Lockout devices, where used, shall be affixed in a manner to that will hold the energy isolating devices in a "safe" or "off" position.
 - 3. Tagout devices, where used, shall be affixed in such a manner as will clearly indicate that the operation or movement of energy isolating devices from the "safe" or "off" position is prohibited.
 - i. Where tagout devices are used with energy isolating devices designed with the capability of being locked, the tag attachment shall be fastened at the same point at which the lock would have been attached
 - ii. Where a tag cannot be affixed directly to the energy isolating device, the tag shall be located as close as safely possible to the device, in a position that will be immediately obvious to anyone attempting to operate the device.
- I. Stored energy.
 - 1. Following the application of lockout or tagout devices to energy isolating devices, all potentially hazardous stored or residual energy shall be relieved, disconnected, restrained, and otherwise rendered safe.
 - 2. If there is a possibility of reaccumulation of stored energy to a hazardous level, verification of isolation shall be continued until the servicing or maintenance is completed, or until the possibility of such accumulation no longer exists.
- J. Verification of isolation. Prior to starting work on machines or equipment that have been locked out or tagged out, the authorized employee shall verify that isolation and deenergization of the machine or equipment have been accomplished.
- K. Release from lockout or tagout. Before lockout or tagout devices are removed and energy is restored to the machine or equipment, procedures shall be followed and actions taken by the authorized employee(s) to ensure the following:
 - 1. The machine or equipment. The work area shall be inspected to ensure that nonessential items have been removed and to ensure that machine or equipment components are operationally intact.

L. Employees

- 1. The work area shall be checked to ensure that all employees have been safely positioned or removed.
- 2. After lockout or tagout devices have been removed and before a machine or equipment is started, affected employees shall be notified that the lockout or tagout device(s) have been removed.
- M. Lockout or tagout devices removal. Each lockout or tagout device shall be removed from each energy isolating device by the employee who applied the device. Exception to paragraph (e)(3): When the authorized employee who applied the lockout or tagout device is not available to remove it, that device may be removed under the direction of the employer, provided that specific procedures and training for such removal have been developed, documented, and incorporated into the employer's energy control program. The employer shall demonstrate that the specific procedure provides equivalent safety to the removal of the device by the authorized employee who applied it. The specific procedure shall include at least the following elements:
 - 1. Verification by the employer that the authorized employee who applied the device is not at the facility
 - 2. Making all reasonable efforts to contact the authorized employee to inform him/her that his/her lockout or tagout device has been removed; and
 - 3. Ensuring that the authorized employee has this knowledge before he/she resumes work at that facility.
- N. Additional requirements.
 - 1. Testing or positioning of machines, equipment or components thereof. 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:
 - i. Clear the machine or equipment of tools and materials in accordance with paragraph (e)(1) of this section;
 - ii. Remove employees from the machine or equipment area in accordance with paragraph (e)(2) of this section;
 - iii. Remove the lockout or tagout devices as specified in paragraph (e)(3) of this section;
 - iv. Energize and proceed with testing or positioning;
 - v. Deenergize all systems and reapply energy control measures in accordance with paragraph (d) of this section to continue the servicing and/or maintenance.
 - vi. Outside personnel (contractors, etc.).
 - a. Whenever outside servicing personnel are to be engaged in activities covered by the scope and application of this standard, the on-site employer and the outside employer shall inform each other of their respective lockout or tagout procedures.
 - b. The on-site employer shall ensure that his/her employees understand and comply with the restrictions and prohibitions of the outside employer's energy control program.
- O. Group lockout or tagout.
 - 1. When servicing and/or maintenance is performed by a crew, craft, department or other group, they shall utilize a procedure which affords the employees a level of protection equivalent to that provided by the implementation of a personal lockout or tagout device.
 - 2. Group lockout or tagout devices shall be used in accordance with the procedures required by paragraph (c)(4) of this section including, but not necessarily limited to, the following specific requirements:

- i. Primary responsibility is vested in an authorized employee for a set number of employees working under the protection of a group lockout or tagout device (such as an operations lock);
- ii. Provision for the authorized employee to ascertain the exposure status of individual group members with regard to the lockout or tagout of the machine or equipment and
- iii. When more than one crew, craft, department, etc. is involved, assignment of overall jobassociated lockout or tagout control responsibility to an authorized employee designated to coordinate affected work forces and ensure continuity of protection; and
- iv. Each authorized employee shall affix a personal lockout or tagout device to the group lockout device, group lockbox, or comparable mechanism when he or she begins work, and shall remove those devices when he or she stops working on the machine or equipment being serviced or maintained.
- P. Shift or personnel changes. Specific procedures shall be utilized during shift or personnel changes to ensure the continuity of lockout or tagout protection, including provision for the orderly transfer of lockout or tagout device protection between off-going and oncoming employees, to minimize exposure to hazards from the unexpected energization or start-up of the machine or equipment, or the release of stored energy.

Note: The following appendix to §1910.147 services as a non-mandatory guideline to assist employers and employees in complying with the requirements of this section, as well as to provide other helpful information. Nothing in the appendix adds to or detracts from any of the requirements of this section.

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