



PROJECT MANUAL

Fargo VA Health Care System
2101 Elm Street
Fargo, ND 58102

VA Project Number: 437-21-190

VA PROJECT TITLE: REPLACE 25 KV SWITCHGEAR

**DEPARTMENT OF VETERANS AFFAIRS
VHA MASTER SPECIFICATIONS**

**TABLE OF CONTENTS
Section 00 01 10**

SECTION NO.	DIVISION AND SECTION TITLES	DATE
	DIVISION 00 - SPECIAL SECTIONS	
00 01 15	List of Drawing Sheets	01-21
	DIVISION 01 - GENERAL REQUIREMENTS	
01 00 00	General Requirements	05-21
01 33 23	Shop Drawings, Product Data, and Samples	06-21
01 35 26	Safety Requirements	07-20
01 74 19	Construction Waste Management	01-21
	DIVISION 02 – EXISTING CONDITIONS	
02 41 00	Demolition	08-17
	DIVISION 26 – ELECTRICAL	
26 05 11	Requirements for Electrical Installations	
26 05 12	Electrical Demolition	01-16
26 05 13	Medium-Voltage Cables	01-17
26 05 26	Grounding and Bonding for Electrical Systems	01-17
26 13 16	Medium-Voltage Fusible Interrupter Switches	01-17

**SECTION 01 00 00
GENERAL REQUIREMENTS**

GENERAL

1.1 SAFETY REQUIREMENTS

- A. Refer to section 01 35 26, SAFETY REQUIREMENTS for safety and infection control requirements.

1.2 GENERAL INTENTION

- A. Contractor shall completely prepare site for building operations, including demolition and removal of existing structures, and furnish labor and materials and perform work for Fargo VA Health Care System project 437-21-190, Replace 25 KV Switchgear in accordance with the contract documents.
- B. Visits to the site by Bidders through Contracting Officer only. Only one organized site visit shall be conducted per FAR 52.236-27 Alternate I.
- C. NOT USED.
- D. NOT USED.
- E. All employees of general contractor and subcontractors shall comply with VA security management program, shall be identified by project and employer, and restricted from unauthorized access.

1.3 STATEMENT OF BID ITEM(S)

- A. ITEM I, GENERAL CONSTRUCTION: BASE BID: Work includes general construction, alterations, work on and modifications to the existing medium voltage electrical distribution system, necessary removal of existing structures and construction and certain other items.

1.4 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR

- A. Drawings and contract documents may be obtained from the website where the solicitation is posted. Additional copies will be at Contractor's expense.

1.5 CONSTRUCTION SECURITY REQUIREMENTS

- A. Security:
 - 1. The General Contractor shall inform their staff about the security plan that will be implemented to control access to the work site and keep all non-project related individuals out of the job site.
 - 2. The General Contractor is responsible for assuring that all sub-contractors working on the project and their employees also comply with these regulations.

B. Security Procedures:

1. General Contractor's employees shall not enter the project site without appropriate badge. They may also be subject to inspection of their personal effects when entering or leaving the project site.
2. NOT USED.
3. No photography of VA premises is allowed without written permission of the Contracting Officer. Patients and staff are not to be photographed at any time.
4. VA reserves the right to close down or shut down the project site and order General Contractor's employees off the premises in the event of a national emergency. The General Contractor may return to the site only with the written approval of the Contracting Officer.

C. NOT USED.

D. NOT USED.

E. Document Control:

1. The General Contractor is responsible for safekeeping of all drawings, project manual and other project information. This information shall be shared only with those with a specific need to accomplish the project.

F. NOT USED.

1.6 OPERATIONS AND STORAGE AREAS (FAR 52.236-10)

- A. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.
- B. Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.
- C. The Contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity

recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

- D. Working space and space available for storing materials shall be as determined by the COR .
- E. Workers are subject to rules of Medical Center applicable to their conduct.
- F. Execute work in such a manner as to interfere as little as possible with work being done by others. Keep roads clear of construction materials, debris, standing construction equipment and vehicles at all times.
- G. NOT USED.
- H. Utilities Services: Where necessary to cut existing pipes, electrical wires, conduits, cables, etc., of utility services, or of fire protection systems or communications systems (except telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by COR . All such actions shall be coordinated with the COR or Utility Company involved:
 - 1. Whenever it is required that a connection fee be paid to a public utility provider for new or replacement utility service work required under this contract to be performed by the utility company, payment of such fee shall be the responsibility of the Contractor.
- I. Phasing:
 - 1. The Medical Center must maintain its operation 24 hours a day 7 days a week. Therefore, any interruption in service must be scheduled and coordinated with the COR to ensure that no lapses in operation occur. It is the CONTRACTOR'S responsibility to develop a work plan and schedule detailing, at a minimum, the procedures to be employed, the equipment and materials to be used, the interim life safety measure to be used during the work, and a schedule defining the duration of the work with milestone subtasks.
 - 2. To ensure such executions, Contractor shall furnish the COR with a schedule of approximate dates on which the Contractor intends to accomplish work in each specific area of site. In addition, Contractor shall notify the COR three weeks in advance of the proposed date of starting work in each specific area. Arrange such dates to ensure accomplishment of this work in successive phases mutually agreeable to COR and Contractor.

3. The project shall be performed in two phases, but they shall run concurrently. Phase definitions are provided below and the submittal process and acquisition of the exterior switchgear and other equipment or materials by the contractor shall take place at the same time. The time difference between the phases is the expected additional time to obtain the equipment (remanufactured versus new):
 - a. Phase 1 – This phase shall remove the existing exterior switchgear that has been damaged by lightning and replace it with a remanufactured switchgear of the same size, identical to the existing damaged unit so that concrete pad and vault do not require replacement. If a remanufactured switchgear cannot be located that fits onto the existing pad and vault, the contractor may refurbish the switch on site (but still shall be required to pass all contract document required testing and certification requirements, provide reports and certifications to the COR), or the contractor may remove the pad, vault, etc. and install new as required for the remanufactured exterior switchgear. All electrical disconnections and connections shall be the responsibility of the contractor, to include any work Xcel Energy may insist they have to perform.
 - b. Phase 2 – This phase shall remove the remanufactured exterior switchgear and replace it with a new switchgear of the same size, preferably identical to the original unit so that concrete pad and vault do not require replacement. If a switchgear cannot be located that fits onto the existing pad and vault (whether the vault / pad is existing or newly installed (contractor shall coordinate depending upon switchgear they are able to obtain), the contractor shall remove the pad, vault, etc. and install new as required for the remanufactured exterior switchgear. All electrical disconnections and connections shall be the responsibility of the contractor, to include any work Xcel Energy may insist they have to perform.
- J. No buildings will be vacated by Government since this is an outdoor project.
 1. Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Centers operations will not be hindered.
- K. Construction Fence: Before construction operations begin, Contractor shall provide a chain link construction fence, 2.1m (seven feet) minimum height, around the construction area. Provide gates as required for access with necessary hardware, including hasps

and padlocks. Fasten fence fabric to terminal posts with tension bands and to line posts and top and bottom rails with tie wires spaced at maximum 375 mm (15 inches). Bottom of fences shall extend to 25mm (one inch) above grade. Remove the fence when directed by COR.

- L. When a building and/or construction site is turned over to Contractor, Contractor shall accept entire responsibility including upkeep and maintenance therefore:
- M. Utilities Services: Maintain existing utility services for Medical Center at all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to assure uninterrupted services. Where necessary to cut existing water, steam, gases, sewer or air pipes, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems (including telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by COR.
 - 1. No utility service such as water, gas, steam, sewers or electricity, or fire protection systems and communications systems may be interrupted without prior approval of COR. Electrical work shall be accomplished with all affected circuits or equipment de-energized. When an electrical outage cannot be accomplished, work on any energized circuits or equipment shall not commence without a detailed work plan, the Medical Center Director's prior knowledge and written approval. Refer to specification Sections 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS for additional requirements.
 - 2. Contractor shall submit a request to interrupt any such services to COR, in writing, 21 days in advance of proposed interruption. Request shall state reason, date, exact time of, and approximate duration of such interruption.
 - 3. Contractor will be advised (in writing) of approval of request, or of which other date and/or time such interruption will cause least inconvenience to operations of Medical Center. Interruption time approved by Medical Center may occur at other than Contractor's normal working hours and shall be at no additional cost to the Government.
 - 4. Major interruptions of any system must be requested, in writing, at least 21 calendar days prior to the desired time and shall be performed as directed by the COR.
 - 5. In case of a contract construction emergency, service will be interrupted on approval of COR. Such approval will be confirmed in writing as soon as practical.

- 6. Whenever it is required that a connection fee be paid to a public utility provider for new permanent service to the construction project, payment of such fee shall be the responsibility of the Contractor.
- N. Abandoned Lines: All service lines such as wires, cables, conduits, ducts, pipes and the like, and their hangers or supports, shall be removed back to their source. Those which are indicated to be abandoned but are not required to be entirely removed, shall be sealed, capped or plugged at the main, branch or panel they originate from. The lines shall not be capped in finished areas, but shall be removed and sealed, capped or plugged in ceilings, within furred spaces, in unfinished areas, or within walls or partitions; so that they are completely behind the finished surfaces.
- O. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:
 - 1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles. Wherever excavation for new utility lines cross existing roads, at least one lane must be open to traffic at all times with approval.
 - 2. Method and scheduling of required cutting, altering and removal of existing roads, walks and entrances must be approved by the COR.
- P. Coordinate the work for this contract with other construction operations as directed by COR. This includes the scheduling of traffic and the use of roadways, as specified in Article, USE OF ROADWAYS.
- Q. NOT USED.

1.7 NORMAL HOURS OF OPERATION

- A. Normal hours of operation are Monday through Friday 8 am – 4:30 pm.

1.8 DISPOSAL AND RETENTION

- A. Materials and equipment accruing from work removed and from demolition of buildings or structures, or parts thereof, shall be disposed of as follows:
 - 1. Reserved items which are to remain property of the Government are identified by notes on drawings or in specifications. Items that remain property of the Government shall be removed or dislodged from present locations in such a manner as to prevent damage which would be detrimental to re-installation and reuse. Store such items were directed by COR.
 - 2. Items not reserved shall become property of the Contractor and be removed by Contractor from Medical Center.

3. NOT USED.

1.9 SCHEDULES AND INSPECTIONS

- A. Contractor shall submit a progress chart or schedule within 5 calendar days after issuance of a Notice to Proceed.
- B. Contractor shall submit a schedule of cost / value within 7 calendar days after date of receipt of the Notice to Proceed.
- C. Contractor must provide notification 7 calendar days prior to completion in order to schedule the final inspection.

1.10 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS (FAR 52.236-9)

- A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workers, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.
- B. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.
- C. NOT USED.
- D. NOT USED.

1.10 RESTORATION

- A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Except as otherwise shown or specified, do not cut, alter or remove any structural work, and do not disturb any ducts, plumbing, steam, gas, or electric work without approval of the COR. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the COR before it is disturbed. Materials and

workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.

- B. Upon completion of contract, deliver work complete and undamaged. Existing work disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.
- C. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workers to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are not scheduled for discontinuance or abandonment.

1.11 NOT USED.

1.12 NOT USED.

1.13 NOT USED.

1.14 AS-BUILT DRAWINGS

- A. The contractor shall maintain two full size sets of as-built drawings which will be kept current during construction of the project, to include all contract changes, modifications and clarifications.
- B. All variations shall be shown in the same general detail as used in the contract drawings. To ensure compliance, as-built drawings shall be made available for the COR review, as often as requested.
- C. Contractor shall deliver two approved completed sets of as-built drawings in the electronic version (scanned PDF) to the COR within 15 calendar days after each completed phase and after the acceptance of the project by the COR.
- D. Paragraphs A, B, & C shall also apply to all shop drawings.

1.15 NOT USED.

1.16 USE OF ROADWAYS

- A. For hauling, use only established public roads and roads on Medical Center property in the performance of contract work. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.

1.17 NOT USED.

1.18 NOT USED

1.19 NOT USED.

1.20 NOT USED.

1.21 TEMPORARY TOILETS

- A. Provide where directed, (for use of all Contractor's workers) ample temporary sanitary toilet accommodations. Keep such places clean and free from flies and all shall be removed prior to completion of contract, and premises left perfectly clean.

1.22 AVAILABILITY AND USE OF UTILITY SERVICES

- A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. The Contractor shall carefully conserve any utilities furnished without charge.
- B. The Contractor, at Contractor's expense and in a workmanlike manner, in compliance with code and as satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines and associated paraphernalia and repair restore the infrastructure as required.
- C. NOT USED.
- D. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any temporary heating devices which may be fire hazards or may smoke and damage finished work, will not be permitted.
- E. Electricity (for Construction and Testing): Furnish all temporary electric services.
 - 1. Obtain electricity by connecting to the Medical Center electrical distribution system. Electricity for all other uses is available at no cost to the Contractor.
 - 2. NOT USED.
- F. NOT USED.

1.23 NOT USED.

1.24 TESTS

- A. NOT USED.
- B. Pre-test electrical equipment and systems and make corrections required for proper operation of such systems before requesting final tests. Final test will not be conducted unless pre-tested.

- C. Conduct final tests required in various sections of specifications in presence of an authorized representative of the Contracting Officer. Contractor shall furnish all labor, materials, equipment, instruments, and forms, to conduct and record such tests.
- D. Eelectrical systems shall be balanced, controlled and coordinated. A system is defined as the entire system which must be coordinated to work together during normal operation to produce results for which the system is designed. For example, air conditioning supply air is only one part of entire system which provides comfort conditions for a building. Other related components are return air, exhaust air, steam, chilled water, refrigerant, hot water, controls and electricity, etc. Another example of a system which involves several components of different disciplines is a boiler installation. Efficient and acceptable boiler operation depends upon the coordination and proper operation of fuel, combustion air, controls, steam, feedwater, condensate and other related components.
- E. All related components as defined above shall be functioning when any system component is tested. Tests shall be completed within a reasonable period of time during which operating and environmental conditions remain reasonably constant and are typical of the design conditions.
- F. Individual test result of any component, where required, will only be accepted when submitted with the test results of related components and of the entire system.

1.25 INSTRUCTIONS

- A. Contractor shall furnish Maintenance and Operating manuals (hard copies and electronic) and verbal instructions when required by the various sections of the specifications and as hereinafter specified.
- B. Manuals: Maintenance and operating manuals and one compact disc (one hard copy and one electronic copy each) for each separate piece of equipment shall be delivered to the COR coincidental with the delivery of the equipment to the job site. In addition to copies of the approved equipment submittals, manuals shall be complete, detailed guides for the maintenance and operation of equipment. They shall include complete information necessary for starting, adjusting, maintaining in continuous operation for long periods of time and dismantling and reassembling of the complete units and sub-assembly components. Manuals shall include an index covering all component parts clearly cross-referenced to diagrams and illustrations. Illustrations shall include "exploded" views showing and identifying each separate item. Emphasis shall be placed on the use of special tools and instruments. The function of each piece of equipment,

component, accessory and control shall be clearly and thoroughly explained. All necessary precautions for the operation of the equipment and the reason for each precaution shall be clearly set forth. Manuals must reference the exact model, style and size of the piece of equipment and system being furnished. Manuals referencing equipment similar to but of a different model, style, and size than that furnished will not be accepted.

- c. Instructions: Contractor shall provide qualified, factory-trained manufacturers' representatives to give detailed training to assigned Department of Veterans Affairs personnel in the operation and complete maintenance for each piece of equipment. All such training will be at the job site. These requirements are more specifically detailed in the various technical sections. Instructions for different items of equipment that are component parts of a complete system, shall be given in an integrated, progressive manner. All instructors for every piece of component equipment in a system shall be available until instructions for all items included in the system have been completed. This is to assure proper instruction in the operation of inter-related systems. All instruction periods shall be at such times as scheduled by the COR and shall be considered concluded only when the COR is satisfied in regard to complete and thorough coverage. The contractor shall submit a course outline with associated material to the COR for review and approval prior to scheduling training to ensure the subject matter covers the expectations of the VA and the contractual requirements. The Department of Veterans Affairs reserves the right to request the removal of, and substitution for, any instructor who, in the opinion of the COR, does not demonstrate sufficient qualifications in accordance with requirements for instructors above.

1.26 NOT USED.

1.27 NOT USED.

1.28 NOT USED.

1.29 NOT USED

1.30 NOT USED.

1.31 NOT USED.

1.32 NOT USED.

1.33 NOT USED.

1.34 NOT USED.

1.20 LOCAL FARGO VA HEALTH CARE SYSTEM CONSTRUCTION CONTRACTOR ORIENTATION AND POLICIES

A. Contracts: The following staff or resource people will be working with you at the Fargo VA Health Care System. Please feel free to contact these individuals with any questions:

1. Chief Engineer: Shawn Bergan (701) 239-3700, ext. 93388 or (701) 239-3760.
2. Assistant Chief / Project Section Chief: Brady Wiesner (701) 239-3700, ext. 93335 or (701) 239-3760
3. Project Engineers: Ron Tollefson (701) 239-3700, ext. 93866 or (701) 239-3760 or Dennis Langevin (701) 239-3700, ext. 93365 or (701) 239-3760.

B. Vehicle Traffic Rules: All construction contractors shall park their vehicles in areas assigned by the Contracting Officer or Engineering Service representatives. All persons coming on the premises of the Fargo VA Health Care System must obey the posted traffic and parking rules. Police Service will issue tickets to contractor vehicles parked in areas other than those assigned.

C. Keys/ID Badges: VA ID badges must be worn while you are on Medical Center premises. Contact Engineering Service to obtain an ID badge and any necessary keys. Contract staff are responsible for the security of keys and ID badges issued to them and may be charged for replacement cost. You must notify Engineering (ext. 3361) personnel immediately to report any loss, theft or suspected reproduction of a Medical Center key or access card.

D. Smoking: Smoking is prohibited throughout the entire campus.

E. Use of Government Telephones

1. Government telephones are for official Government business use. Contract staff may use telephones, for local calls only, to contact your place of employment or to address unforeseen events such as injury on the job, work schedule changes etc.

F. Housekeeping

1. All construction sites shall be kept clean, orderly and in sanitary condition.
2. All rags/cloth and rubbish soaked with flammable and/or combustible material shall be placed in a covered metal receptacle until being disposed.
3. A clear and unobstructed path must be maintained to all portable fire extinguishers and electrical panels.

G. Storage

1. Any commodities that may be hazardous in combination with each other must be stored so they cannot come in contact with each other.
2. Store flammable and combustible liquids and gasses in approved storage containers.
3. Materials will not be stored directly on the ground. Materials shall be protected from the elements.
4. Storage areas will be kept free from accumulation of materials that constitute hazards.
5. Storage will not be permitted within 3 feet of electric equipment in all directions.

H. Hazardous Materials

1. Discovery of any suspected asbestos containing material shall result in the contractor stopping work in the area and reporting the discovery immediately to the Engineering Office (ext. 3361) or one of the contact persons indicated above. Engineering Service shall then evaluate the suspect material and if it contains asbestos shall arrange for the removal of the asbestos.
2. Contractors shall maintain and provide to the VA Project Engineer MSDS's for products used during construction which shall explain the labeling system and all other required information. Report any discovery of an existing hazardous material to Engineering Service, (ext. 3361).

I. Infection Control

1. PURPOSE: To prevent the acquisition of nosocomial infection in patients and healthcare workers during construction activities.
2. The Contractor shall contact Engineering Service prior to beginning construction in any areas so that a Pre-Construction Risk Assessment (PCRA) may be performed and all other applicable forms completed. Once completed the Contractor shall conform to all of the requirements (ILSM's, Infection Control Precautions, etc.) as noted on the completed forms. The Contractor shall post a copy of the completed form outside the construction

barrier at each work site in plain view and accessible to VA Staff for verification that requirements noted on PCRA form are being adhered to.

3. General: The goal of Infection Control is to identify and reduce the risks of acquiring and transmitting infections among patients, employees, service workers and visitors to the Medical Center. During construction or renovation projects, hidden infectious disease hazards may be released into the air, carried on dust particles, on workers clothing or be present in damp areas or areas where water has collected
 - a. Removing demolition debris in a manner that minimizes any contamination of the environment outside.
4. Please feel free to contact Infection Control at ext. 3668 if you have questions or concerns.
5. If you find any needles, syringes, sharp medical objects please do not handle or remove yourself. Contact the Medical Center project coordinator or Project Engineer at 239-3760 or at Medical Center extension 3361 for removal.
6. Construction activities causing disturbance of existing dust, or generating new dust must be conducted in ways that will minimize dust generation and dispersion.
7. All construction/maintenance workers and contract workers must follow the infection control procedures as described in this guideline.

J. Construction Safety

1. The Medical Center policy is to provide an environment for patients, visitors and staff that is free from danger. Interim life safety measures (ILSM's) are applied to all construction projects as necessary and are defined in construction contracts. Minimum ILSM's are:

- a. Exits – provide free and unobstructed egress.
- b. Free and unobstructed access to emergency department/service for emergency forces.
- c. Smoking is prohibited through the VA campus.
- d. Storage, housekeeping and debris removal policies and procedures that reduce the flammable and combustible fire load are enforced.
- e. Hazard surveillance is increased in construction areas.

K. NOT USED.

L. Utilities

1. Engineering (ext. 3361) is responsible for all utilities at the Medical Center. If there are problems or failures of the utilities, call extension 3361 during normal business hours (Monday through Friday, 8:00 a.m. to 4:30 p.m.). After hours and on weekends, contact the Police Service at ext. 3251 to report problems and failures. A utilities failure and its type/location will be communicated by a "Utility Failure" overhead announcement.
2. All utility service connections shall be reviewed with and approved by Engineering Service just prior to the connection being made with the existing utility. This condition shall apply to both temporary and permanent connections. This final utility system connection check is meant to ensure the following:
 - a. The Medical Center is prepared for the connection.
 - b. The contractor is prepared for the connection work.

M. Emergencies

1. "Disaster Alert" - The Medical Center has initiated a process that provides an "all-hazard" approach to disaster management. Construction contractor staff shall ensure corridors are free of obstructions and a foreman or representative shall report to the Engineering Service office for further instructions.
2. Hostage Situations – Immediately report to Police Service (ext. 2222), any incident in which the safety of any person is threatened by another.
3. "Bomb Threat" - React calmly and evacuate. Notify Police Service (ext. 2222) if the threat poses immediate danger to a person or destruction of property. If you discover a suspicious object, do not touch or move the object.
4. Severe Weather – In the event of an overhead announcement, all personnel are expected to take cover in windowless interior corridors that are not on the top floor of the building.
5. Armed Assailant – React calmly and evacuate. Avoid area(s) where it has been indicated an armed assailant is in the building or on the ground.

N. RECORDS MANAGEMENT OBLIGATIONS

- A. Applicability: This clause applies to all Contractors whose employees create, work with, or otherwise handle Federal records, as defined in Section B, regardless of the medium in which the record exists.

- B. Definitions: "Federal Record" as defined in 44 U.S.C. § 3301, includes all recorded information, regard-less of form or characteristics, made or received by a Federal agency under Federal law or in connection with the transaction of public business and preserved or appropriate for preservation by that agency or its legitimate successor as evidence of the organization, functions, policies, decisions, procedures, operations, or other activities of the United States Government or because of the informational value of data in them.

The term Federal record:

1. includes Agency records.
2. does not include personal materials.
3. applies to records created, received, or maintained by Contractors pursuant to their Agency contract.
4. may include deliverables and documentation associated with deliverables.

C. Requirements

1. Contractor shall comply with all applicable records management laws and regulations, as well as National Archives and Records Administration (NARA) records policies, including but not limited to the Federal Records Act (44 U.S.C. chs. 21, 29, 31, 33), NARA regulations at 36 CFR Chapter XII Subchapter B, and those policies associated with the safeguarding of records covered by the Privacy Act of 1974 (5 U.S.C. 552a). These policies include the preservation of all records, regardless of form or characteristics, mode of transmission, or state of completion.
2. In accordance with 36 CFR 1222.32, all data created for Government use and delivered to, or falling under the legal control of, the Government are Federal records subject to the provisions of 44 U.S.C. chapters 21, 29, 31, and 33, the Freedom of Infor-mation Act (FOIA) (5 U.S.C. 552), as amended, and the Priva-cy Act of 1974 (5 U.S.C. 552a), as amended and must be managed and scheduled for disposition only as permitted by statute or regulation.
3. In accordance with 36 CFR 1222.32, Contractor shall maintain all records created for Government use or created in the course of performing the contract and/or delivered to, or under the legal control of the Government and must be managed in accordance with Federal law. Electronic records and associated metadata must be accompanied by sufficient technical documentation to permit understanding and use of the records and data.

4. Fargo VA Health Care System and its contractors are responsible for preventing the alienation or unauthorized destruction of records, including all forms of mutilation. Records may not be removed from the legal custody of [Fargo VA Health Care System] or destroyed except for in accordance with the provisions of the agency records schedules and with the written concurrence of the Head of the Contracting Activity. Willful and unlawful destruction, damage or alienation of Federal records is subject to the fines and penalties imposed by 18 U.S.C. 2701. In the event of any unlawful or accidental removal, defacing, alteration, or destruction of records, Contractor must report to Fargo VA Health Care System. The agency must report promptly to NARA in accordance with 36 CFR 1230.
5. The Contractor shall immediately notify the appropriate Contracting Officer upon discovery of any inadvertent or unauthorized disclosures of information, data, documentary materials, records or equipment. Disclosure of non-public information is limited to authorized personnel with a need-to-know as described in the [contract vehicle]. The Contractor shall ensure that the appropriate personnel, administrative, technical, and physical safeguards are established to ensure the security and confidentiality of this information, data, documentary material, records and/or equipment is properly protected. The Contractor shall not remove material from Government facilities or systems, or facilities or systems operated or maintained on the Government's behalf, without the express written permission of the Head of the Contracting Activity. When information, data, documentary material, records and/or equipment is no longer required, it shall be returned to [Fargo VA Health Care System] control or the Contractor must hold it until otherwise directed. Items returned to the Government shall be hand carried, mailed, emailed, or securely electronically transmitted to the Contracting Officer or address prescribed in the [contract vehicle]. Destruction of records is EXPRESSLY PROHIBITED unless in accordance with Paragraph (4).
6. The Contractor is required to obtain the Contracting Officer's approval prior to engaging in any contractual relationship (sub-contractor) in support of this contract requiring the disclosure of information, documentary material and/or records generated under, or relating to, contracts. The Contractor (and any sub-contractor) is required to abide by Government and [Fargo VA Health Care System] guidance for protecting sensitive, proprietary information, classified, and controlled unclassified information.
7. The Contractor shall only use Government IT equipment for purposes specifically tied to or authorized by the contract and in accordance with Fargo VA Health Care System policy.

8. The Contractor shall not create or maintain any records containing any non-public [Fargo VA Health Care System] information that are not specifically tied to or authorized by the contract.
 9. The Contractor shall not retain, use, sell, or disseminate copies of any deliverable that contains information covered by the Privacy Act of 1974 or that which is generally protect-ed from public disclosure by an exemption to the Freedom of Information Act.
 10. The [Fargo VA Health Care System] owns the rights to all data and records produced as part of this contract. All deliverables under the contract are the property of the U.S. Government for which [Fargo VA Health Care System] shall have unlimited rights to use, dispose of, or disclose such data contained therein as it determines to be in the public interest. Any Contractor rights in the data or deliverables must be identified as required by FAR 52.227-11 through FAR 52.227-20.
 11. Training. All Contractor employees assigned to this contract who create, work with, or otherwise handle records are required to take VHA-provided records management training. The Contractor is responsible for confirming training has been completed according to agency policies, including initial training and any annual or refresher training.
- D. Flowdown of Requirements to Subcontractors
1. The Contractor shall incorporate the substance of this clause, its terms and requirements including this paragraph, in all subcontracts under this [contract vehicle], and require written subcontractor acknowledgment of same.
 2. Violation by a subcontractor of any provision set forth in this clause will be attributed to the Contractor.

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**SECTION 00 01 15
LIST OF DRAWING SHEETS**

The drawings listed below accompanying this specification form a part of the contract.

<u>Drawing No.</u>	<u>Title</u>
GI001	COVER SHEET / SITE PLAN
E1	ELECTRICAL PLANS AND DETAILS

--- E N D ---

SECTION 01 33 23**SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES****PART 1 – GENERAL****1.1 DESCRIPTION**

- A. This specification defines the general requirements and procedures for submittals. A submittal is information submitted for VA review to establish compliance with the contract documents.
- B. Detailed submittal requirements are found in the technical sections of the contract specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective technical specifications at no additional cost to the government.
- C. VA approval of a submittal does not relieve the Contractor of the responsibility for any error which may exist. The Contractor is responsible for fully complying with all contract requirements and the satisfactory construction of all work, including the need to check, confirm, and coordinate the work of all subcontractors for the project. Non-compliant material incorporated in the work will be removed and replaced at the Contractor's expense.

1.2 DEFINITIONS

- A. Preconstruction Submittals: Submittals which are required prior to issuing contract notice to proceed or starting construction. For example, Certificates of insurance; Surety bonds; Site-specific safety plan; Construction progress schedule; Schedule of values; Submittal register; List of proposed subcontractors.
- B. Shop Drawings: Drawings, diagrams, and schedules specifically prepared to illustrate some portion of the work. Drawings prepared by or for the Contractor to show how multiple systems and interdisciplinary work will be integrated and coordinated.
- C. Product Data: Catalog cuts, illustrations, schedules, diagrams, performance charts, instructions, and brochures, which describe and illustrate size, physical appearance, and other characteristics of materials, systems, or equipment for some portion of the work. Samples of warranty language when the contract requires extended product warranties.
- D. Samples: Physical examples of materials, equipment, or workmanship that illustrate functional and aesthetic characteristics of a material or product and establish standards by which the work can be judged. Color samples from the manufacturer's standard line (or custom color samples if specified) to be used in selecting or approving colors for the project. Field samples and mock-ups constructed to establish standards by which the ensuing work can be judged.
- E. Design Data: Calculations, mix designs, analyses, or other data pertaining to a part of work.
- F. Test Reports: Report which includes findings of a test required to be performed by the Contractor on an actual portion of the work. Report which includes finding of a test made at the job site or on sample taken from the job site, on portion of work during or after installation.

- G. Certificates: Document required of Contractor, or of a manufacturer, supplier, installer, or subcontractor through Contractor. The purpose is to document procedures, acceptability of methods, or personnel qualifications for a portion of the work.
- H. Manufacturer's Instructions: Pre-printed material describing installation of a product, system, or material, including special notices and MSDS concerning impedances, hazards, and safety precautions.
- I. Manufacturer's Field Reports: Documentation of the testing and verification actions taken by manufacturer's representative at the job site on a portion of the work, during or after installation, to confirm compliance with manufacturer's standards or instructions. The documentation must indicate whether the material, product, or system has passed or failed the test.
- J. Operation and Maintenance Data: Manufacturer data that is required to operate, maintain, troubleshoot, and repair equipment, including manufacturer's help, parts list, and product line documentation. This data shall be incorporated in an operations and maintenance manual.
- K. Closeout Submittals: Documentation necessary to properly close out a construction contract. For example, Record Drawings and as-built drawings. Also, submittal requirements necessary to properly close out a phase of construction on a multi-phase contract.

1.3 SUBMITTAL REGISTER

- A. A submittal register will list items of equipment and materials for which submittals are required by the specifications. This list may not be all inclusive and additional submittals may be required by the specifications. The Contractor is not relieved from supplying submittals required by the contract documents but which have been omitted from the submittal register.
- B. The submittal register will serve as a scheduling document for submittals and will be used to control submittal actions throughout the contract period.
- C. The General Contractor shall provide the submittal register in electronic format. Thereafter, the Contractor shall track all submittals by maintaining a complete list, including completion of all data columns, including dates on which submittals are received and returned by the VA.
- D. The Contractor shall update the submittal register as submittal actions occur and maintain the submittal register at the project site until final acceptance of all work by Contracting Officer.
- E. The Contractor shall submit formal monthly updates to the submittal register in electronic format. Each monthly update shall document actual submission and approval dates for each submittal.

1.4 SUBMITTAL SCHEDULING

- A. Submittals are to be scheduled, submitted, reviewed, and approved prior to the acquisition of the material or equipment.
- B. Coordinate scheduling, sequencing, preparing, and processing of submittals with performance of work so that work will not be delayed by submittal processing. Allow time for potential resubmittal.
- C. No delay costs or time extensions will be allowed for time lost in late submittals or resubmittals.
- D. All submittals are required to be approved prior to the start of the specified work activity.

1.5 SUBMITTAL PREPARATION

- A. Each submittal is to be complete and in sufficient detail to allow ready determination of compliance with contract requirements.
- B. Collect required data for each specific material, product, unit of work, or system into a single submittal. Prominently mark choices, options, and portions applicable to the submittal. Partial submittals will not be accepted for expedition of construction effort. Submittal will be returned without review if incomplete.
- C. If available product data is incomplete, provide Contractor-prepared documentation to supplement product data and satisfy submittal requirements.
- D. All irrelevant or unnecessary data shall be removed from the submittal to facilitate accuracy and timely processing. Submittals that contain the excessive amount of irrelevant or unnecessary data will be returned with review.
- E. Provide a transmittal form for each submittal with the following information:
 - 1. VA Project title, location and VA Project number.
 - 2. VA construction contract number.
 - 3. Date of the drawings and revisions.
 - 4. Name, address, and telephone number of subcontractor, supplier, manufacturer, and any other subcontractor associated with the submittal.
 - 5. List paragraph number of the specification section and sheet number of the contract drawings by which the submittal is required.
 - 6. When a resubmission, add alphabetic suffix on submittal description. For example, submittal 18 would become 18A, to indicate resubmission.
 - 7. Product identification and location in project.
- F. The Contractor is responsible for reviewing and certifying that all submittals are in compliance with contract requirements before submitting for VA review. Proposed deviations from the contract requirements are to be clearly identified. All deviations submitted must include a side by side comparison of item being proposed against item specified. Failure to point out deviations will result in the VA requiring removal and replacement of such work at the Contractor's expense.
- G. Stamp, sign, and date each submittal transmittal form indicating action taken.
- H. Stamp used by the Contractor on the submittal transmittal form to certify that the submittal meets contract requirements is to be similar to the following:

CONTRACTOR
(Firm Name)
_____ Approved
_____ Approved with corrections as noted on submittal data and/or attached sheets(s)
SIGNATURE: _____
TITLE: _____
DATE: _____

1.6 SUBMITTAL FORMAT AND TRANSMISSION

- A. Provide submittals in electronic format, with the exception of material samples. Use PDF as the electronic format, unless otherwise specified or directed by the Contracting Officer. Provide one hardcopy submittal to the VA COR in addition to the electronic file.
- B. Compile the electronic submittal file as a single, complete document. Name the electronic submittal file specifically according to its contents.
- C. Electronic files must be of sufficient quality that all information is legible. Generate PDF files from original documents so that the text included in the PDF file is both searchable and can be copied. If documents are scanned, Optical Character Resolution (OCR) routines are required.

1.7 SAMPLES

- A. Submit two sets of physical samples showing range of variation, for each required item.
- B. Where samples are specified for selection of color, finish, pattern, or texture, submit the full set of available choices for the material or product specified.

- C. When color, texture, or pattern is specified by naming a particular manufacturer and style, include one sample of that manufacturer and style, for comparison.
- D. Before submitting samples, the Contractor is to ensure that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.
- E. The VA reserves the right to disapprove any material or equipment which previously has proven unsatisfactory in service.
- F. Physical samples supplied maybe requested back for use in the project after reviewed and approved.

1.8 OPERATION AND MAINTENANCE DATA

- A. Submit data specified for a given item within 30 calendar days after the item is delivered to the contract site.
- B. In the event the Contractor fails to deliver O&M Data within the time limits specified, the Contracting Officer may withhold from progress payments 50 percent of the price of the item with which such O&M Data are applicable.

1.9 TEST REPORTS

- A. VA COR may require specific test after work has been installed or completed which could require contractor to repair test area at no additional cost to contract.

1.10 VA REVIEW OF SUBMITTALS AND RFIS

- A. The VA will review all submittals for compliance with the technical requirements of the contract documents. Review will be only for conformance with the applicable codes, standards and contract requirements.
- B. Period of review for submittals begins when the VA COR receives submittal from the Contractor.
- C. Period of review for each resubmittal is the same as for initial submittal.
- D. VA review period is 15 working days for submittals.
- E. VA review period is 10 working days for RFIs.
- F. The VA will return submittals to the Contractor with the following notations:
 1. "Approved": authorizes the Contractor to proceed with the work covered.
 2. "Approved as noted": authorizes the Contractor to proceed with the work covered provided the Contractor incorporates the noted comments and makes the noted corrections.
 3. "Disapproved, revise and resubmit": indicates noncompliance with the contract requirements or that submittal is incomplete. Resubmit with appropriate changes and corrections. No work shall proceed for this item until resubmittal is approved.
 4. "Not reviewed": indicates submittal does not have evidence of being reviewed and approved by Contractor or is not complete. A submittal marked "not reviewed" will be returned with an

explanation of the reason it is not reviewed. Resubmit submittals after taking appropriate action.

1.11 APPROVED SUBMITTALS

- A. The VA approval of submittals is not to be construed as a complete check, and indicates only that the general method of construction, materials, detailing, and other information are satisfactory.
- B. VA approval of a submittal does not relieve the Contractor of the responsibility for any error which may exist. The Contractor is responsible for fully complying with all contract requirements and the satisfactory construction of all work, including the need to check, confirm, and coordinate the work of all subcontractors for the project. Non-compliant material incorporated in the work will be removed and replaced at the Contractor's expense.
- C. After submittals have been approved, no resubmittal for the purpose of substituting materials or equipment will be considered unless accompanied by an explanation of why a substitution is necessary.
- D. Retain a copy of all approved submittals at project site, including approved samples.

1.12 WITHHOLDING OF PAYMENT

- A. Payment for materials incorporated in the work will not be made if required approvals have not been obtained.

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**SECTION 01 35 26
SAFETY REQUIREMENTS**

1.1 APPLICABLE PUBLICATIONS:

- A. Latest publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only.
- B. American Society of Safety Engineers (ASSE):
- A10.1-2011Pre-Project & Pre-Task Safety and Health Planning
 - A10.34-2012Protection of the Public on or Adjacent to Construction Sites
 - A10.38-2013Basic Elements of an Employer's Program to Provide a Safe and Healthful Work Environment American National Standard Construction and Demolition Operations
- C. National Fire Protection Association (NFPA):
- 10-2018.....Standard for Portable Fire Extinguishers
 - 30-2018.....Flammable and Combustible Liquids Code
 - 51B-2019Standard for Fire Prevention During Welding, Cutting and Other Hot Work
 - 70-2020.....National Electrical Code
 - 70B-2019Recommended Practice for Electrical Equipment Maintenance
 - 70E-2018Standard for Electrical Safety in the Workplace
 - 99-2018.....Health Care Facilities Code
 - 241-2019.....Standard for Safeguarding Construction, Alteration, and Demolition Operations
- D. The Joint Commission (TJC)
- TJC ManualComprehensive Accreditation and Certification Manual
- E. U.S. Occupational Safety and Health Administration (OSHA):
- 29 CFR 1910Safety and Health Regulations for General Industry
 - 29 CFR 1926Safety and Health Regulations for Construction Industry
- VHA Directive 7715 Safety and Health During Construction
 - VHA Directive 2005-007

1.2 DEFINITIONS:

- A. **Critical Lift.** A lift with the hoisted load exceeding 75% of the crane's maximum capacity; lifts made out of the view of the operator (blind picks); lifts involving two or more cranes; personnel being hoisted; and special hazards such as lifts over occupied facilities, loads lifted close to power-lines, and lifts in high winds or where other adverse environmental conditions exist; and any lift which the crane operator believes is critical.
- B. **OSHA "Competent Person" (CP).** One who is capable of identifying existing and predictable hazards in the surroundings and working conditions which are unsanitary, hazardous or dangerous to employees, and who has the authorization to take prompt corrective measures to eliminate them (see 29 CFR 1926.32(f)).
- C. **"Qualified Person"** means one who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter, the work, or the project.
- D. **High Visibility Accident.** Any mishap which may generate publicity or high visibility.
- E. **Accident/Incident Criticality Categories:**
 - 1. No impact – near miss incidents that should be investigated but are not required to be reported to the VA;
 - 2. Minor incident/impact – incidents that require first aid or result in minor equipment damage (less than \$5000). These incidents must be investigated but are not required to be reported to the VA;
 - 3. Moderate incident/impact – Any work-related injury or illness that results in:
 - a. Days away from work (any time lost after day of injury/illness onset);
 - b. Restricted work;
 - c. Transfer to another job;
 - d. Medical treatment beyond first aid;
 - e. Loss of consciousness;
 - 4. A significant injury or illness diagnosed by a physician or other licensed health care professional, even if it did not result in (1) through (5) above or,
 - 5. Any incident that leads to major equipment damage (greater than \$5000).

- F. These incidents must be investigated and are required to be reported to the VA;
- 1 Major incident/impact – Any mishap that leads to fatalities, hospitalizations, amputations, and losses of an eye as a result of contractors' activities. Or any incident which leads to major property damage (greater than \$20,000) and/or may generate publicity or high visibility. These incidents must be investigated and are required to be reported to the VA as soon as practical, but not later than 2 hours after the incident.
- G. Medical Treatment. Treatment administered by a physician or by registered professional personnel under the standing orders of a physician. Medical treatment does not include first aid treatment even through provided by a physician or registered personnel.

1.3 REGULATORY REQUIREMENTS:

- A. In addition to the detailed requirements included in the provisions of this contract, comply with 29 CFR 1926, comply with 29 CFR 1910 as incorporated by reference within 29 CFR 1926, comply with ASSE A10.34, and all applicable federal, state, and local laws, ordinances, criteria, rules and regulations. Submit matters of interpretation of standards for resolution before starting work. Where the requirements of this specification, applicable laws, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirements govern except with specific approval and acceptance by the Contracting Officer and Contracting Officer.

1.4 ACCIDENT PREVENTION PLAN (APP):

- A. The APP (aka Construction Safety & Health Plan) shall interface with the Contractor's overall safety and health program. Include any portions of the Contractor's overall safety and health program referenced in the APP in the applicable APP element and ensure it is site-specific. The Government considers the Prime Contractor to be the "controlling authority" for all worksite safety and health of each subcontractor(s). Contractors are responsible for informing their subcontractors of the safety provisions under the terms of the contract and the penalties for noncompliance, coordinating the work to prevent one craft from interfering with or creating hazardous working conditions for other crafts, and inspecting subcontractor operations to ensure that accident prevention responsibilities are being carried out.
- B. The APP shall be prepared as follows:
1. Written in English by a qualified person who is employed by the Prime Contractor articulating the specific work and hazards pertaining to the contract (model language can be found in ASSE A10.33). Specifically articulating the safety requirements found within these VA contract safety specifications.
 2. Address both the Prime Contractors and the subcontractors work operations.

3. State measures to be taken to control hazards associated with materials, services, or equipment provided by suppliers.
4. Address all the elements/sub-elements and in order as follows:
 - a. **SIGNATURE SHEET.** Title, signature, and phone number of the following:
 - 1) Plan preparer (Qualified Person such as corporate safety staff person or contracted Certified Safety Professional with construction safety experience);
 - 2) Plan approver (company/corporate officers authorized to obligate the company);
 - 3) Plan concurrence (e.g., Chief of Operations, Corporate Chief of Safety, Corporate Industrial Hygienist, project manager or superintendent, project safety professional). Provide concurrence of other applicable corporate and project personnel (Contractor).
 - b. **BACKGROUND INFORMATION.** List the following:
 - 1) Contractor;
 - 2) VA Contract number;
 - 3) VA Project Number and VA Project Title;
 - 4) Brief project description, description of work to be performed, and location; phases of work anticipated (these will require an AHA).
 - c. **STATEMENT OF SAFETY AND HEALTH POLICY.** Provide a copy of current corporate/company Safety and Health Policy Statement, detailing commitment to providing a safe and healthful workplace for all employees. The Contractor's written safety program goals, objectives, and accident experience goals for this contract should be provided.
 - d. **RESPONSIBILITIES AND LINES OF AUTHORITIES.** Provide the following:
 - 1) A statement of the employer's ultimate responsibility for the implementation of his SOH program;
 - 2) Identification and accountability of personnel responsible for safety at both corporate and project level. Contracts specifically requiring safety or industrial hygiene personnel shall include a copy of their resumes.

- 3) The names of Competent and/or Qualified Person(s) and proof of competency/qualification to meet specific OSHA Competent/Qualified Person(s) requirements must be attached.;
 - 4) Requirements that no work shall be performed unless a designated competent person is present on the job site;
 - 5) Requirements for pre-task Activity Hazard Analysis (AHAs);
 - 6) Lines of authority;
 - 7) Policies and procedures regarding noncompliance with safety requirements (to include disciplinary actions for violation of safety requirements) should be identified;
- e. **SUBCONTRACTORS AND SUPPLIERS.** If applicable, provide procedures for coordinating SOH activities with other employers on the job site:
- 1) Identification of subcontractors and suppliers (if known);
 - 2) Safety responsibilities of subcontractors and suppliers.
- f. **TRAINING.**
- 1) Site-specific SOH orientation training at the time of initial hire or assignment to the project for every employee before working on the project site is required.
 - 2) Mandatory training and certifications that are applicable to this project (e.g., explosive actuated tools, crane operator, rigger, crane signal person, fall protection, electrical lockout/NFPA 70E, machine/equipment lockout, confined space, etc...) and any requirements for periodic retraining/recertification are required.
 - 3) Procedures for ongoing safety and health training for supervisors and employees shall be established to address changes in site hazards/conditions.
 - 4) OSHA 10-hour training is required for all workers on site and the OSHA 30-hour training is required for Trade Competent Persons (CPs)
- g. **SAFETY AND HEALTH INSPECTIONS.**
- 1) Specific assignment of responsibilities for a minimum daily job site safety and health inspection during periods of work activity: Who will conduct (e.g., "Site Safety and Health CP"), proof of inspector's training/qualifications, when inspections will be conducted, procedures for documentation, deficiency tracking system, and follow-up procedures.

- 2) Any external inspections/certifications that may be required (e.g., contracted CSP or CSHT)

h. ACCIDENT/INCIDENT INVESTIGATION & REPORTING. The Contractor shall conduct mishap investigations of all Moderate and Major as well as all High Visibility Incidents. The APP shall include accident/incident investigation procedure and identify person(s) responsible to provide the following to the Contracting Officer Representative:

- 1) Exposure data (man-hours worked);
- 2) Accident investigation reports;
- 3) Project site injury and illness logs.

i. PLANS (PROGRAMS, PROCEDURES) REQUIRED. Based on a risk assessment of contracted activities and on mandatory OSHA compliance programs, the Contractor shall address all applicable occupational, patient, and public safety risks in site-specific compliance and accident prevention plans. These Plans shall include but are not be limited to procedures for addressing the risks associates with the following:

- 1) Emergency response;
- 2) Contingency for severe weather;
- 3) Fire Prevention;
- 4) Medical Support;
- 5) Posting of emergency telephone numbers;
- 6) Prevention of alcohol and drug abuse;
- 7) Site sanitation (housekeeping, drinking water, toilets);
- 8) Night operations and lighting (if night operations are planned);
- 9) Hazard communication program;
- 10) Welding/Cutting "Hot" work;
- 11) Electrical Safe Work Practices (Electrical LOTO/NFPA 70E);
- 12) General Electrical Safety;
- 13) Hazardous energy control (Machine LOTO);
- 14) NOT USED.

- 15) NOT USED;
- 16) NOT USED;
- 17) NOT USED;
- 18) Crane Critical lift;
- 19) Respiratory protection;
- 20) Health hazard control program;
- 21) NOT USED;
- 22) NOT USED;
- 23) Heat/Cold Stress Monitoring;
- 24) NOT USED;
- 25) Demolition plan;
- 26) NOT USED;
- 27) NOT USED;
- 28) Public (Mandatory compliance with ANSI/ASSE A10.34-2012).

- C. Submit the APP to the Contracting Officer Representative for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES 21 calendar days prior to the date of the preconstruction conference for acceptance. Work cannot proceed without an accepted APP.
- D. Once accepted by the Contracting Officer Representative, the APP and attachments will be enforced as part of the contract. Disregarding the provisions of this contract or the accepted APP will be cause for stopping of work, at the discretion of the Contracting Officer in accordance with FAR Clause 52.236-13, *Accident Prevention*, until the matter has been rectified.
- E. Once work begins, changes to the accepted APP shall be made with the knowledge and concurrence of the project superintendent, project overall designated OSHA Competent Person, and facility Contracting Officer Representative. Should any severe hazard exposure, i.e. imminent danger, become evident, stop work in the area, secure the area, and develop a plan to remove the exposure and control the hazard. Notify the Contracting Officer within 24 hours of discovery. Eliminate/remove the hazard. In the interim, take all necessary action to restore and maintain safe working conditions in order to safeguard onsite personnel, visitors, the public and the environment.

1.5 ACTIVITY HAZARD ANALYSES (AHAS):

- A. AHAs are also known as Job Hazard Analyses, Job Safety Analyses, and Activity Safety Analyses. Before beginning each work activity involving a type of work presenting hazards not experienced in previous project operations or where a new work crew or sub-contractor is to perform the work, the Contractor(s) performing that work activity shall prepare an AHA (Example electronic AHA forms can be found on the US Army Corps of Engineers web site)
- B. AHAs shall define the activities being performed and identify the work sequences, the specific anticipated hazards, site conditions, equipment, materials, and the control measures to be implemented to eliminate or reduce each hazard to an acceptable level of risk.
- C. Work shall not begin until the AHA for the work activity has been accepted by the Contracting Officer Representative and discussed with all engaged in the activity, including the Contractor, subcontractor(s), and Government on-site representatives at preparatory and initial control phase meetings.
 - 1. The names of the Competent/Qualified Person(s) required for a particular activity (for example, excavations, scaffolding, fall protection, other activities as specified by OSHA and/or other State and Local agencies) shall be identified and included in the AHA. Certification of their competency/qualification shall be submitted to the Government Designated Authority (GDA) for acceptance prior to the start of that work activity.
 - 2. The AHA shall be reviewed and modified as necessary to address changing site conditions, operations, or change of competent/qualified person(s).
 - a. If more than one Competent/Qualified Person is used on the AHA activity, a list of names shall be submitted as an attachment to the AHA. Those listed must be Competent/Qualified for the type of work involved in the AHA and familiar with current site safety issues.
 - b. If a new Competent/Qualified Person (not on the original list) is added, the list shall be updated (an administrative action not requiring an updated AHA). The new person shall acknowledge in writing that he or she has reviewed the AHA and is familiar with current site safety issues.
 - 3. Submit AHAs to the Contracting Officer Representative for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES for review at least 21 calendar days prior to the start of each phase. Subsequent AHAs as shall be formatted as amendments to the APP. The analysis should be used during daily inspections to ensure the implementation and effectiveness of the activity's safety and health controls.

4. The AHA list will be reviewed periodically (at least monthly) at the Contractor supervisory safety meeting and updated as necessary when procedures, scheduling, or hazards change.
5. Develop the activity hazard analyses using the project schedule as the basis for the activities performed. All activities listed on the project schedule will require an AHA. The AHAs will be developed by the contractor, supplier, or subcontractor and provided to the prime contractor for review and approval and then submitted to the Contracting Officer Representative.

1.6 NOT USED.

1.7 “SITE SAFETY AND HEALTH OFFICER” (SSHO) AND “COMPETENT PERSON” (CP):

- A. The Prime Contractor shall designate a minimum of one SSHO at each project site that will be identified as the SSHO to administer the Contractor's safety program and government-accepted Accident Prevention Plan. Each subcontractor shall designate a minimum of one CP in compliance with 29 CFR 1926.20 (b)(2) that will be identified as a CP to administer their individual safety programs.
- B. Further, all specialized Competent Persons for the work crews will be supplied by the respective contractor as required by 29 CFR 1926 (i.e. Asbestos, Electrical, Cranes, & Derricks, Demolition, Fall Protection, Fire Safety/Life Safety, Ladder, Rigging, Scaffolds, and Trenches/Excavations).
- C. These Competent Persons can have collateral duties as the subcontractor's superintendent and/or work crew lead persons as well as fill more than one specialized CP role (i.e. Asbestos, Electrical, Cranes, & Derricks, Demolition, Fall Protection, Fire Safety/Life Safety, Ladder, Rigging, Scaffolds, and Trenches/Excavations). However, the SSHO has be a separate qualified individual from the Prime Contractor's Superintendent and/or Quality Control Manager with duties only as the SSHO.
- D. The SSHO or an equally-qualified Designated Representative/alternate will maintain a presence on the site during construction operations in accordance with FAR Clause 52.236-6: *Superintendence by the Contractor*. CPs will maintain presence during their construction activities in accordance with above mentioned clause. A listing of the designated SSHO and all known CPs shall be submitted prior to the start of work as part of the APP with the training documentation and/or AHA as listed in Section 1.8 below.
- E. The repeated presence of uncontrolled hazards during a contractor's work operations will result in the designated CP as being deemed incompetent and result in the required removal of the employee in accordance with FAR Clause 52.236-5: Material and Workmanship, Paragraph (c).

1.8 TRAINING:

- A. The designated Prime Contractor SSHO must meet the requirements of all applicable OSHA standards and be capable (through training, experience, and qualifications) of ensuring that the

requirements of 29 CFR 1926.16 and other appropriate Federal, State and local requirements are met for the project. As a minimum the SSHO must have completed the OSHA 30-hour Construction Safety class and have five (5) years of construction industry safety experience or three (3) years if he/she possesses a Certified Safety Professional (CSP) or certified Construction Safety and Health Technician (CSHT) certification or have a safety and health degree from an accredited university or college.

- B. All designated CPs shall have completed the OSHA 30-hour Construction Safety course within the past 5 years.
- C. In addition to the OSHA 30 Hour Construction Safety Course, all CPs with high hazard work operations such as operations involving asbestos, electrical, cranes, demolition, work at heights/fall protection, fire safety/life safety, ladder, rigging, scaffolds, and trenches/excavations shall have a specialized formal course in the hazard recognition and control associated with those high hazard work operations. Documented "repeat" deficiencies in the execution of safety requirements will require retaking the requisite formal course.
- D. All other construction workers shall have the OSHA 10-hour Construction Safety Outreach course and any necessary safety training to be able to identify hazards within their work environment.
- E. Submit training records associated with the above training requirements to the Contracting Officer Representative for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES 21 calendar days prior to the date of the preconstruction conference for acceptance.
- F. Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the SSHO or his/her designated representative. As a minimum, this briefing shall include information on the site-specific hazards, construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, use of VAMC equipment, emergency procedures, accident reporting etc... Documentation shall be provided to the COR that individuals have undergone contractor's safety briefing.
- G. Ongoing safety training will be accomplished in the form of weekly documented safety meeting.

1.9 INSPECTIONS:

- A. The SSHO shall conduct frequent and regular safety inspections (daily) of the site and each of the subcontractors CPs shall conduct frequent and regular safety inspections (daily) of their work operations as required by 29 CFR 1926.20(b)(2). Each week, the SSHO shall conduct a formal documented inspection of the entire construction areas with the subcontractors' "Trade Safety and Health CPs" present in their work areas. Coordinate with, and report findings and corrective actions weekly to Contracting Officer Representative.

1.10 ACCIDENTS, OSHA 300 LOGS, AND MAN-HOURS:

- A. The prime contractor shall establish and maintain an accident reporting, recordkeeping, and analysis system to track and analyze all injuries and illnesses, high visibility incidents, and accidental property damage (both government and contractor) that occur on site. Notify the Contracting Officer Representative as soon as practical, but no more than four hours after any accident meeting the definition of a Moderate or Major incidents, High Visibility Incidents, or any weight handling and hoisting equipment accident. Within notification include contractor name; contract title; type of contract; name of activity, installation or location where accident occurred; date and time of accident; names of personnel injured; extent of property damage, if any; extent of injury, if known, and brief description of accident (to include type of construction equipment used, PPE used, etc.). Preserve the conditions and evidence on the accident site until the Contracting Officer Representative determine whether a government investigation will be conducted.
- B. Conduct an accident investigation for all Minor, Moderate and Major incidents as defined in paragraph DEFINITIONS, and property damage accidents resulting in at least \$20,000 in damages, to establish the root cause(s) of the accident. Complete the VA Form 2162 (or equivalent) , and provide the report to the Contracting Officer Representative within 5 calendar days of the accident. The Contracting Officer Representative will provide copies of any required or special forms.
- C. A summation of all man-hours worked by the contractor and associated sub-contractors for each month will be reported to the Contracting Officer monthly.
- D. A summation of all Minor, Moderate, and Major incidents experienced on site by the contractor and associated sub-contractors for each month will be provided to the Contracting Officer Representative monthly. The contractor and associated sub-contractors' OSHA 300 logs will be made available to the Contracting Officer Representative.

1.11 PERSONAL PROTECTIVE EQUIPMENT (PPE):

- A. PPE is governed in all areas by the nature of the work the employee is performing. For example, specific PPE required for performing work on electrical equipment is identified in NFPA 70E, Standard for Electrical Safety in the Workplace.
- B. Mandatory PPE includes:
 - 1. Hard Hats – With authorization to relax the requirement of hard hats, or if hard hats are not required for compliance with the OSHA regulations.
 - 2. Safety Glasses - Unless in circumstances of no eye hazards, appropriate safety glasses meeting the ANSI Z.87.1 standard must be worn by each person on site.

3. Appropriate Safety Shoes – based on the hazards present, safety shoes meeting the requirements of ASTM F2413-11 shall be worn unless there are no anticipated circumstances of foot hazards as determined by the VA COR and the Contractors SSHO.
4. Hearing protection - Use personal hearing protection at all times in designated noise hazardous areas or when performing noise hazardous tasks.

1.12 NOT USED.

1.13 NOT USED.

1.14 FIRE SAFETY

- A. Fire Safety Plan: Establish and maintain a site-specific fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to Contracting Officer Representative for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES. This plan may be an element of the Accident Prevention Plan.
- B. Site and Building Access: Maintain free and unobstructed access to facility emergency services and for fire, police and other emergency response forces in accordance with NFPA 241.
- C. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings and new construction by distances in accordance with NFPA 241. For small facilities with less than 6 m (20 feet) exposing overall length, separate by 3m (10 feet).
- D. NOT USED.
- E. Temporary Heating and Electrical: Install, use and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.
- F. Means of Egress: Do not block exiting for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with Contracting Officer.
- G. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily.
- H. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.
- I. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.
- J. NOT USED.
- K. NOT USED.

- L. NOT USED.
- M. NOT USED.
- N. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with COR. Obtain permits from COR at least 24 hours in advance.
- O. NOT USED.
- P. Smoking: Smoking is prohibited on the VA grounds.
- Q. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.

1.15 ELECTRICAL

- A. All electrical work shall comply with NFPA 70 (NEC), NFPA 70B, NFPA 70E, 29 CFR Part 1910 Subpart J – General Environmental Controls, 29 CFR Part 1910 Subpart S – Electrical, and 29 CFR 1926 Subpart K in addition to other references required by contract.
- B. All qualified persons performing electrical work under this contract shall be licensed journeyman or master electricians. All apprentice electricians performing under this contract shall be deemed unqualified persons unless they are working under the immediate supervision of a licensed electrician or master electrician.
- C. All electrical work will be accomplished de-energized and in the Electrically Safe Work Condition (refer to NFPA 70E for Work Involving Electrical Hazards, including Exemptions to Work Permit). Any Contractor, subcontractor or temporary worker who fails to fully comply with this requirement is subject to immediate termination in accordance with FAR clause 52.236-5(c). Only in rare circumstance where achieving an electrically safe work condition prior to beginning work would increase or cause additional hazards, or is infeasible due to equipment design or operational limitations is energized work permitted. The Chief Engineer and Contracting Officer Representative with approval of the Medical Center Director will make the determination if the circumstances would meet the exception outlined above. An AHA and permit specific to energized work activities will be developed, reviewed, and accepted by the VA prior to the start of that activity.
 - 1. Development of a Hazardous Electrical Energy Control Procedure is required prior to de-energization. A single Simple Lockout/Tagout Procedure for multiple work operations can only be used for work involving qualified person(s) de-energizing one set of conductors or circuit part source. Task specific Complex Lockout/Tagout Procedures are required at all other times.
 - 2. Verification of the absence of voltage after de-energization and lockout/tagout is considered “energized electrical work” (live work) under NFPA 70E, and shall only be performed by

qualified persons wearing appropriate shock protective (voltage rated) gloves and arc rate personal protective clothing and equipment, using Underwriters Laboratories (UL) tested and appropriately rated contact electrical testing instruments or equipment appropriate for the environment in which they will be used.

3. Personal Protective Equipment (PPE) and electrical testing instruments will be readily available for inspection by the Chief Engineer and Contracting Officer Representative.
- D. Before beginning any electrical work, an Activity Hazard Analysis (AHA) will be conducted to include Shock Hazard and Arc Flash Hazard analyses (NFPA Tables can be used only as a last alternative and it is strongly suggested a full Arc Flash Hazard Analyses be conducted). Work shall not begin until the AHA for the work activity and permit for energized work has been reviewed and accepted by the Contracting Officer Representative and discussed with all engaged in the activity, including the Contractor, subcontractor(s), and Government on-site representatives at preparatory and initial control phase meetings.
 - E. Ground-fault circuit interrupters. GFCI protection shall be provided where an employee is operating or using cord- and plug-connected tools related to construction activity supplied by 125-volt, 15-, 20-, or 30- ampere circuits. Where employees operate or use equipment supplied by greater than 125-volt, 15-, 20-, or 30- ampere circuits, GFCI protection or an assured equipment grounding conductor program shall be implemented in accordance with NFPA 70E - 2015, Chapter 1, Article 110.4(C)(2)..

1.16 NOT USED.

1.17 NOT USED.

1.18 NOT USED

1.19 CRANES

- A. All crane work shall comply with 29 CFR 1926 Subpart CC.
- B. Prior to operating a crane, the operator must be licensed, qualified or certified to operate the crane. Thus, all the provisions contained with Subpart CC are effective and there is no "Phase In" date.
- C. A detailed lift plan for all lifts shall be submitted to the COR 21 days prior to the scheduled lift complete with route for truck carrying load, crane load analysis, siting of crane and path of swing and all other elements of a critical lift plan where the lift meets the definition of a critical lift. Critical lifts require a more comprehensive lift plan to minimize the potential of crane failure and/or catastrophic loss. The plan must be reviewed and accepted by the General Contractor before being submitted to the VA for review. The lift will not be allowed to proceed without prior acceptance of this document.

- D. Crane operators shall not carry loads
 - 1. over the general public or VAMC personnel
 - 2. over any occupied building unless
 - a. the top two floors are vacated
 - b. or overhead protection with a design live load of 300 psf is provided

1.20 CONTROL OF HAZARDOUS ENERGY (LOCKOUT/TAGOUT)

- A. All installation, maintenance, and servicing of equipment or machinery shall comply with 29 CFR 1910.147 except for specifically referenced operations in 29 CFR 1926 such as concrete & masonry equipment [1926.702(j)], heavy machinery & equipment [1926.600(a)(3)(i)], and process safety management of highly hazardous chemicals (1926.64). Control of hazardous electrical energy during the installation, maintenance, or servicing of electrical equipment shall comply with Section 1.15 to include NFPA 70E and other VA specific requirements discussed in the section.

1.21 NOT USED.

1.22 WELDING AND CUTTING

- A. As specified in section 1.14, Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with COR. Obtain permits from COR at least 24 hours in advance.

1.23 LADDERS

- A. All Ladder use shall comply with 29 CFR 1926 Subpart X.
- B. All portable ladders shall be of sufficient length and shall be placed so that workers will not stretch or assume a hazardous position.
- C. Manufacturer safety labels shall be in place on ladders.
- D. Step Ladders shall not be used in the closed position.
- E. Top steps or cap of step ladders shall not be used as a step.
- F. Ladders shall be inspected for visible defects on a daily basis and after any occurrence that could affect their safe use. Broken or damaged ladders shall be immediately tagged "DO NOT USE," or with similar wording, and withdrawn from service until restored to a condition meeting their original design.

1.24 NOT USED.

--- E N D ---

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the requirements for the management of non-hazardous building construction and demolition waste.
- B. Waste disposal in landfills shall be minimized to the greatest extent possible. Of the inevitable waste that is generated, as much of the waste material as economically feasible shall be salvaged, recycled or reused.
- C. Contractor shall use all reasonable means to divert construction and demolition waste from landfills and incinerators, and facilitate their salvage and recycle not limited to the following:
 - 1. Waste Management Plan development and implementation.
 - 2. Techniques to minimize waste generation.
 - 3. Sorting and separating of waste materials.
 - 4. Salvage of existing materials and items for reuse or resale.
 - 5. Recycling of materials that cannot be reused or sold.
 - 6. At a minimum the following waste categories shall be diverted from landfills:
 - a. Inerts (eg, concrete, masonry and asphalt).
 - b. Clean dimensional wood and palette wood.
 - c. Engineered wood products (plywood, particle board and I-joists, etc).
 - d. Metal products (eg, steel, wire, beverage containers, copper, etc).
 - e. Cardboard, paper and packaging.

1.2 RELATED WORK

- A. Section 02 41 00, DEMOLITION.
- B. Section 01 00 00, GENERAL REQUIREMENTS.

1.3 QUALITY ASSURANCE

- A. Contractor shall practice efficient waste management when sizing, cutting and installing building products. Processes shall be employed to ensure the generation of as little waste as possible. Construction /Demolition waste includes products of the following:
 - 1. Excess or unusable construction materials.
 - 2. Packaging used for construction products.
 - 3. Poor planning and/or layout.
 - 4. Construction error.
 - 5. Over ordering.
 - 6. Weather damage.
 - 7. Contamination.
 - 8. Mishandling.

9. Breakage.

- B. Establish and maintain the management of non-hazardous building construction and demolition waste set forth herein. Conduct a site assessment to estimate the types of materials that will be generated by demolition and construction.
- C. Contractor shall develop and implement procedures to recycle construction and demolition waste to a minimum of 25 percent.
- D. Contractor shall be responsible for implementation of any special programs involving rebates or similar incentives related to recycling. Any revenues or savings obtained from salvage or recycling shall accrue to the contractor.
- E. Contractor shall provide all demolition, removal and legal disposal of materials. Contractor shall ensure that facilities used for recycling, reuse and disposal shall be permitted for the intended use to the extent required by local, state, federal regulations.
- F. Contractor shall assign a specific area to facilitate separation of materials for reuse, salvage, recycling, and return. Such areas are to be kept neat and clean and clearly marked in order to avoid contamination or mixing of materials.
- G. Contractor shall provide on-site instructions and supervision of separation, handling, salvaging, recycling, reuse and return methods to be used by all parties during waste generating stages.
- H. Record on daily reports any problems in complying with laws, regulations and ordinances with corrective action taken.

1.4 TERMINOLOGY

- A. Class III Landfill: A landfill that accepts non-hazardous resources such as household, commercial and industrial waste resulting from construction, remodeling, repair and demolition operations.
- B. Clean: Untreated and unpainted; uncontaminated with adhesives, oils, solvents, mastics and like products.
- C. Construction and Demolition Waste: Includes all non-hazardous resources resulting from construction, remodeling, alterations, repair and demolition operations.
- D. Dismantle: The process of parting out a building in such a way as to preserve the usefulness of its materials and components.
- E. Disposal: Acceptance of solid wastes at a legally operating facility for the purpose of land filling (includes Class III landfills and inert fills).
- F. Inert Backfill Site: A location, other than inert fill or other disposal facility, to which inert materials are taken for the purpose of filling an excavation, shoring or other soil engineering operation.
- G. Inert Fill: A facility that can legally accept inert waste, such as asphalt and concrete exclusively for the purpose of disposal.
- H. Inert Solids/Inert Waste: Non-liquid solid resources including, but not limited to, soil and concrete that does not contain hazardous waste or soluble pollutants at concentrations in excess of water-

quality objectives established by a regional water board, and does not contain significant quantities of decomposable solid resources.

- I. Mixed Debris: Loads that include commingled recyclable and non-recyclable materials generated at the construction site.
- J. Mixed Debris Recycling Facility: A solid resource processing facility that accepts loads of mixed construction and demolition debris for the purpose of recovering re-usable and recyclable materials and disposing non-recyclable materials.
- K. Permitted Waste Hauler: A company that holds a valid permit to collect and transport solid wastes from individuals or businesses for the purpose of recycling or disposal.
- L. Recycling: The process of sorting, cleansing, treating, and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating or thermally destroying solid waste.
 - 1. On-site Recycling – Materials that are sorted and processed on site for use in an altered state in the work, i.e. concrete crushed for use as a sub-base in paving.
 - 2. Off-site Recycling – Materials hauled to a location and used in an altered form in the manufacture of new products.
- M. Recycling Facility: An operation that can legally accept materials for the purpose of processing the materials into an altered form for the manufacture of new products. Depending on the types of materials accepted and operating procedures, a recycling facility may or may not be required to have a solid waste facilities permit or be regulated by the local enforcement agency.
- N. Reuse: Materials that are recovered for use in the same form, on-site or off-site.
- O. Return: To give back reusable items or unused products to vendors for credit.
- P. Salvage: To remove waste materials from the site for resale or re-use by a third party.
- Q. Source-Separated Materials: Materials that are sorted by type at the site for the purpose of reuse and recycling.
- R. Solid Waste: Materials that have been designated as non-recyclable and are discarded for the purposes of disposal.
- S. Transfer Station: A facility that can legally accept solid waste for the purpose of temporarily storing the materials for re-loading onto other trucks and transporting them to a landfill for disposal, or recovering some materials for re-use or recycling.

1.5 SUBMITTALS

- A. In accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, and SAMPLES, furnish the following:
- B. Prepare and submit to the COR a written demolition debris management plan. The plan shall include, but not be limited to, the following information:
 - 1. Procedures to be used for debris management.
 - 2. Techniques to be used to minimize waste generation.

3. Analysis of the estimated job site waste to be generated:
 - a. List of each material and quantity to be salvaged, reused, recycled.
 - b. List of each material and quantity proposed to be taken to a landfill.
4. Detailed description of the Means/Methods to be used for material handling.
 - a. On site: Material separation, storage, protection where applicable.
 - b. Off site: Transportation means and destination. Include list of materials.
 - 1) Description of materials to be site-separated and self-hauled to designated facilities.
 - 2) Description of mixed materials to be collected by designated waste haulers and removed from the site.
 - a) The names and locations of mixed debris reuse and recycling facilities or sites.
 - b) The names and locations of trash disposal landfill facilities or sites.
 - c) Documentation that the facilities or sites are approved to receive the materials.
- C. Designated Manager responsible for instructing personnel, supervising, documenting and administer over meetings relevant to the Waste Management Plan.
- D. Monthly summary of construction and demolition debris diversion and disposal, quantifying all materials generated at the work site and disposed of or diverted from disposal through recycling.
- E. Target waste diversion rate by material and an overall diversion rate.
- F. Final report documenting the results of implementation of the preconstruction waste management plan.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced by the basic designation only. In the event that criteria requirements conflict, the most stringent requirements shall be met.
- B. U.S. Green Building Council (USGBC): LEED Green Building Rating System for New Construction
 1. Green Building Initiative (GBI): Green Globes for New Construction 2019

1.7 RECORDS

- A. Maintain records to document the quantity of waste generated; the quantity of waste diverted through sale, reuse, or recycling; and the quantity of waste disposed by landfill or incineration. Records shall be kept in accordance with the LEED Reference Guide and LEED Template or Green Globes for New Construction 2019 Technical Reference Manual.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. List of each material and quantity to be salvaged, recycled, reused.
- A. List of each material and quantity proposed to be taken to a landfill.
- B. Material tracking data: Receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices, net total costs or savings.

PART 3 - EXECUTION

3.1 COLLECTION

- A. Provide all necessary containers, bins and storage areas to facilitate effective waste management.
- B. Clearly identify containers, bins and storage areas so that recyclable materials are separated from trash and can be transported to respective recycling facility for processing.
- C. Hazardous wastes shall be separated, stored, disposed of according to local, state, federal regulations.

3.2 DISPOSAL

- A. Contractor shall be responsible for transporting and disposing of materials that cannot be delivered to a source-separated or mixed materials recycling facility to a transfer station or disposal facility that can accept the materials in accordance with state and federal regulations.
- B. Construction or demolition materials with no practical reuse or that cannot be salvaged or recycled shall be disposed of at a landfill or incinerator.

3.3 REPORT

- A. With each application for progress payment, submit a summary of construction and demolition debris diversion and disposal including beginning and ending dates of period covered.
- B. Quantify all materials diverted from landfill disposal through salvage or recycling during the period with the receiving parties, dates removed, transportation costs, weight tickets, manifests, invoices. Include the net total costs or savings for each salvaged or recycled material.
- C. Quantify all materials disposed of during the period with the receiving parties, dates removed, transportation costs, weight tickets, tipping fees, manifests, invoices. Include the net total costs for each disposal.

--- E N D ---

**SECTION 02 41 00
DEMOLITION**

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. This section specifies demolition and removal of utilities, other structures and debris.

1.2 RELATED WORK:

- A. Safety Requirements: Section 01 35 26 Safety Requirements Article, ACCIDENT PREVENTION PLAN (APP).
- B. Disconnecting utility services prior to demolition: Section 01 00 00, GENERAL REQUIREMENTS.
- C. Construction Waste Management: Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT.
- D. Infectious Control: Section 01 35 26, SAFETY REQUIREMENTS.

1.3 PROTECTION:

- A. Perform demolition in such manner as to eliminate hazards to persons and property; to minimize interference with use of adjacent areas, utilities and structures or interruption of use of such utilities; and to provide free passage to and from such adjacent areas of structures. Comply with requirements of GENERAL CONDITIONS Article, ACCIDENT PREVENTION.
- B. Provide safeguards, including warning signs, barricades, temporary fences, warning lights, and other similar items that are required for protection of all personnel during demolition and removal operations. Comply with requirements of Section 01 00 00, GENERAL REQUIREMENTS, Article PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES AND IMPROVEMENTS.
- C. Prevent spread of flying particles and dust. Sprinkle rubbish and debris with water to keep dust to a minimum. Do not use water if it results in hazardous or objectionable condition such as, but not limited to: ice, flooding, or pollution.
- F. NOT USED.
- G. Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The contractor shall take necessary precautions to avoid damages to existing items to remain in place, to be reused, or to remain the property of the Medical Center; any damaged items shall be repaired or replaced as approved by the COR. The Contractor shall coordinate the work of this section with all other work.
- H. The work shall comply with the requirements of Section 01 00 00, GENERAL REQUIREMENTS and Section 01 35 26, SAFETY REQUIREMENTS.

1.4 UTILITY SERVICES:

- A. The Contractor shall coordinate with the utility provider to demolish and remove outside utility service lines needing to be removed or reinstalled under the project.

- B. Remove abandoned outside utility lines that would interfere with installation of new utility lines and new construction.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 DEMOLITION:

- A. Completely demolish and remove all appurtenances related or connected thereto, as noted below:
 - 1. As required for installation of new utility service lines.
- B. Debris, including concrete, metals and similar materials shall become property of Contractor and shall be disposed of by him daily, off the Medical Center to avoid accumulation at the demolition site. Contractor shall dispose debris in compliance with applicable federal, state or local permits, rules and/or regulations.
- C. Remove and legally dispose of all materials. Materials removed shall become property of contractor and shall be disposed of in compliance with applicable federal, state or local permits, rules and/or regulations.
- D. Remove existing utilities as indicated or uncovered by work and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the COR. When utility lines are encountered that are not indicated on the drawings, the COR shall be notified prior to further work in that area.

3.2 CLEAN-UP:

- A. On completion of work of this section and after removal of all debris, leave site in clean condition satisfactory to COR. Clean-up shall include off the Medical Center property disposal of all items and materials not required to remain property of the Government as well as all debris and rubbish resulting from demolition operations.

--- E N D ---

**SECTION 26 05 11
REQUIREMENTS FOR ELECTRICAL INSTALLATIONS**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section applies to all sections of Division 26.
- B. Furnish and install electrical systems, materials, equipment, and accessories in accordance with the specifications and drawings. Capacities and ratings of electrical distribution system equipment, devices and other items and arrangements for the specified items are shown on the drawings.
- C. Electrical service entrance equipment and arrangements for temporary and permanent connections to the electric utility company's system shall conform to the electric utility company's requirements. Coordinate fuses, metering, circuit breakers and relays with the electric utility company's system, and obtain electric utility company approval for sizes and settings of these devices.
- D. Conductor ampacities specified or shown on the drawings are based on copper conductors, with the conduit and raceways sized per NEC. Aluminum conductors are prohibited.

1.2 MINIMUM REQUIREMENTS

- A. The latest International Building Code (IBC), Underwriters Laboratories, Inc. (UL), Institute of Electrical and Electronics Engineers (IEEE), and National Fire Protection Association (NFPA) codes and standards are the minimum requirements for materials and installation.
- B. The drawings and specifications shall govern in those instances where requirements are greater than those stated in the above codes and standards.

1.3 TEST STANDARDS

- A. All materials and equipment shall be listed, labeled, or certified by a Nationally Recognized Testing Laboratory (NRTL) to meet Underwriters Laboratories, Inc. (UL), standards where test standards have been established. Materials and equipment which are not covered by UL standards will be accepted, providing that materials and equipment are listed, labeled, certified or otherwise determined to meet the safety requirements of a NRTL. Materials and equipment which no NRTL accepts, certifies, lists, labels, or determines to be safe, will be considered if inspected or tested in accordance with national industrial standards, such as ANSI, NEMA, and NETA. Evidence of compliance shall include certified test reports and definitive shop drawings.
- B. Definitions:
 - 1. Listed: Materials and equipment included in a list published by an organization that is acceptable to the Authority Having Jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production or listed materials and equipment or periodic evaluation of services, and whose listing states that the materials and equipment

either meets appropriate designated standards or has been tested and found suitable for a specified purpose.

2. Labeled: Materials and equipment to which has been attached a label, symbol, or other identifying mark of an organization that is acceptable to the Authority Having Jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled materials and equipment, and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.
3. Certified: Materials and equipment which:
 - a. Have been tested and found by a NRTL to meet nationally recognized standards or to be safe for use in a specified manner.
 - b. Are periodically inspected by a NRTL.
 - c. Bear a label, tag, or other record of certification.
4. Nationally Recognized Testing Laboratory: Testing laboratory which is recognized and approved by the Secretary of Labor in accordance with OSHA regulations.

1.4 QUALIFICATIONS (PRODUCTS AND SERVICES)

- A. Manufacturer's Qualifications: The manufacturer shall regularly and currently produce, as one of the manufacturer's principal products, the materials and equipment specified for this project, and shall have manufactured the materials and equipment for at least three years.
- B. Product Qualification:
 1. Manufacturer's materials and equipment shall have been in satisfactory operation, on three installations of similar size and type as this project, for at least three years.
 2. The Government reserves the right to require the Contractor to submit a list of installations where the materials and equipment have been in operation before approval.
- C. Service Qualifications: There shall be a permanent service organization maintained or trained by the manufacturer which will render satisfactory service to this installation within four hours of receipt of notification that service is needed. Submit name and address of service organizations.

1.5 APPLICABLE PUBLICATIONS

- A. Applicable publications listed in all Sections of Division 26 shall be the latest issue, unless otherwise noted.
- B. Products specified in all sections of Division 26 shall comply with the applicable publications listed in each section.

1.6 MANUFACTURED PRODUCTS

- A. Materials and equipment furnished shall be of current production by manufacturers regularly engaged in the manufacture of such items, and for which replacement parts shall be available. Materials and equipment furnished shall be new, and shall have superior quality and freshness.
- B. When more than one unit of the same class or type of materials and equipment is required, such units shall be the product of a single manufacturer.

- C. Equipment Assemblies and Components:
 - 1. Components of an assembled unit need not be products of the same manufacturer.
 - 2. Manufacturers of equipment assemblies, which include components made by others, shall assume complete responsibility for the final assembled unit.
 - 3. Components shall be compatible with each other and with the total assembly for the intended service.
 - 4. Constituent parts which are similar shall be the product of a single manufacturer.
- D. Factory wiring and terminals shall be identified on the equipment being furnished and on all wiring diagrams.

1.7 VARIATIONS FROM CONTRACT REQUIREMENTS

- A. Where the Government or the Contractor requests variations from the contract requirements, the connecting work and related components shall include, but not be limited to additions or changes to branch circuits, circuit protective devices, conduits, wire, feeders, controls, panels and installation methods.

1.8 MATERIALS AND EQUIPMENT PROTECTION

- A. Materials and equipment shall be protected during shipment and storage against physical damage, vermin, dirt, corrosive substances, fumes, moisture, cold and rain.
 - 1. Store materials and equipment indoors in clean dry space with uniform temperature to prevent condensation.
 - 2. During installation, equipment shall be protected against entry of foreign matter, and be vacuum-cleaned both inside and outside before testing and operating. Compressed air shall not be used to clean equipment. Remove loose packing and flammable materials from inside equipment.
 - 3. Damaged equipment shall be repaired or replaced, as determined by the COR.
 - 4. Painted surfaces shall be protected with factory installed removable heavy kraft paper, sheet vinyl or equal.
 - 5. Damaged paint on equipment shall be refinished with the same quality of paint and workmanship as used by the manufacturer so repaired areas are not obvious.

1.9 WORK PERFORMANCE

- A. All electrical work shall comply with requirements of the latest NFPA 70 (NEC), NFPA 70B, NFPA 70E, NFPA 99, NFPA 110, OSHA Part 1910 subpart J – General Environmental Controls, OSHA Part 1910 subpart K – Medical and First Aid, and OSHA Part 1910 subpart S – Electrical, in addition to other references required by contract.
- B. Job site safety and worker safety is the responsibility of the Contractor.
- C. Electrical work shall be accomplished with all affected circuits or equipment de-energized. However, energized electrical work may be performed only for the non-destructive and non-invasive diagnostic testing(s), or when scheduled outage poses an imminent hazard to patient

care, safety, or physical security. In such case, all aspects of energized electrical work, such as the availability of appropriate/correct personal protective equipment (PPE) and the use of PPE, shall comply with the latest NFPA 70E, as well as the following requirements:

1. Only Qualified Person(s) shall perform energized electrical work. Supervisor of Qualified Person(s) shall witness the work of its entirety to ensure compliance with safety requirements and approved work plan.
 2. At least three weeks before initiating any energized electrical work, the Contractor and the Qualified Person(s) who is designated to perform the work shall visually inspect, verify and confirm that the work area and electrical equipment can safely accommodate the work involved.
 3. At least three weeks before initiating any energized electrical work, the Contractor shall develop and submit a job specific work plan, and energized electrical work request to the COR, and Medical Center's Chief Engineer or his/her designee. At the minimum, the work plan must include relevant information such as proposed work schedule, area of work, description of work, name(s) of Supervisor and Qualified Person(s) performing the work, equipment to be used, procedures to be used on and near the live electrical equipment, barriers to be installed, safety equipment to be used, and exit pathways.
 4. Energized electrical work shall begin only after the Contractor has obtained written approval of the work plan, and the energized electrical work request from the COR and Medical Center's Chief Engineer or his/her designee. The Contractor shall make these approved documents present and available at the time and place of energized electrical work.
 5. Energized electrical work shall begin only after the Contractor has invited and received acknowledgment from the COR and Medical Center's Chief Engineer or his/her designee to witness the work.
- D. For work that affects existing electrical systems, arrange, phase and perform work to assure minimal interference with normal functioning of the facility. Refer to Article OPERATIONS AND STORAGE AREAS under Section 01 00 00, GENERAL REQUIREMENTS.
- E. New work shall be installed and connected to existing work neatly, safely and professionally. Disturbed or damaged work shall be replaced or repaired to its prior conditions, as required by Section 01 00 00, GENERAL REQUIREMENTS.
- F. Coordinate location of equipment and conduit with other trades to minimize interference.

1.10 EQUIPMENT INSTALLATION AND REQUIREMENTS

- A. Equipment location shall be as close as practical to locations shown on the drawings.
- B. Working clearances shall not be less than specified in the NEC.
- C. Inaccessible Equipment:

1. Where the Government determines that the Contractor has installed equipment not readily accessible for operation and maintenance, the equipment shall be removed and reinstalled as directed at no additional cost to the Government.
 2. "Readily accessible" is defined as being capable of being reached quickly for operation, maintenance, or inspections without the use of ladders, or without climbing or crawling under or over obstacles such as, but not limited to, motors, pumps, belt guards, transformers, piping, ductwork, conduit and raceways.
- D. Electrical service entrance equipment and arrangements for temporary and permanent connections to the electric utility company's system shall conform to the electric utility company's requirements. Coordinate fuses, meter, circuit breakers and relays with the electric utility company's system, and obtain electric utility company approval for sizes and settings of these devices.

1.11 EQUIPMENT IDENTIFICATION

- A. In addition to the requirements of the NEC, install an identification sign which clearly indicates information required for use and maintenance of the electrical equipment.
- B. Identification signs for Normal Power System equipment shall be laminated black phenolic resin with a white core with engraved lettering. Lettering shall be a minimum of 12 mm (1/2 inch) high. Identification signs shall indicate equipment designation, rated bus amperage, voltage, number of phases, number of wires, and type of EES power branch as applicable. Secure nameplates with screws.
- C. Install adhesive arc flash warning labels on all equipment as required by the latest NFPA 70E. Label shall show specific and correct information for specific equipment based on its arc flash calculations. Label shall show the followings:
 1. Nominal system voltage.
 2. Equipment/bus name, date prepared, and manufacturer name and address.
 3. Arc flash boundary.
 4. Available arc flash incident energy and the corresponding working distance.
 5. Minimum arc rating of clothing.
 6. Site-specific level of PPE.

1.12 SUBMITTALS

- A. Submit to the COR in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. The Government's approval shall be obtained for all materials and equipment before delivery to the job site. Delivery, storage or installation of materials and equipment which has not had prior approval will not be permitted.
- C. Catalog cuts submitted for approval shall be legible and clearly identify specific materials and equipment being submitted.

- D. Submittals for individual systems and equipment assemblies which consist of more than one item or component shall be made for the system or assembly as a whole. Partial submittals will not be considered for approval.
1. Mark the submittals, "SUBMITTED UNDER SECTION _____".
 2. Submittals shall be marked to show specification reference including the section and paragraph numbers.
 3. Submit each section separately.
- E. The submittals shall include the following:
1. Information that confirms compliance with contract requirements. Include the manufacturer's name, model or catalog numbers, catalog information, technical data sheets, shop drawings, manuals, pictures, nameplate data, and test reports as required.
 2. Elementary and interconnection wiring diagrams for communication and signal systems, control systems, and equipment assemblies. All terminal points and wiring shall be identified on wiring diagrams.
 3. Parts list which shall include information for replacement parts and ordering instructions, as recommended by the equipment manufacturer.
- F. Maintenance and Operation Manuals:
1. Submit as required for systems and equipment specified in the technical sections. Furnish information in an Adobe electronic format and hardcopies in binders or an approved equivalent.
 2. Inscribe the following identification on the cover: the words "MAINTENANCE AND OPERATION MANUAL," the name and location of the system, material, equipment, building, name of Contractor, and VA contract name and VA project number with VA Project Title. Include in the manual the names, addresses, and telephone numbers of each subcontractor installing the system or equipment and the local representatives for the material or equipment.
 3. Provide a table of contents and assemble the manual to conform to the table of contents, with tab sheets placed before instructions covering the subject. The instructions shall be legible and easily read, with large sheets of drawings folded in.
 4. The manuals shall include:
 - a. Internal and interconnecting wiring and control diagrams with data to explain detailed operation and control of the equipment.
 - b. A control sequence describing start-up, operation, and shutdown.
 - c. Description of the function of each principal item of equipment.
 - d. Installation instructions.
 - e. Safety precautions for operation and maintenance.
 - f. Diagrams and illustrations.

- g. Periodic maintenance and testing procedures and frequencies, including replacement parts numbers.
 - h. Performance data.
 - i. Pictorial "exploded" parts list with part numbers. Emphasis shall be placed on the use of special tools and instruments. The list shall indicate sources of supply, recommended spare and replacement parts, and name of servicing organization.
 - j. List of factory approved or qualified permanent servicing organizations for equipment repair and periodic testing and maintenance, including addresses and factory certification qualifications.
 - k. All approved submittals.
- G. Approvals will be based on complete submission of shop drawings, manuals, test reports, certifications, and samples as applicable.

1.13 SINGULAR NUMBER

- A. Where any device or part of equipment is referred to in these specifications in the singular number (e.g., "the switch"), this reference shall be deemed to apply to as many such devices as are required to complete the installation as shown on the drawings.

1.14 NOT USED.

1.15 ACCEPTANCE CHECKS AND TESTS

- A. The Contractor shall furnish the instruments, materials, and labor for tests.
- B. Where systems are comprised of components specified in more than one section of Division 26, the Contractor shall coordinate the installation, testing, and adjustment of all components between various manufacturer's representatives and technicians so that a complete, functional, and operational system is delivered to the Government.
- C. When test results indicate any defects, the Contractor shall repair or replace the defective materials or equipment, and repeat the tests for the equipment. Repair, replacement, and re-testing shall be accomplished at no additional cost to the Government.

1.16 WARRANTY

- A. All work performed and all equipment and material furnished under this Division shall be free from defects and shall remain so for a period of one year from the date of acceptance of the entire installation by the Contracting Officer for the Government.

1.17 INSTRUCTION

- A. Instruction to designated Government personnel shall be provided for the particular equipment or system as required in each associated technical specification section.
- B. Furnish the services of competent and factory-trained instructors to give full instruction in the adjustment, operation, and maintenance of the specified equipment and system, including pertinent safety requirements. Instructors shall be thoroughly familiar with all aspects of the

installation, and shall be factory-trained in operating theory as well as practical operation and maintenance procedures.

- C. A training schedule shall be developed and submitted by the Contractor and approved by the COR at least 30 days prior to the planned training.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

---END---

**SECTION 26 05 12
ELECTRICAL DEMOLITION**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electrical demolition.
- B. Construction Phasing.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify field measurements and circuiting arrangements are as shown on Drawings.
- B. Demolition drawings are based on casual field observation and existing record documents.
- C. Report discrepancies to COR before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.

3.2 PREPARATION

- A. Disconnect electrical systems to be removed.
- B. Provide temporary wiring and connections to maintain existing systems in service during construction.
- C. Existing 25 kV Switchgear: Disable system to make switchovers and connections.
 - 1. Obtain permission from Owner at least three weeks before disabling switchgear
 - 2. All 25 kV switching operations to be completed by VA staff only. Coordinate energizing and de-energizing of equipment with the VA engineering staff.

3.3 DEMOLITION EXISTING ELECTRICAL WORK

- A. Remove the existing 25 kV switch as shown on the drawings and dispose of properly. Turn over all fuses and other accessories to the VA.
- B. All equipment and materials removed shall become the property of the contractor unless claimed by the VA.

3.4 CONSTRUCTION PHASING

- A. All work shall be phased to create minimal electrical service disruption to the daily operations of the hospital

- B. Switchover and testing work may need to be completed outside of normal work hours to keep disruption to hospital operations minimized.
- B. Phasing schedules are to be submitted to VA project engineer at least three weeks prior to any power outages for approval. Outages are to be scheduled at least three weeks prior to the outage date with the COR.

3.5 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment which remain or are to be reused.

3.6 MATERIAL DISPOSAL

- A. Material and equipment deemed salvageable by the Owner shall remain the property of Owner. Contractor shall dismantle these items to manageable size and deliver to designated storage area on site. The Owner shall have first right of refusal on all material and equipment.
- B. All other materials and equipment shall become property of Contractor and must be removed from site and disposed of by approved method.

--- END ---

**SECTION 26 05 13
MEDIUM-VOLTAGE CABLES**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the furnishing, installation, and connection of medium-voltage cables, indicated as cable or cables in this section, and medium-voltage cable splices and terminations.

1.2 RELATED WORK

- A. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS: Requirements that apply to all sections of Division 26.
- B. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path for possible ground fault currents.

1.3 QUALITY ASSURANCE

- A. Quality Assurance shall be in accordance with Paragraph, QUALIFICATIONS (PRODUCTS AND SERVICES) in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

1.4 FACTORY TESTS

- A. Factory Tests shall be required.
- B. Factory Tests shall be in accordance with Paragraph, MANUFACTURED PRODUCTS in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

1.5 SUBMITTALS

- A. Submit in accordance with Paragraph, SUBMITTALS in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, and the following requirements:
 - 1. Shop Drawings:
 - a. Submit sufficient information to demonstrate compliance with drawings and specifications.
 - b. Submit the following data for approval:
 - 1) Complete electrical ratings.
 - 2) Installation instructions.
 - 2. Certifications:
 - a. Factory Test Reports: Submit certified factory production test reports for approval.
 - b. Field Test Reports: Submit field test reports for approval.
 - c. Compatibility: Submit a certificate from the cable manufacturer that the splices and terminations are approved for use with the cable.
 - d. Two weeks prior to final inspection, submit the following.
 - 1) Certification by the manufacturer that the cables, splices, and terminations conform to the requirements of the drawings and specifications.
 - 2) Certification by the Contractor that the cables, splices, and terminations have been properly installed and tested.

- 3) Certification by the Contractor that each splice and each termination were completely installed in a single continuous work period by a single qualified worker without any overnight interruption.
- 3. Qualified Worker Approval:
 - a. Qualified workers who install cables, splices, and terminations shall have a minimum of five years of experience splicing and terminating cables, including experience with the materials in the approved splices and terminations. Qualified workers who perform cable testing shall have a minimum of five year of experience performing electrical testing of medium-voltage cables, including the ability to understand, interpret test results and develop test report.
 - b. Furnish satisfactory proof of such experience for each qualified worker who splices or terminates the cables.
- 4. Electric Utility Company Approval:
 - a. Prior to construction, obtain written approval from the electric utility company for the following items:
 - 1) Service entrance cables, splices, and terminations.
 - 2) A list of qualified workers who will install, splice, and terminate the service entrance cables.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.
- B. American Society for Testing and Materials (ASTM):
 - B3-13..... Standard Specification for Soft or Annealed Copper Wire
- C. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
 - 48-09 Test Procedures and Requirements for Alternating-Current Cable Terminations Used on Shielded Cables Having Laminated Insulation Rated 2.5 kV through 765 kV or Extruded Insulation Rated 2.5 kV through 500 kV
 - 386-06 Separable Insulated Connector Systems for Power Distribution Systems above 600 V
 - 400-12 Guide for Field Testing and Evaluation of the Insulation of Shielded Power Cable Systems
 - 400.2-13 Guide for Field Testing of Shielded Power Cable Systems Using Very Low Frequency (VLF)
 - 404-12 Extruded and Laminated Dielectric Shielded Cable Joints Rated 2500 V to 500,000 V

- D. National Electrical Manufacturers Association (NEMA):
 - WC 71-14 Non-Shielded Cables Rated 2001-5000 Volts for Use in the
Distribution of Electric Energy
 - WC 74-12 5-46 KV Shielded Power Cable for Use in the Transmission and
Distribution of Electric Energy
- E. National Fire Protection Association (NFPA):
 - 70-17 National Electrical Code (NEC)
- F. Underwriters Laboratories (UL):
 - 1072-06 Medium-Voltage Power Cables

1.7 SHIPMENT AND STORAGE

- A. Cable shall be shipped on reels such that it is protected against physical, mechanical and environmental damage. Each end of each length of cable shall be hermetically sealed with manufacturer's end caps and securely attached to the reel.
- B. Cable stored and/or cut on site shall have the ends turned down, and sealed with cable manufacturer's standard cable end seals, or field-installed heat-shrink cable end seals.

PART 2 - PRODUCTS

2.1 CABLE

- A. Cable shall be in accordance with ASTM, IEEE, NEC, NEMA and UL, and as shown on the drawings.
- B. Single conductor stranded copper conforming to ASTM B3.
- C. Voltage Rating:
 - 1. 25,000 V cable shall be used on 25,000 V distribution systems.
- D. Insulation:
 - 1. Insulation level shall be 133%.
 - 2. Types of insulation:
 - a. Cable type abbreviation, EPR: Ethylene propylene rubber insulation shall be thermosetting, light and heat stabilized.
- E. Insulation shield shall be semi-conducting. Conductor shield shall be semi-conducting.
- F. Insulation shall be wrapped with copper shielding tape, helically-applied over semi-conducting insulation shield.
- G. Heavy duty, overall protective polyvinyl chloride jacket shall enclose every cable. The manufacturer's name, cable type and size, and other pertinent information shall be marked or molded clearly on the overall protective jacket.
- H. Cable temperature ratings for continuous operation, emergency overload operation, and short circuit operation shall be not less than the NEC, NEMA WC 71, or NEMA WC 74 standard for the respective cable.

2.2 SPLICES AND TERMINATIONS

- A. Materials shall be compatible with the cables being spliced and terminated, and shall be suitable for the prevailing environmental conditions.
- B. Terminations:
 1. Shall comply with IEEE 48. Include shield ground strap for shielded cable terminations.
 2. Class 1 terminations for outdoor use: Kit with stress-relief tube, nontracking insulator tube, shield ground strap, compression-type connector, and end seal.
 3. Ground metallic cable shields with a device designed for that purpose, consisting of a solderless connector enclosed in watertight rubber housing covering the entire assembly.
 4. Provide insulated cable supports to relieve any strain imposed by cable weight or movement. Ground cable supports to the grounding system.

PART 3 - EXECUTION

3.1 GENERAL

- A. Installation shall be in accordance with the NEC, as shown on the drawings, and manufacturer's instructions.
- B. Ground shields in accordance with Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS.

3.2 NOT USED.

3.3 NOT USED.

3.4 TERMINATIONS

- A. Install the materials as recommended by the manufacturer, including precautions pertaining to air temperature and humidity during installation.
- B. Installation shall be executed by qualified person trained to perform medium-voltage equipment installations. Tools shall be as recommended or provided by the manufacturer. Installation shall comply with manufacturer's instructions.
- C. Where the Government determines that unsatisfactory splices and terminations have been installed, the Contractor shall replace the unsatisfactory terminations with approved material at no additional cost to the Government.

3.5 NOT USED.

3.6 CIRCUIT IDENTIFICATION OF FEEDERS

- A. Install permanent identification tags on each circuit's cables to clearly designate the circuit identification and voltage. The tags shall be the embossed brass type, 40 mm (1.5 inches) in diameter and 40 mils thick. Attach tags with plastic ties. Position the tags so they will be easy to read.

3.7 ACCEPTANCE CHECKS AND TESTS

- A. General:

1. Perform tests in accordance with the latest IEEE 400 and 400.2, manufacturer's recommendations, and as specified in this specification.
- B. Visual Inspection: Perform visual inspection prior to electrical tests.
1. Inspect exposed sections of cables for physical damage.
 2. Inspect shield grounding, cable supports and terminations.
 3. Verify that visible cable bends meet manufacturer's minimum bending radius requirement.
 4. Verify installation of identification tags.
- C. Electrical Tests:
1. Preparation Prior to Testing: Terminations applied to cables shall be completed prior to testing. For renovation installation, ends of any new or existing service-aged cables shall be prepared (cut back) to allow testing without flashover or tracking. Cables shall not be connected to other equipment while under test.
 2. Perform Insulation-Resistance Test. Test all cables with respect to ground and adjacent cables. All adjacent cables shall be grounded during testing.
 - a. Apply test voltage for a period sufficient to stabilize output voltage and insulation resistance measurement.
 - b. Test data shall include megohm, applied test voltage, and leakage current readings.
 - c. Further testing shall not continue unless the insulation resistance test results meet or exceed the values listed below. Test voltages and minimum acceptable resistance values shall be:

<u>Voltage Class</u>	<u>Test Voltage</u>	<u>Min. Insulation Resistance</u>
25kV	5,000 VDC	20,000 megohms
- D. Field Test Report: Submit a field test report to the COR that includes the following information:
1. VA Project Number, VA Project Title, VA Contract Number, Equipment Identifier for tested equipment, Location, Test Date.
 2. Name of Technician and Company performing the test.
 3. Ambient temperature and humidity at time of test.
 4. Name, Model Number and Description of Test Equipment used.
 5. Circuit identification, cable length, cable type and size, insulation type, cable manufacturer, service age (if any), voltage rating, description of splices or terminations.
 6. Visual field inspection notes, findings, and photographs.
 7. Insulation Resistance Test results:
 - a. Test voltage.
 - b. Measurement in Megohms.
 - c. Leakage current.
 8. Conclusions. If any deficiency is discovered based on test results, provide recommendations for corrective action.

- E. Final Acceptance: Final acceptance shall depend upon the satisfactory performance of the cables under test. No cable shall be put into service until all tests are successfully passed, and field test reports have been approved by the COR.

---END---

**SECTION 26 05 26
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS**

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the furnishing, installation, connection, and testing of grounding and bonding equipment, indicated as grounding equipment in this section.
- B. "Grounding electrode system" refers to grounding electrode conductors and all electrodes required or allowed by NEC, as well as made, supplementary, and lightning protection system grounding electrodes.
- C. The terms "connect" and "bond" are used interchangeably in this section and have the same meaning.

1.2 RELATED WORK

- A. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS: Requirements that apply to all sections of Division 26.
- B. Section 26 13 16, MEDIUM-VOLTAGE FUSIBLE INTERRUPTER SWITCHES: Medium-voltage fusible interrupter switches.

1.3 QUALITY ASSURANCE

- A. Quality Assurance shall be in accordance with Paragraph, QUALIFICATIONS (PRODUCTS AND SERVICES) in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.

1.4 NOT USED.

1.5 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.
- B. American Society for Testing and Materials (ASTM):
 - B1-13..... Standard Specification for Hard-Drawn Copper Wire
 - B3-13..... Standard Specification for Soft or Annealed Copper Wire
 - B8-11..... Standard Specification for Concentric-Lay-Stranded Copper
Conductors, Hard, Medium-Hard, or Soft
- C. Institute of Electrical and Electronics Engineers, Inc. (IEEE):
 - 81-12 IEEE Guide for Measuring Earth Resistivity, Ground Impedance,
and Earth Surface Potentials of a Ground System Part 1: Normal
Measurements
- D. National Fire Protection Association (NFPA):
 - 70-17 National Electrical Code (NEC)
 - 70E-15..... National Electrical Safety Code
 - 99-15 Health Care Facilities

- E. Underwriters Laboratories, Inc. (UL):
- 44-14 Thermoset-Insulated Wires and Cables
 - 83-14 Thermoplastic-Insulated Wires and Cables
 - 467-13 Grounding and Bonding Equipment

PART 2 - PRODUCTS

2.1 GROUNDING AND BONDING CONDUCTORS

- A. Equipment grounding conductors shall be insulated stranded copper, except that sizes No. 10 AWG and smaller shall be solid copper. Insulation color shall be continuous green for all equipment grounding conductors, except that wire sizes No. 4 AWG and larger shall be identified per NEC.
- B. Bonding conductors shall be bare stranded copper, except that sizes No. 10 AWG and smaller shall be bare solid copper. Bonding conductors shall be stranded for final connection to motors, transformers, and vibrating equipment.
- C. Conductor sizes shall not be less than shown on the drawings, or not less than required by the NEC, whichever is greater.
- D. Insulation: THHN-THWN.

2.2 GROUND CONNECTIONS

- A. Below Grade and Inaccessible Locations: Exothermic-welded type connectors.
- B. Above Grade:
 - 1. Bonding Jumpers: Listed for use with copper conductors. For wire sizes No. 8 AWG and larger, use compression-type connectors. For wire sizes smaller than No. 8 AWG, use mechanical type lugs. Connectors or lugs shall use zinc-plated steel bolts, nuts, and washers. Bolts shall be torqued to the values recommended by the manufacturer.
 - 2. Connection to Grounding Bus Bars: Listed for use with copper conductors. Use mechanical type lugs, with zinc-plated steel bolts, nuts, and washers. Bolts shall be torqued to the values recommended by the manufacturer.

PART 3 - EXECUTION

3.1 GENERAL

- A. Installation shall be in accordance with the NEC, as shown on the drawings, and manufacturer's instructions.
- B. Equipment Grounding: Electrical enclosures and other conductive items in close proximity with electrical circuits, shall be bonded and grounded.

3.2 INACCESSIBLE GROUNDING CONNECTIONS

- A. Make grounding connections, which are normally buried or otherwise inaccessible, by exothermic weld.

3.3 MEDIUM-VOLTAGE EQUIPMENT AND CIRCUITS

- A. Switchgear: Provide a bare grounding electrode conductor from the switchgear ground bus to the grounding electrode system.
- B. Lightning Arresters: Connect lightning arresters to the equipment ground bus or ground rods as applicable.

3.4 CORROSION INHIBITORS

- A. When making grounding and bonding connections, apply a corrosion inhibitor to all contact surfaces. Use corrosion inhibitor appropriate for protecting a connection between the metals used.

---END---

SECTION 26 13 16
MEDIUM-VOLTAGE FUSIBLE INTERRUPTER SWITCHES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. This section specifies the furnishing, installation, connection, and testing of medium-voltage fusible interrupter switches, indicated as switches in this section.

1.2 RELATED WORK

- A. Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS: Requirements that apply to all sections of Division 26.
- B. Section 26 05 13, MEDIUM-VOLTAGE CABLES: Medium-voltage cables and terminations.
- C. Section 26 05 26, GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS: Requirements for personnel safety and to provide a low impedance path to ground for possible ground fault currents.

1.3 QUALITY ASSURANCE

- A. Quality Assurance shall be in accordance with Paragraph, QUALIFICATIONS (PRODUCTS AND SERVICES) in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS.
- B. Switchgear to be UL listed or 3rd party certified.

1.4 FACTORY TESTS

- A. Factory Tests shall be required.
- B. Factory Tests shall be in accordance with Paragraph, MANUFACTURED PRODUCTS in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, and the following requirements:
 - 1. Switches shall be tested to assure that there are no electrical or mechanical defects. Tests shall be conducted as per UL and ANSI Standards. Factory tests shall be certified. The following tests shall be performed:
 - a. Verify that fuse sizes and types are in accordance with drawings.
 - b. Verify tightness of bolted electrical connections by calibrated torque-wrench method in accordance with manufacturer's published data.
 - c. Verify operation of mechanical interlocks.
 - d. Confirm correct operation and sequencing of key-type mechanical interlock systems for multiple switches by attempting closure on locked-open devices, and attempting to open locked-closed devices, and making key exchange with devices operated in off-normal positions.
 - e. Verify correct phase barrier installation.
 - f. Verify correct operation of all indicating and control devices.
 - g. Verify appropriate lubrication on moving current-carrying parts and on moving and sliding surfaces.

- h. Exercise all active components.
 - i. Perform an insulation-resistance test, phase to ground, on each bus section, with phases not under test grounded, in accordance with manufacturer's published data.
- C. Furnish one copy of certified manufacturer's factory test reports to COR prior to shipment of the switches to ensure that the switches have been successfully tested as specified.

1.5 SUBMITTALS

- A. Submit in accordance with Paragraph, SUBMITTALS in Section 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS, and the following requirements:
1. Shop Drawings:
 - a. Shop drawings shall be submitted simultaneously with or after an Overcurrent Protective Device Coordination Study (provided by the contractor).
 - b. Submit sufficient information to demonstrate compliance with drawings and specifications.
 - c. Provide information such as complete electrical ratings, dimensions and approximate design weights, enclosure types, mounting details, materials, required clearances, cable terminations, fuse sizes and class, interrupting ratings, wiring diagrams, front, side and rear elevations, sectional views, safety features, accessories, and nameplate data.
 2. Manuals:
 - a. Submit, simultaneously with the shop drawings, companion copies of complete maintenance and operating manuals including technical data sheets, wiring diagrams, and information for ordering replacement parts.
 - b. If changes have been made to the maintenance and operating manuals originally submitted, submit updated maintenance and operating manuals to the COR three weeks prior to the final inspection.
 3. Certification: Three weeks prior to the final inspection, submit the following.
 - a. Certification by the manufacturer that switches conform to the requirements of the drawings and specifications.
 - b. Certification by the Contractor that switches have been properly installed, adjusted, and tested.

1.6 APPLICABLE PUBLICATIONS

- A. Publications listed below (including amendments, addenda, revisions, supplements, and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by designation only.
- B. American National Standards Institute (ANSI):
- C37.57-10 Metal-Enclosed Interrupter Switchgear Assemblies -
Conformance Testing

- C37.58-10 Indoor AC Medium-Voltage Switches for Use in Metal-Enclosed Switchgear - Conformance Test Procedures
- C. International Code Council (ICC):
IBC-15 International Building Code
- D. Institute of Electrical and Electronics Engineers (IEEE):
C37.20.3-13 Metal-Enclosed Interrupter Switchgear (1kV – 38kV)
C37.22-97 Preferred Ratings and Related Required Capabilities for Indoor AC Medium Voltage Switches Used in Metal-Enclosed Switchgear
C37.47-11 High Voltage (>1000V) Current-Limiting Type Distribution Class Fuses and Fuse Disconnecting Switches
C37.48-10 Guide for Application, Operation and Maintenance of High Voltage Fuses, Distribution Enclosed Single Pole Air Switches, Fuse Disconnecting Switches, and Accessories
- E. National Fire Protection Association (NFPA):
70-17 National Electrical Code (NEC)

PART 2 - PRODUCTS

2.1 MEDIUM-VOLTAGE FUSIBLE INTERRUPTER SWITCHES – REFURBISHED AND NEW

- A. Shall be in accordance with ANSI, IEEE, NFPA, as shown on the drawings, and have the following features:
1. Pad-mounted live front air break switch/fuse enclosure, three-pole gang-operated, interrupter type, 25 kV, 600 ampere, 110 kV BIL, 3 phase, 60 hertz.
 2. Components:
 - a. (2) 25 kV, 600 ampere load break manually operated switches.
 - b. (3) S&C SM-20 150E fuses, fuse mountings and fuse end fittings rated 27 kV.
 - c. (3) Surge arrestors, 18 kV MCOV, distribution class
 - d. (3) CT's that are mounted at the factory by the switchgear manufacturer.
 - e. (3) PT's that are mounted at the factory by the switchgear manufacturer.
 - f. Kirk key interlock system.
 - g. Silver flashed copper bussing.
 - h. Provide interconnecting wiring from the CT's and PT's to the terminal block compartment. Terminal block compartment to be in an 18"x18"x8" NEMA 4 enclosure mounted to the exterior of the switchgear with locking provisions.
 2. Copper blades.
 3. Key-type mechanical interlocks shall be provided as shown on the drawings.
 4. Intersection barriers for the full length of each section.

5. Protective shield to cover the cable connections on the line terminals. Provide dual purpose front and rear barriers to guard against inadvertent contact with live parts when inserted into the gap of an open switch provides isolation from bus and upper contacts. Provide a window panel to allow viewing of the switch position without removing the barriers properly secured.
6. Quick-make, quick-break, manual stored-energy type operation mechanism. The mechanism shall enable the switch to close against a fault equal to the momentary rating of the switch without affecting its continuous current carrying or load interrupting ability.
7. External manual operating handle with lock-open padlocking provisions.
8. When the switches are open, the fuses shall be de-energized.
9. Current limiting fuses.
10. All barriers shall be 3/16 inch, GPO-3, glass polyester construction.
11. Enclosures:
 - a. NEMA 3R type shown on the drawings. Where the types of switch enclosures are not shown, they shall be the NEMA types which are most suitable for the environmental conditions where the switches are being installed. Enclosure shall be 12 gauge galvanized steel, solidly welded construction with the welds and seams ground smooth.
 - b. Roof to be cross kinked removable roof for added strength and preventing standing moisture.
 - c. Provide lifting plates that are removable with blind mounting holes.
 - d. Doors:
 - 1) Concealed or semi-concealed hinges shall be used to attach doors. Weld hinges to the enclosure and door.
 - 2) A mechanical interlock shall prevent opening the doors unless the switch blades are open, and prevent closing the switch if the door is open.
 - 3) Three point door locking mechanism with suitable handles and padlocking provisions. Provide 3-point positive latch mechanism, secured and operated by ½ turn, captive, recessed Pentahead bolt and shielded padlock shackle, stainless steel.
 - 4) Door stops for the open position. Door arms shall hold doors in the 110 degree open position.
 - e. Finish:
 - 1) All metal surfaces shall be thoroughly cleaned, phosphatized, primed and painted at the factory.
 - 2) Final finish shall be enamel, lacquer or powder coating. Enamel and powder coatings shall be oven baked. Color shall be munsell green 7GY 3.29/1. Paint finish shall meet or exceed ANSI C57.12.28 paint specifications for pad mounted equipment.
- B. The minimum momentary current rating shall be 40 kA.
- C. The minimum short-time 2-second current rating shall be 48 kA.

- D. Provide full length ground bar. Provide with ½"-13 UNC threaded holes and ground bails.
- E. The existing switch may be refurbished on site, but shall still be required to pass all testing and certification requirements contained within the contract documents. Testing and certification certificates and information shall be provided to the COR.

2.3 NAMEPLATES

- A. Provide the following signs and labels:
 - 1. Caution, keep out, high voltage located above the latching device.
 - 2. Warning, 'Secure Doors', located above the latching device.
 - 3. NEMA "Mr. Ouch", danger, on interior of enclosure doors and switch handle covers.
 - 4. Warning, installation and operation, located on the interior of doors.
 - 5. Danger, keep out, high voltage, located on compartment doors.
 - 6. Circuit diagram, located on the interior of enclosure doors and switch handle covers.
 - 7. Switch label 'SS-South' on the exterior of the enclosure, yellow with black letters to match existing.
 - 8. Phase identification labels (A,B,C).
 - 9. All labels to be self adhesive, UV resistant type, rated for exterior locations.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install switches in accordance with the NEC, manufacturer's instructions and recommendations, and as shown on the drawings.
- B. Reconnect the existing 25 kV cables to the new switchgear, coordinate installation of the primary cables with Xcel Energy. Reconnect all new metering cables for the totalizing signal to the new metering equipment, coordinate installation with Xcel Energy.
- C. Anchor switch with rustproof stainless steel bolts, nuts, and washers not less than 13 mm (1/2 inch) diameter, in accordance with manufacturer's instructions, and as shown on drawings.
- D. Existing Exterior Location: Mount switches on existing concrete basement.

3.2 ACCEPTANCE CHECKS AND TESTS

- A. Perform in accordance with the manufacturer's recommendations. In addition, include the following:
 - 1. Visual Inspection and Tests:
 - a. Compare switches nameplate data with specifications and approved shop drawings.
 - b. Inspect physical and mechanical condition.
 - c. Confirm correct application of manufacturer's recommended lubricants.
 - d. Vacuum-clean switch enclosure interior. Clean switch enclosure exterior.
 - e. Verify appropriate anchorage and required area clearances.
 - f. Verify appropriate equipment grounding.
 - g. Verify correct blade alignment, blade penetration, travel stops, and mechanical operation.

- h. Verify that fuse sizes and types correspond to approved shop drawings.
- i. Inspect all field-installed bolted electrical connections, verifying tightness of accessible bolted electrical connections by calibrated torque-wrench method, or performing thermographic survey after energization under load.
- j. Exercise all active components.
- k. Confirm correct operation of mechanical interlocks. Confirm correct operation and sequencing of key-type mechanical interlocks for multiple switches.
- l. Inspect all indicating devices for correct operation.

3.3 FOLLOW-UP VERIFICATION

- A. Upon completion of acceptance checks, settings, and tests, the Contractor shall show by demonstration in service that switches are in good operating condition, and properly performing the intended function.

3.4 WARNING SIGN

- A. Mount on each entrance door of the outdoor switchboard enclosure approximately 1500 mm (5 feet) above grade, a clearly lettered warning sign for warning personnel. The sign shall be attached with rustproof metal screws.

3.5 SPARE PARTS

- A. Two weeks prior to the final inspection, provide one (1) set of spare fuses for each switch installed on this project.

3.6 ONE LINE DIAGRAM AND SEQUENCE OF OPERATION

- A. At final inspection, an as-built one line diagram shall be laminated or mounted under acrylic glass, and installed in a frame mounted in the switchgear room or in the outdoor switchgear enclosure.
- B. Furnish a written sequence of operation for the switchgear and connected line side/load side electrical distribution equipment. The sequence of operation shall be laminated or mounted under acrylic glass, and installed in a frame mounted in the switchgear room or in the outdoor switchgear enclosure.
- C. Deliver one additional copy of the as-built one line diagram and sequence of operation to the COR.

3.7 INSTRUCTION

- A. Furnish the services of a factory-trained technician for one 4 hour period for instructing personnel in the operation and maintenance of the switches and related equipment on the date requested by the COR.

---END---