

## **EXHIBIT B – Scope of Work**

### **INTENT:**

In general, this Bid Package is comprehensive to specific CSI Division Work and related Work as referenced, indicated on, or implied by the Project Drawings, Specifications and Project Manual. Subcontractor acknowledges that the following Scope of Work detail is provided as a courtesy and must be used in conjunction with **all** Project Documents. Scope of Work detail listed is not intended to describe a complete and final work scope. It is provided as a summary overview only.

### **I. SCOPE OF WORK SUMMARY:**

The Scope of Work shall include the furnishing and installation, complete, of the **Electrical Work** as outlined in **The Contract Bidding Requirements** and in accordance with the **Contract Documents**. This shall include, but is not limited to all required, engineering, submittals (samples or mock-ups and shop drawings), materials, fabrication, labor, equipment and tools, supervision, hoisting, scaffolding, and transportation, burden and taxes as required for a complete installation.

### **II. GENERAL REQUIREMENTS**

- A. Subcontractor has included all material, labor, supervision and administration for requirements outlined in the Exhibit C - Special Provisions. These are the standard expectations for all Balfour Beatty Construction projects.
- B. This Subcontractor shall obtain and pay for any additional permits, bonds, or fees as required to complete scope of work under this agreement including any required re-inspection fees / costs are responsibility of Subcontractor.
- C. Subcontractor understands that all work is being done on an active university campus. As such the following apply:
  - 1. Due to the Emergency Declaration associated with this project the guidelines present in Section 5 – Special Provisions, specifically Item No. 4 shall be strictly adhered to without exception. Coordinate ALL weekend work with the Site Superintendent as there are restrictions and guidance from UNCW that must be adhered to on Campus.
  - 2. No noise making activities (including trucks backing or equipment prepping or music playing) prior to 7:00 AM or after 6:00 PM
  - 3. No work will be permitted to start early without 48 hour written notification to UNCW Project Manager outlining specific tasks to be performed prior to 7:00 AM.
  - 4. No afterhours work will be permitted without 48 hour written notification to UNCW Project Manager outlining specific tasks to be performed after 5:30 PM.
  - 5. All gates will be locked after 6:00 PM.

6. Streets are to be clean all the time. Subcontractor is responsible for cleaning the roads should their specific activities track dirt or mud onto university streets.
7. No trucks are to be left on university roads.
8. All deliveries are to be accompanied by flagmen at the entry gates.
9. No work shall be performed outside the site fencing without UNCW authorization.
10. At no point are any construction personnel to interact (talk or look) with the students.

D. Employee Conduct:

1. All construction personnel shall be respectful to all University of North Carolina Wilmington staff and students. Any disrespect, harassment, unwelcome comments or advances from any construction personnel toward any staff member or student shall constitute sufficient grounds for University of North Carolina Wilmington to request removal of any specific individuals from this project.
  - a. Such Owner action shall not constitute grounds for a delay claim.
  - b. Owner will not be responsible for any delays caused to the project due to any individual being removed from this project.
  - c. Construction superintendents shall be held accountable for any incident of this nature.
2. All after normal hours work shall be scheduled a minimum of 48 hours for Interior Work and 7 Days for Exterior Work.
3. Special attention is required for traffic control in and out of the Construction Site so as to avoid the Student population as they move around on Campus.
4. Use of tobacco products and other controlled substances on the Project Site is not permitted.
5. No Lottering on campus is allowed at any time.

III. **TRADE SPECIFIC SCOPE OF WORK ITEMS:**

A. Subcontractor shall furnish, install, maintain and remove the following *Temporary Utilities*.

1. Furnish, install, maintain (include GFCI Test schedule and log), and remove all temporary power and lighting as directed by the CMAR, all installations shall be inspected by the AHJ. A single experienced/safety trained/competent person shall be assigned to perform maintenance for all temporary power and lighting. This person shall be responsible for all maintenance issues and administration of daily logs, file records, etc.
  - a. Provide stand-alone power pedestals (spider boxes) with ground fault circuit interrupter (GFCI) protection for all receptacle outlets to be used at the site during the entire period of construction. Power Pedestals shall have a minimum of 6 duplex receptacles with

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- weather proof receptacles at each location. Power Pedestals shall be placed so that no power pedestal with outlets is more than 100' apart. (1) Duplex receptacles on a single 20 Amp GFCI breaker. These should be put on platforms to allow extension cords to be held off the ground. All power pedestals shall built on sturdy bases with the ability to easily relocate.
- b. Subcontractor to provide three (3) 208v, 100 amp 3P 4W outlets to be located by Construction Manager for electric welding equipment, make provisions to provide matching plug end to accommodate equipment needs.
  - c. Provide and turnover to Contractor three (3) new 5kw gas powered portable generators for use in providing temporary power at remote site condition Work.
  - d. Temporary lights in stairs shall be **LED rope lighting** and will remain on throughout the night and designated receptacles will remain on for charging lifts, batteries, etc. The balance of lights for the building will be shut off from a central location on the first floor as designated by the site Superintendent.
- 2. All temporary lighting to be maintained at a minimum of 10fc at no time or location shall the fc be below OSHA requirements. Egress and Work areas are to be checked and re-lamped daily at a minimum. Subcontractor shall provide additional temporary lighting on a daily basis as additional interior walls are erected. Subcontractor shall submit, to the CMAR, a temporary Power & Lighting plan indicating layout locations of equipment and lighting fixtures to meet the requirements listed within this Scope of Work.
  - 3. All temporary power and lighting shall be installed with flexibility in mind, it may be necessary to suspend or move all temporary power and lighting equipment to accommodate on going work. AS this work is required it shall be performed by this subcontractor at no additional cost to the project.
  - 4. Temporary power panels are to be NEMA rated & UL Listed for the location they are installed; all installations are to have OSHA approved signage.
  - 5. Subcontractor agrees to utilize permanent building power for temporary power needs upon activation of permanent power system through main switch board. Subcontractor agrees to activate permanent power at each floor level main panel upon completion of sheetrock installations on each floor. At such time all temporary power elements shall be removed and/or reconnected to permanent power systems as required. Subcontractor agrees to provide temporary GFI outlets at permanent outlet locations for protection including at 50' increments in corridors and one (1) at each room area prior to building finishes beginning.
- B. The following is a general outline of items included, but not limited to, under this agreement for all ***Electrical*** per all specification sections under Division 26, etc. and in accordance with the contract documents:
- 1. This subcontractor shall perform all electrical demolition as noted on the Package A contract documents and as required for installation of new equipment, conduit and wire.

2. This Subcontractor shall furnish and install complete the generator and transformer. All wiring from the existing switchgear to the new transformer will be the responsibility of this Subcontractor.
  - a. The 750 KW Gen-Set shown on the contract documents will be provide to this subcontractor for 100% complete installation as per the contract documents and manufactures installation instructions. This installation is to include all appurtenances and does include the gen-set exhaust and supports complete. It will be scheduled, coordinated and received by this subcontractor. For questions and technical information please contact Mr. Joe Mountjoy at Gregory Poole Power Systems – P: (919) 755-7003
3. Subcontractor shall furnish and install a complete distribution system for power including feeders, molded case circuit breakers, transformers, switches, devices and connections to motors and other power loads. This includes all main distribution panels, transformers and sub panels that are to be included in this scope of work.
  - a. Subcontractor shall reference the 1994 Construction Drawings and subsequent renovation drawings for an ‘in kind replacement’ of what has been demolished as part of the abatement process.
    - i. LE-series, for Lab spaces
    - ii. E-series, for remaining building spaces
    - iii. Package A, for renovation work
    - iv. Work shall include a replace in kind of all wiremold, outlets, devices, etc.
    - v. The distribution panels are existing.
    - vi. Subcontractor is to access the condition of the existing distribution conduit and reuse this to the fullest extent possible.
    - vii. Any remaining un-used conduit shall be demolished, removed and disposed of by this subcontractor.
  - b. The intent of this agreement is to ensure this Electrical Subcontractor provides a complete power wiring system from Main electrical source to the equipment motors ready for operation contrary to electrical drawings notations that divisions 22 and 23 will provide such wiring.
    - i. This Subcontractor shall provide all power conduit, wiring, disconnects, starters, etc. to all plumbing and mechanical equipment noted on Contract Documents. This includes conduit and wire from electric panel to disconnect (or controller, VFD, DDC, etc.), and from disconnect (or controller, VFD, DDC, etc.) to motor.
    - ii. Subcontractor shall provide load side conduit, wire, and terminations for Mechanical and Plumbing Subcontractor (this is in addition to the line side requirement and

which differs from electrical drawing single line diagram. The intent of this agreement is for the Electrical Subcontractor to furnish all conduits and wiring from the power source to each piece of equipment. The Mechanical and Plumbing Subcontractors will perform no power wiring or terminations to provide power to equipment.

- c. Provide and coordinate all necessary relocations, tie-ins, shutdowns & re-commissioning of electrical, mechanical, plumbing, include premium time for all such coordinated interruptions as required to complete this work. The necessity of performing this work during non-regular or non-peak hours, as directed, will not be grounds for additional compensation. There will be a minimum of (7) working days' notice required for any/all shut downs of the existing Public Utilities.
  - d. All power requirements for the Fire Pumps.
  - e. All power requirements for irrigation system controllers, irrigation pumps and exterior fountain systems including all conduits, wiring, junction boxes.
  - f. Subcontractor will provide final cleaning of all electrical devices and electrical equipment.
4. Subcontractor shall furnish and install all exterior site lighting for a complete system (reference specification section 26 56 00, etc.).
- a. All lighting and power systems including but not limited to conduits, wire, fixtures, panels, transformers, switches, lamping, grounding, etc.
  - b. Provide all concrete pier bases with templates, reinforcing bars and anchor bolts for all exterior lighting fixtures.
  - c. All site exterior light poles, fixtures, etc.
  - d. All labeling as required.
5. Subcontractor shall furnish and install complete distribution system for all lighting including all necessary feeders, branch circuits, ballasts, batteries, lighting fixtures, emergency lighting, night lights, exit lights, transformers, lighting control system, switches, dimmers, photo cells, clock timers, occupancy sensors, receptacles, site lighting, bulbs, hangers, supports, etc.
- a. Labeling for emergency lighting switches is included.
  - b. All secondary light fixture supports are included to structure.
  - c. All key switching.
  - d. Include lighting contactors /photo cell operation of building exterior lighting.
  - e. All lighting occupancy sensor wiring systems complete.

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- f. Subcontractor will provide final cleaning of all light lighting fixtures, devices and equipment.
  - g. This Subcontractor shall provide ten (10) additional exit signs, including installation and equipment, for any additional requirements made by the inspector. Final reconciliation of these devices will be made on each pay application and must be clearly documented.
  - h. Subcontractor shall provide one (1) additional of each type of fixture including pole/mounts for unidentifiable damage not caused by this subcontractor.
  - i. Subcontractor shall provide replacement light bulbs until owner acceptance of the project.
  - j. Subcontractor to provide a complete Lighting Control System and coordinate the system with the Building Management System Subcontractor.
  - k. Subcontractor understands that the lay-in light fixtures will be suspended from the structure and not installed tight to the structure. Subcontractor will be required to assist in coordinating the height of the light fixtures so as not interfere with other trades.
- C. Subcontractor shall be responsible for facilitating and providing a comprehensive Ground Fault Coordination study for all electrical service entrance and distribution equipment. This study shall be prepared and validated by an engineer trained and approved to perform this work.
- D. Subcontractor shall furnish and install complete grounding system (per NEC and contract documents) for all electrical equipment. Include all materials and labor required to provide a complete and UL Certificated lightning protection system. Subcontractor shall confirm the proper installation, schedule and obtain an approved inspection by the AHJ and **owner's representative** prior to covering or concealing any underground work in place. All work required to be re-exposed for Inspection will be the responsibility of this subcontractor at no additional cost to the project.
- E. Subcontractor shall furnish and install a complete lightning protection system.
- 1. Provide all required Design and Engineering support necessary to create the required submittal shop drawings and technical information for approval.
  - 2. Furnish and install ground rod Test Wells at all ground rod Test Locations described.
  - 3. This contractor will be responsible for coordinating all "through the roof" locations for the down conductors.
  - 4. This contractor will be responsible for communication and coordination with the roof membrane provider/installer for all costs of all attachments to the roof membrane and/or any installation of additional flashing and/or metal panels. This communication and coordination is for the purpose of confirming the attachment process is within the roof membrane manufactures recommended installation guidelines so as not to affect the warranty in any way.

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5. This Subcontractor will be responsible for coordinating all inspections pertaining to their work. Contact CMAR prior to coordinating inspections and provide all inspection documentation to the CMAR Project Manager.
  6. Upon completion provide all test reports and certification information to the CMAR. Coordinate all inspections with the CMAR, Designers (A/E), and the Third Party UL certifier.
- F. The following is a general outline of items included, but not limited to, under this agreement for all **Fire Alarm** Work per all specification sections under Division 28 and in accordance with the contract documents.
1. Subcontractor shall furnish and install a complete fire alarm/life safety system. This shall include all supplemental power supplies, smoke detectors, beam smoke detectors, heat detectors, pull stations, remote test switches, relays, monitor modules, relay switches, horns, strobes, combination Audio / Visual, 120v power wiring, TVSS, control panels, remote annunciator panels, terminal cabinets, node panels, control wiring, connections, panel devices, smoke & smoke/fire damper requirements, line to low voltage transformers, complete HVAC interface and shutdown requirements, etc. for a **complete** Fire Alarm System, as shown on the Contract Documents.
  2. Completion of all systems, testing, programming, documenting all forms and certifications, Owner and Architect inspections, and AHJ inspections shall be completed sixty (60) days prior to scheduled project completion date.
  3. Final connection to fire protection devices including, but not limited to, tamper switches, flow switches, and etc. and for monitoring (2) site PIV's is included.
  4. Subcontractor shall provide all elevator recall devices and functions per contract documents.
  5. Subcontractor shall provide all required Fire Alarm relays and monitoring modules required for the Security Subcontractor.
  6. Subcontractor shall provide coordination, final connections, programming, and wiring of fire alarm to overhead coiling doors as required.
  7. Installation and wiring of door hold opens furnished by Door Hardware Supplier.
  8. Wiring to mechanical equipment shall be by this Subcontractor (fire alarm) and not by Mechanical Subcontractor as indicated.
  9. All required grounding of FA panels.
  10. All duct detectors will be supplied by this Subcontractor to the Mechanical Subcontractor for installation only. Final wiring and electrical connections will be by this Subcontractor. Any contact switches shall be by this Subcontractor.



11. Subcontractor shall agree and understand that the HVAC System and the Fire Protection System must be tested in conjunction with the Fire Alarm System. Subcontractor agrees to assist in coordinating and performing the testing with the Owner's Rep, CMAR, Fire Alarm Systems Subcontractor, Fire Protection Systems Subcontractor, and Mechanical Subcontractors, Local Inspectors, DOI, and Commissioning Agent. It is further understood that the results of this testing is to be documented in writing and submitted to the CMAR by the electrical, fire protection, and mechanical contractors including all documentation required to be provided by the respective manufactures representatives.
12. Subcontractor shall "bag" all fire alarm devices from installation through date of Owner acceptance of building to protect devices from surrounding construction elements including dust, etc. Factory dust covers are not acceptable means of protection. Any soiled heads at time of Owner Acceptance through sensitivity report shall be replaced by subcontractor at no cost. Delaying installation of devices due to current construction status of building is not acceptable since fire alarm system will proceed under all circumstances to meet inspection dates.
13. This Subcontractor shall provide ten (10) additional devices of each type under the fire alarm system (Smoke, Heat, Horn, etc.), including installation and programming, for any additional requirements made by the inspector. Final reconciliation of these devices will be made on each pay application and must be clearly documented.
14. This Subcontractor shall complete a test of all fire/smoke dampers throughout the project in cooperation with the Mechanical Subcontractor. Any corrections are included in this Scope of Work.
15. Any minor fire alarm programming modifications as requested by the design team and/or inspectors shall be included in this Scope of Work.
16. Subcontractor shall coordinate with the HVAC Subcontractor for installation of duct mounted smoke detectors. This Subcontractor is responsible for furnishing, monitoring, and powering all duct mounted smoke detectors. Subcontractor is responsible for furnishing and complete turnover to HVAC Subcontractor all duct mounted smoke detector installation into ductwork.
17. Subcontractor shall perform all work in accordance with Contract Documents for Fire Alarm Systems Work per Specifications and be code compliant with current provisions of the latest edition of the North Carolina State Building Code, NFPA70 (National Electric Code), NFPA72 (National Fire Alarm), NFPA90A (Air Conditioning Systems) and NFPA101 (Life Safety Code).
18. Owner warranty full NFPA 72 test is included as specified to verify system operation and replace defective devices.
19. As-built fire alarm plans and zone maps shall be installed prior to scheduling NFPA 72 testing.



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G. The following is a general outline of items included, but not limited to, under this agreement for all **Telecommunication (Raceways)** per all specification sections under Division 26 and 27. Cabling, hardware, software, devices, etc. will be completed by Telecommunications Subcontractor under Bid Package 27A:

1. Subcontractor shall reference the 1994 Construction Drawings and subsequent renovation drawings for an 'in kind replacement' of what has been demolished as part of the abatement process.
  - a. LE-series, for Lab spaces
  - b. E-series, for remaining building spaces
  - c. Package A, for renovation work
  - d. Subcontractor is to access the condition of the existing distribution conduit and reuse this to the fullest extent possible.
  - e. Any remaining un-used conduit shall be demolished, removed and disposed of by this subcontractor.
2. Subcontractor shall provide all Telecommunications raceway work complete for all voice and data communication systems (reference Division 27 specification section requirements, etc.). Work shall include, but not be limited to, all cable tray, j-hooks, floor boxes, conduit, riser conduits, sleeves, boxes, connectors, bushings, wireway, etc. for raceway system.
3. Provide pull strings in all raceways.
4. Provide covers for all j-boxes with labels. Subcontractor shall label all device boxes for easy identification.
5. Provide all grounding requirements including bars in telecommunications rooms.

H. Subcontractor shall furnish and install all material required for electrical rough-in, hookups, and final hook-ups to equipment furnished by others as indicated by the Contract Documents. Subcontractor is also responsible to insuring all equipment shipped corresponds with approved submittals prior to hook-ups including rough-in locations, mounting heights, grounding, power requirements, etc. Subcontractor is further responsible for insuring all equipment indicated on Architectural, Plumbing, and Mechanical Drawings have power source. This also includes owner supplied equipment.

1. This Scope of Work shall allow walls to be primed and surface painted prior to installation of surface mounted conduits/wiremolds, panel boards, phone/back boards, disconnects, trim work, etc.
2. Subcontractor shall ensure that all rough-in work to be concealed within wall cavities, masonry cells, or cast-in concrete unless approved otherwise by Owner and Architect.

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3. Subcontractor shall foam/seal all conduits entering climate controlled building or cabinets from an outside, unconditioned, or underground conduit raceway.
- I. Subcontractor shall furnish and install all required supports for the work, including but not limited to anchor bolts, hangers, isolators, channels, angles, embeds, etc. All system components are to be hot dipped galvanized unless noted otherwise on the Contract Documents.
- J. All weatherproof enclosures, housing, shields, phase guards, hoods (if electrical work located under water/drain pipes), caulking, sealtight, junctions' boxes, etc. are included in this Scope of Work.
- K. Subcontractor shall seal, pack, fire safe, etc. all fire rated penetrations in walls, floors, and ceilings per specification section 07 8413 as required by the Contract Documents and as to maintain required ratings. Subcontractor shall also fire/smoke caulk, water seal, weather caulk, aesthetic caulk, acoustical caulk, etc. all of its sleeves/penetrations as required by the Contract Documents. This including, but not limited to, around outside and inside of sleeves.
- L. Subcontractor shall provide all labeling, tagging, stenciling, signage, panel schedules, electrical, clean power panel plaques, and IDF room door tag identification, color coding, etc. as required by the Contract Documents including 'fire alarm pull station inside', 'main disconnect', and shunt trip signage.
- M. All access panels and covers as required by code, or indicated on the electrical documents are by this Subcontractor per specification section 08 3113. Subcontractor is responsible for coordinating the locations and size of required framed openings with respective trades during the construction of walls, ceilings, and floors. These access doors are for access through architectural ceilings and walls. Rated panels are included to match ceiling and wall types.
- N. Subcontractor to provide and install complete all concrete pads required for all equipment furnished by this subcontractor. Concrete Pads shall be fully anchored to the existing subsurface using dowelled anchored supports.
- O. Subcontractor is responsible for cutting all sheetrock or acoustical ceiling tiles for light fixtures and other system installations. As part of the punch list, any ceiling tiles that are damaged and contain any electrical device (fire alarm, lighting, etc.) shall be re-cut and reinstalled by this Subcontractor. Ceiling tile will be provided by the Acoustical Subcontractor.
- P. Concrete saw cuts, removal, and concrete replacement as required to install Work within this Scope is included in this Scope of Work. No saw cutting or core drilling are to be performed without written approval from Contractor and Architect/Engineer.
- Q. Subcontractor has acknowledged that all walls and doors have been installed. Subcontractor will be responsible for installing all electrical gear through existing door openings as shown on the plan. Subcontractor shall contact manufacturers to ensure that all equipment will enter the various rooms through the existing door openings. All costs associated with breaking down the equipment to access the rooms are included herein. Subcontractor is responsible to verify that all equipment furnished under this agreement can be installed without leaving any building architectural and
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structural elements out. This Subcontractor will be responsible for all costs to expedite equipment or equipment breakdown to access building in its final state.

R. Schedule: {Description of Critical Patch, requirements and crew logic}

1. Subcontractor agrees to utilize permanent building power for temporary power needs upon activation of permanent power system through main switch board. Subcontractor agrees to activate permanent power at each floor level main panel upon completion of sheetrock installations on each floor. At such time all temporary power elements shall be removed and/or reconnected to permanent power systems as required.
2. Subcontractor agrees to expedite the permanent electrical systems and final hook-ups necessary to operate the permanent heating and ventilating system for the purpose of temporary heating and ventilation. The early start-up of the electrical equipment shall in no way encroach upon any warranty requirements of the Specifications. Subcontractor shall advise and coordinate with Contractor all items that are or will be received in order to achieve early start-up of equipment.
3. Subcontractor is responsible to expedite all vertical shaft work in order to complete enclosure of shafts on each floor level. Shaft work shall proceed from basement level to attic level non-stop as structure progress and shall not be construed to follow each floor level scope of work indicated in schedule. All vertical shaft work shall be completed, tested, and insulated prior to progressing with floor level work. Failure to provide priority to this work will make this Subcontractor responsible for all costs to re-mobilize trades to in-fill openings provided temporary enclosures, etc. as deemed by Contractor.
4. Subcontractor understands that multiple mobilizations are required and has included all cost.
5. Subcontractor understands that multiple crews, supervisors, and equipment are required to start and complete work in each of the buildings simultaneously in accordance with the schedule.

S. Addendum / Bid Clarifications:

1. Subcontractor shall furnish and install a power circuit in each lab room for an overhead projector and screen, including switch. This shall be a dedicated circuit from the same panel that feeds all other normal power devices in each lab room.

#### IV. SCOPE ALLOWANCES

A. The subcontractor shall include the following allowance(s) in the base bid amount for work above and beyond the work outlined in the bid package scope of work sections.

1. Subcontractor shall include 2% of the contract value for general clean-up. This will be deducted from the contract and managed by CMAR. Once credited, this Subcontractor shall continue to perform their daily clean-up as required by the Special Provisions.

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- B. These allowances are intended to cover the cost of work for the scope described. It is understood that all overhead, profit, insurance or other direct or indirect expense of the Subcontractor are included in the base bid amount and thus will not be accounted for when reconciling these allowances.
- C. Verification of any allowance usage must be signed off on by the Contractor to be validated for billing purposes.
- D. All unused portion(s) of these item(s) will be reconciled based on the unit prices provided on the bid form at the completion of the project via deductive change order.
- E. Any work in excess of the allowance amount(s) will be paid via change order based on the unit prices provided on the bid form.

#### V. TRADE SPECIFIC SCOPE EXCLUSIONS

The following is a list of specific exclusions normally related to this scope of work:

- A. None

#### VI. RECAP OF CONTRACT AMOUNT

The Total Subcontract Amount is arrived at and recorded as follows:

BP-## – Bid Amount	\$ #,###,###
Additions / Deletions	\$ ###,###
<b>TOTAL SUBCONTRACT AMOUNT</b>	<b>\$ #,###,###</b>