

**BURDETTE ENGINEERING, INC.
TECHNICAL SPECIFICATIONS**

**LED LIGHTING RETROFIT PROGRAM
ROPER MOUNTAIN SCIENCE CENTER
SCHOOL DISTRICT OF GREENVILLE COUNTY, SC
PROJECT NO. 21370B**

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SECTION 010010 - BASIC REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Summary of Work: Contract, Contractor use of premises, work sequence, owner occupancy.
- B. Contract Considerations: Schedule of values, applications for payment, change procedures, alternates.
- C. Coordination and Meetings: Coordination, field engineering, utility outages and shut down, alteration project procedures, cutting and patching, preconference, site mobilization conference, progress meetings, preinstallation conference.
- D. Submittals: Quality Assurance, Submittal procedures, construction progress schedules, proposed products list, shop drawings, product data, samples, manufacturers' instructions, manufacturers' certificates.
- E. Quality Control: Quality assurance - control of installation, References, Field Samples, Inspection and testing laboratory services, quality assurance.
- F. Material and Equipment: Products, transportation and handling, storage and protection, products options, substitutions.
- G. Starting of Systems: Starting systems, demonstration and instructions, testing adjusting and balancing.
- H. Contract Closeout: Closeout procedures, final cleaning, adjusting, project record documents, operations and maintenance data, warranties, spare parts and maintenance materials.

1.2 CONTRACT

- A. Contract Description: Stipulated Price.

1.3 CONTRACTOR USE OF SITE AND PREMISES

- A. Access to Site: Limited to Owner, Engineer, Contractor, and the Authority having jurisdiction for enforcement of codes. Access will be after school hours, on weekends and holidays, to be coordinated with the owner.
- B. Construction Operations: Limited to areas noted on Drawings.
- C. Emergency Building Exits During Construction: All required emergency exits must be maintained during the duration of construction.
- D. Hours of Operation: Normal working hours are considered to be after school closes and prior to next morning. Coordinate with owner for exact available hours.

- E. Protection of Existing Landscape: Driving or parking over grassed areas is prohibited. All deliveries into the building shall be routed over paved areas or sidewalks. Provide protection of all existing trees and shrubs within the construction limits. Avoid use of any harmful materials or processes within the vicinity of existing trees and shrubs in or adjacent to the construction limits.

1.4 WORK SEQUENCE

- A. Construct Work to accommodate Owner's occupancy requirements for the project during the construction period, coordinate construction schedule and operations with Owner.

1.5 OWNER OCCUPANCY

- A. The Owner will occupy the site during the entire period of construction for the conduct of normal operations.
- B. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.

1.6 SCHEDULE OF VALUES

- A. Submit typed schedule, "Schedule of Values - Work in Place" on AIA form included in this manual.
- B. Submit Schedule of Values in duplicate within 10 days after date of Owner-Contractor Agreement.
- C. Format: Itemize schedule parallel with specification sections.
- D. Include within each line item, a directly proportional amount of Contractor's overhead and profit.
- E. Revise schedule to list approved Change Orders, with each Application for Payment.

1.7 APPLICATIONS FOR PAYMENT

- A. Submit four copies of each application on AIA Form G702 - Application and Certificate for Payment.
- B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- C. Payment Period: One-month intervals ending on the last day of each month.

1.8 CHANGE PROCEDURES

- A. The Architect/Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum or Contract Time as authorized by AIA A201, 1987 Edition, Paragraph 7.4 by issuing supplemental instruction on AIA Form G710.
- B. The Architect/Engineer may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications.
- C. The Contractor may propose a change by submitting request for change to the Architect/Engineer, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full

documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Substitutions paragraph below.

- D. Stipulated Sum Change Order: Based on proposal Request and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Architect/Engineer.
- E. Change Order Forms: Submit on AIA Form G701 - Change Order.
- F. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.9 ALTERNATES

- A. Definition: An alternate is an amount proposed by Bidders and stated on the Bid Form that will be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either the scope of work or in products, materials, equipment, systems or installation methods described in Contract Documents.
- B. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in the Owner - Contractor Agreement.
- C. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

1.10 COORDINATION

- A. Coordinate scheduling, submittals, and Work of the various Sections of specifications to assure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Coordinate and clean up the work of all sections in preparation for Substantial Completion. Areas of Work designated for Owners occupancy shall occur on a daily basis timely coordination and cleanup to minimize delays in Owner's normal operations.
- D. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.11 ALTERATION PROJECT PROCEDURES

- A. Materials: As specified in product Sections; match existing Products and work for patching and extending work.
- B. Coordinate work of alternations and renovations to expedite completion and to accommodate Owner occupancy.
- C. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to original or specified condition.
- D. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.

- E. Where new Work abuts or aligns with existing, perform a smooth and even transition. Patched Work to match existing adjacent Work in texture and appearance.
- F. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendations to Owner.
- G. Where a change of plane of 1/4 inch or more occurs, request instructions from Owner.
- H. Finish surfaces as specified in individual Product Sections.

1.12 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements which affects:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight-exposed elements.
 - 5. Work of Owner or separate contractor.
- C. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
 - 1. Fit the several parts together, to integrate with other Work.
 - 2. Uncover Work to install or correct ill-timed Work.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.
 - 5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.
- D. Execute work by methods which will avoid damage to other Work and provide proper surfaces to receive patching and finishing.
- E. Cut rigid materials using masonry saw or core drill.
- F. Restore Work with new products in accordance with requirements of Contract Documents.
- G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Maintain integrity of wall, ceiling, or floor construction, completely seal voids.
- I. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.
- J. Identify any hazardous substance or condition exposed during the Work to the Owner for decision or remedy.

1.13 PRECONSTRUCTION CONFERENCE

- A. Architect/Engineer will schedule a conference after Notice of Award.
- B. Attendance Required: Owner, Architect/Engineer, and Contractor.
- C. Agenda:

1. Distribution of Contract Documents.
2. Submission of list of Subcontractors, list of products, Schedule of Values, and progress schedule.
3. Designation of personnel representing the parties in Contract, and the Architect/Engineer.
4. Procedures and processing of field decision, submittals, substitutions, applications for payment, proposal request, Change Orders and Contract closeout procedures.
5. Scheduling.

1.14 SITE MOBILIZATION CONFERENCE

- A. Architect/Engineer will schedule a conference at the Project site prior to Contractor occupancy.
- B. Attendance Required: Owner, Architect/Engineer, Contractor, Contractor's Superintendent, and major Subcontractors.
- C. Agenda:
 1. Use of premises by Owner and Contractor.
 2. Owner's requirements and occupancy.
 3. Construction facilities and controls provided by Owner.
 4. Temporary utilities provided by Owner.
 5. Security and housekeeping procedures.
 6. Schedules.
 7. Procedures for testing.
 8. Procedures for maintaining record documents.
 9. Requirements for start-up of equipment.
 10. Inspection and acceptance of equipment put into service during construction period.

1.15 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at weekly intervals.
- B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within two days to Architect/Engineer, Owner, participants, and those affected by decisions made.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect/Engineer, as appropriate to agenda topics for each meeting.
- D. Agenda:
 1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems which impede planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of off-site fabrication and delivery schedules.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.
 10. Coordination of projected progress.
 11. Maintenance of quality and work standards.
 12. Effect of proposed changes on progress schedule and coordination.
 13. Other business relating to Work.

1.16 PREINSTALLATION CONFERENCES

- A. Convene a preinstallation conference at work site prior to commencing work.
- B. Require attendance of parties directly affecting, or affected by, work of the specific Section.
- C. Notify Architect/Engineer four days in advance of meeting date.
- D. Prepare agenda, preside at conference, record minutes, and distribute copies within two days after conference to participants, with one copy to Architect/Engineer.
- E. Review conditions of installation, preparation and installation procedures, and coordination with related work.

1.17 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date for receiving bids.
- C. Obtain copies of standards when required by Contract Documents.
- D. Maintain copy at job site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- F. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or interference otherwise in any reference document.

1.18 SUBMITTAL PROCEDURES

- A. Transmit each submittal with transmittal.
- B. Sequentially number the transmittal forms. Resubmittals to have original number with an alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite the Project, and deliver to Architect at business address. Coordinate submission of related items.
- F. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.

- G. Provide space for Contractor and Architect review stamps.
- H. Revise and resubmit submittals as required, identify all changes made since previous submittal.
- I. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.19 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule (8 1/2" x 14" format) in duplicate within 10 days after date of Owner-Contractor Agreement for Architect/Engineer review.
- B. Revise and resubmit as required.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a horizontal bar chart with separate line for each major section of Work or operation identifying first work day of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submission.
- G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and under Allowances.

1.20 PROPOSED PRODUCTS LIST

- A. Within 10 days after date of Owner-Contractor Agreement, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.21 SHOP DRAWINGS

- A. After review, reproduce and distribute in accordance with Article on Procedures above and for Record Documents described in Section 01001 - Contract Closeout.

1.22 PRODUCT DATA

- A. Submit the number of copies which the Contractor requires, plus submit two hard copies of drawings and product data 11" x 17" and smaller which will be retained by the Architect/Engineer and the Owner.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this Project.

- C. After review, distribute in accordance with Article on Procedures above and provide copies for Record Documents described in Section 01001 - Contract Closeout.

1.23 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification Sections, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.
- B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.24 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification Sections, submit manufacturer's certificate to Architect/Engineer for review, in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.

1.25 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.26 REFERENCES

- A. Conform to reference standard by date of issue current on date for receiving bids.
- B. Obtain copies of standards when required by Contract Documents.
- C. Should specified reference standards conflict with Contract Documents, request clarification for Architect/Engineer before proceeding.

- D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.27 TELEPHONE SERVICE

- A. Provide, maintain and pay for telephone service to field superintendent at time of project mobilization.

1.28 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification Sections.
- B. Protect finished floors, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

1.29 SECURITY

- A. GCSD shall provide security and facilities to protect Work from unauthorized entry, vandalism, or theft.

1.30 PARKING

- A. Owner will provide temporary off-street surface parking areas to accommodate construction personnel.
- B. Do not allow vehicle parking along streets.

1.31 PROGRESS CLEANING

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition on a daily basis. Dispose off-site.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

1.32 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.
- B. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- C. Provide interchangeable components of the same manufacturer, for similar components.

1.33 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.34 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight, climate controlled enclosures.
- B. For exterior storage of fabricated products, place on sloped supports, above ground.
- C. Provide off-site storage and protection when site does not permit on-site storage or protection. Coordinate on-storage areas with Owner at the Pre Bid Conference.
- D. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- E. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

1.35 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers with no provisions for substitution. Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.36 SUBSTITUTIONS

- A. Instructions to Bidders specify time restriction for submitting requests for Substitutions during the bidding period to requirements specified in this Section. All requirements shall be met by submitting contractor in order to be considered.
- B. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- C. A request constitutes a representation that the Bidder:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the Substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.

4. Waives claims for additional costs or time extension which may subsequently become apparent.
5. Will reimburse Owner for review or redesign services associated with re-approval by authorities.

- D. Submit cut sheets and product data of specified product and proposed substitution.
- E. Provide a written letter certifying compliance with specified product and outlining differences.
- F. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revisions to the Contract Documents.

1.37 STARTING SYSTEMS

- A. Coordinate schedule for light systems testing with Owner's representative.
- B. Notify Architect/Engineer seven days prior to start up of each item.
- C. Verify that tests, meter readings and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- D. Verify wiring and support components for equipment are complete and tested.
- E. Execute testing under supervision of responsible Contractors' personnel in accordance with manufacturer's instructions.
- F. Submit a written report that equipment or system has been properly installed and is functioning correctly.

1.38 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel.
- B. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at equipment location.
- D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

1.39 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect/Engineer's inspection.
- B. Provide submittals to Architect/Engineer and Owner that are required by governing or other authorities.

- C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.40 FINAL CLEANING

- A. Execute final cleaning as each space is turned over to Owner.
- B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains, and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to a sanitary condition.
- D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.41 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.42 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to the Work:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other Modifications to the Contract.
 - 5. Reviewed shop drawings, product data, and samples.
- B. Store Record Documents separate from documents used for construction.
- C. Record information concurrent with construction progress.
- D. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and Modifications.
- E. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Field changes of dimension and detail.
 - 2. Details not on original Contract Drawings.
- F. Delete Architect/Engineer title block and seal from all documents.
- G. Submit above documents along with AIA Document G706 "Contractor's Affidavit of Payment of Debts and Claims," and G707 "Consent of Surety Company to Final Payment" to Architect/Engineer with claim for final Application for Payment.

1.43 OPERATION AND MAINTENANCE DATA

- A. Submit two sets prior to final inspection, bound in 8 1/2 x 11 inch text pages, three D-side ring covers.
- B. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project.
- C. Internally subdivide the binder contents with permanent page dividers, logically organized as described below, with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, type on white paper.
- E. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
- F. Part 2: Operation and maintenance instruction, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
 - 1. Significant design criteria.
 - 2. List of equipment.
 - 3. Parts list for each component.
 - 4. Operating instructions.
 - 5. Maintenance instructions for equipment and systems.
 - 6. Maintenance instructions for finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
- G. Part 3: Project documents and certificates, including the following:
 - 1. Shop drawings and product data.
 - 2. Certificates.
 - 3. Photocopies of warranties and bonds.
- H. Submit one copy of completed volumes in final form 5 days prior to final inspection. This copy will be returned after final inspection, with Architect/Engineer comments. Revise content of documents as required prior to final submittal.
- I. Submit final volumes revised, within ten days after final inspection. One for engineer, two for owner in addition, provide digital PDF format copies for engineer and architects.

1.44 WARRANTIES

- A. Provide duplicate notarized copies.
- B. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in three D-side ring binder with durable cover. Provide digital PDF format (2) copies as well.
- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.45 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification sections and listed on drawings.
- B. Deliver to Project site and place in location as directed by Owner; obtain receipt prior to final payment.

1.46 CONTRACTOR LICENSES

- A. Contractor is required to obtain all required licenses in the State of South Carolina. .

END OF SECTION 010010

SECTION 260500 — GENERAL PROVISIONS

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. The provisions of The Supplement to Advertisement, The Instructions to Bidders, Supplement to Instruction to Bidders, General Conditions, Supplementary Conditions and all other sections of Division 1 of these Specifications shall govern the work under this Division or Section the same as if incorporated herein.

1.2 SCOPE

- A. The Contractor shall provide and install complete electrical systems including all conductors, raceways, fittings, protective devices, wiring devices, fixtures, supports, and all miscellaneous hardware necessary. All of the above equipment shall be completely installed and left in proper operating condition. All electrically powered equipment shall be wired by the Contractor.

1.3 REQUIREMENTS

- A. Field verification of scale on plans is directed since actual locations, distances and levels will be governed by actual field conditions.
- B. In case of conflicts or discrepancies between plans, plans and specifications and/or actual field conditions, Contractor shall notify the Engineer before work is continued. Coordinate with other trades to avoid conflicts.
- C. Permits, Inspections and Tests - The Contractor shall procure and pay for all permits, fees, inspections, and licenses required. Perform all tests to ensure all systems are in good operating condition.
- D. Review of Material; Specific reference in the specification to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, with or without the words "or equal", shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition.
- E. Bidders shall base bids on the material specified or on equals receiving approval 10 days prior to Bid Opening. Any increase in the cost of work resulting from substitution of any product specified is part of this contract and shall be accomplished in an approved manner at no extra cost to the Owner.
- F. Substitutions. See Invitation For Bid for additional substitution requirements. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, cuts, performance and test data and any other information necessary for an evaluation. A complete submittal shall be provided per the frontend document "Request for Substitution" setting forth any changes in other materials, equipment or other Work that incorporation of the substitute would require shall be included; failure to do so does not alleviate the Contractor of his responsibility to make any and all necessary changes required for installation of the approved substitution. The burden of proof of the merit of the proposed substitute is upon the proposer. The Engineer's decision of approval or disapproval of a proposed substitution shall be final.

- G. All materials shall be new and of current manufacturer. Where more than one of a type of device is used, all shall be by the same manufacturer. All materials shall conform to the grade, quality and standards of those specified.
- H. Shop drawings shall be submitted in accordance with the General Conditions. Forward all shop drawings at one time. Each item shall bear project name and identifying symbol from plans. Shop Drawings required are as follows:
 - 1. Lighting Fixtures
 - 2. Wiring DevicesProvide additional submittal to owner with purchasing information as specified in sections 265119 and 265121
- I. Interferences - The drawings are generally diagrammatic in nature, and reflect generally the existing conditions and accordingly the Contractor shall coordinate his work to avoid interferences. The Contractor shall examine the complete set of drawings and specifications for the job before installation of electrical work, coordinating locations and routings as required. Work installed by the Contractor which does interfere with another trade shall be removed and reinstalled at the Contractor's expense when directed by the Owner.
- J. Workmanship shall be of the highest quality and all work shall be done by workmen skilled in the trades involved.
- K. The Contractor shall guarantee all work under this contract for one year and shall be responsible for the maintenance of all electrical equipment furnished and installed under this contract for a period of one year from the date of substantial completion.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 APPLICABLE CODES AND STANDARDS

Note: The materials and installation shall conform to the minimum requirements and latest outstanding issues and revisions of the following codes, standards, and regulations wherein they apply:

- NFPA No. 70, National Electrical Code, (2020 edition).
- IBC (2021), IECC (2009), IFC (2021)
- American National Standard, National Electrical Safety Code.
- Applicable Publications of NEMA, ANSI, IEEE and IPCEA.
- Underwriter's Laboratories, Inc. Standards
- City, State and Local Codes and Regulations having jurisdiction.
- OSHA requirements.
- ADA requirements.

END OF SECTION 260500

SECTION 260501 — BASIC MATERIALS

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. Materials specified in this section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 SCOPE

- A. Contractor Furnished. Unless otherwise noted on the drawings, equipment list, or specifications, the Contractor shall furnish and install all materials, devices, and apparatus necessary for the complete electrical system. All materials and equipment shall be of types and manufacturer specified wherever practical. Should materials or equipment so specified be unobtainable, the Contractor shall submit the description and manufacturer's literature, reason for the substitution request and shall secure the approval of the Engineers before substitution of other material or equipment. This specification establishes performance requirements and the quality of equipment acceptable for use and shall in no way be construed to limit procurement from other manufacturers.
- B. Equal or Equivalent. The term "or equal" and similar terms as used on the drawings or specifications shall be interpreted to mean "equal or equivalent" in the opinion of the Engineers.
- C. Manufacturer's Prints. Where the Contractor furnishes equipment other than standard construction items, he shall furnish manufacturer's prints and reproducibles of all such equipment to the Engineers.
- D. U.L. Listing. All equipment and materials shall be new and conform to the requirements of this specification. All equipment and materials shall be listed by the Underwriter's Laboratories, Inc., and shall bear their label whenever standards have been established and label service is regularly furnished. All equipment and materials shall be of the best grade of their respective kind for the purpose.

PART 2 - PRODUCTS AND EXECUTION

2.1 COVERS AND DEVICE PLATES

- A. Contractor Furnished. Where required, the contractor shall furnish and install the appropriate cover on all boxes, conduit fittings, panels, cabinets, switches, receptacles, and similar wiring devices and other equipment that is Contractor furnished. Conduit outlet fitting covers shall be the type specified under "Conduit Fittings."

2.2 ENCLOSURES

- A. Enclosures and housings for all Contractor furnished electrical equipment and devices shall be suitable for the location and environmental conditions.

END OF SECTION 260501

SECTION 260515 — DEMOLITION

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 16 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. The extent of demolition work shall be in general, but not limited to, removal of existing power, cable and conduit to all removed equipment at each air handling unit, unit heater, and boiler control.
- B. Demolition includes removal and disposal of demolished materials.

1.3 JOB CONDITIONS

- A. Occupancy: Building will be occupied and in operation during work duration. However, all construction work required by this project will occur after school closing and prior to opening. Coordinate exact time of work with SDGC.
- B. Condition of existing systems: The Owner assumes no responsibility for actual condition of items to be demolished. Conditions existing at time of inspection for bidding purposes will be maintained by Owner insofar as practicable.
- C. Protection: Ensure safe passage of persons in and around areas of demolition. Conduct operations to prevent injury to building, structure, other facilities and persons.
- D. Damages: Promptly repair damages caused to facilities by demolition operations at no cost to Owner.
- E. Utility Services: Maintain existing utilities, keep in service and protect against damage during demolition operations.
- F. Clean Up: Job work area to be cleaned each night of all debris, materials, etc. and returned to original state for use by school the next day.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 DEMOLITION

- A. Demolition: Demolition of all parts to be removed shall be done in a safe, orderly fashion, taking care to avoid damage to parts which are to be left in place. All debris shall be removed from the premises as it is generated and shall not be allowed to accumulate. In the event the Contractor has any questions regarding items to be removed, the Contractor is to ask the Engineer.
- B. Disposal of Demolished Materials:
 - 1. General: Remove from site, debris, rubbish and other materials resulting from demolition operations.
 - 2. Removal: Transport demolished materials removed from premise and legally dispose of off site.

END OF SECTION 260515

SECTION 260519 — CONDUCTORS

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. Materials specified in this Section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 SCOPE

- A. This specification covers the requirements for all wire and cable to be used in the installation of the electrical systems for the project, including all, lighting, systems, should it be required.
- B. Wire and cable will normally be furnished by the Contractor for installation.
- C. All cable is to be "Contractor-furnished", the Contractor shall submit for approval by the Owner any deviations anticipated or proposed with respect to the cable manufacturer, cable type, or specification contained herein.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All wire and cable shall be Underwriters' Laboratories (UL) listed. In addition to other standard labeling, all wire and cable shall be marked UL on the outer surface indicating Underwriters' Laboratories, Inc. certification.
- B. Grounding conductors, where insulated, shall be colored solid green. Conductors intended as a neutral shall be colored solid white.
- C. For all circuits 600 volt and less, wires and cables shall have code grade, 600 volt type THWN-THHN, 75 degrees C., wet or dry locations, moisture and heat resistant thermoplastic insulation. Insulation thickness shall be per National Electrical Code, Table 310-13.
- D. Conductor sizes are expressed in American Wire Gage (AWG) or in circular mils. Conductors shall be annealed copper wire, minimum size #12 AWG, except that #14 AWG may be used for control. All conductors shall be stranded except that solid conductors may be used for #12 AWG lighting and receptacle branch circuits.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Separation of Usage. Lighting and power wiring shall be routed in conduits, or other raceways as shown on the drawings. Lighting and power wiring shall not be routed in a common raceway except

where shown on drawings. Push-button wiring shall be routed in separate raceways even though related to a particular motor circuit.

- B. Pulling. Where mechanical assistance is used for pulling conductors, patented wire pulling compounds having inert qualities that do not harm the wire insulation or covering shall be applied to the conductors as they are pulled into raceways. Interior of all raceways shall be free from grease, filings or foreign matter before conductors are pulled in.

3.2 IDENTIFICATION

- A. Wire, Cable, Raceways, and Conduits.
- B. Circuit identification numbers shall be placed on each end of the conductor involved by using self-laminating marker tags, T&B Company E-Z Code Type WSL or equal. Circuit numbers shall be as shown on the plan and panel schedule drawings.
- C. Phase Identification. Phase sequence throughout the installation shall be standardized wherever practical in all electrical power equipment as follows:

	Phase A	Phase B	Phase C
Position Occupied	Front Top Left	Center Center Center	Rear Bottom Right
Color Code: 208/120V, 3-phase 480/277V, 3-phase	Black Brown	Red Orange	Blue Yellow

3.3 SPLICES AND TERMINATIONS

- A. Lighting Conductors. Splices in lighting conductors shall be made with splicing caps with metal inserts only, such as 3M Company's "Scotchlock" spring connectors. The splices shall be firmly and neatly taped to prevent entry of moisture.
- B. Power Conductors shall be continuous from outlet to outlet. No power cable shall be spliced except on explicit instructions of the Owner's Representative.

3.4 LUGS

- A. All lugs shall be furnished and installed by the Contractor where required.
- B. Lugs for copper power wiring, Sizes No. 12 and No. 10 AWG, shall be T&B "Sta-Kon" uninsulated ring type lugs. Lugs for copper power wiring from No. 10 AWG to size 1/0 AWG shall be T&B 1-hole Type 54100 Series. Size 2/0 AWG and larger lugs shall be 2-hole type 54200 series (except where 1-hole is required to match motor lead lugs). Sizes above 1/0 are to be applied using hydraulic pump tool.
- C. Where motor leads are furnished without lugs, T&B 54500 Series 2-way connectors (splicing sleeves) shall be used. Splice sleeves may be desirable where limited space for termination exists.

- D. The proper lugs will normally be furnished with equipment in all Owner-furnished equipment. All other lugs shall be furnished and installed by the Contractor. No mechanical type lugs shall be used except in panelboards. If any mechanical type lugs are furnished with Owner-furnished equipment, the Contractor shall replace them with proper compression type lugs where practical.

3.5 TAPING

- A. All voids, sharp corners and bolt projections shall be made smooth by filling with Okonite or Scotch Fill before applying the laps of tape required for insulation. All loose strands of wire shall be removed before taping. Duxseal will not be permitted.
- B. Joints and other sections of wiring requiring tape shall be half lap and at least two layers. Taping shall be neatly done and shall form a permanent insulation equal in mechanical and electrical strength to the insulation of the conductor. Taping shall be as follows:
 - 1. 600 Volt insulation - A minimum of 1-1/2 lap layer varnished cambric and 2-1/2 lap layers of 3M No. 33 vinyl plastic electrical tape.
- C. All taping, splicing and termination materials shall be furnished by the Contractor.

END OF SECTION 260519

SECTION 260539 — ELECTRICAL RACEWAYS

PART 1 - GENERAL

1.1 RELATED SECTIONS

- A. Materials specified in this Section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 SCOPE

- A. Contractor Furnished. The contractor shall provide all conduit, fittings, and supports if required.
- B. The types of electrical raceways required for the project include the following:
 - 1. Electrical Metallic Tubing
 - 2. Flexible Metal Conduit
- C. The minimum raceway size shall be 3/4".
- D. Product Delivery, Storage, and Handling. Contractor is to provide color-coded end-cap thread protectors and handle conduit and tubing carefully to prevent damage. Store pipe and tubing inside whenever possible. When necessary to store outdoors, elevate well above grade and enclose with durable, watertight wrapping.

PART 2 - PRODUCTS

2.1 MATERIALS AND COMPONENTS

- A. Electrical Metallic Tubing. Galvanized, thin wall tubing, fittings shall be hex-nut, expansion gland type, zinc plated, and U.L. listed as "raintight." No crimp, spring, or set-screw type fittings will be accepted.
- B. Flexible Metal Conduit. Galvanized single steel strip, flexible, interlocked.
- C. Conduit, tubing and duct accessories including straps, hangers, expansion and deflection fittings as recommended by conduit, tubing, and duct manufacturers.

PART 3 - EXECUTION

a. APPLICATION

- A. Electrical Metallic Tubing. Branch circuits run in hollow dry walls and above ceilings. Not to be exposed.
- B. Flexible Metal Conduit. Connection of motors and for other electrical equipment where subject to movement and vibration and located in a dry, interior location. Flexible conduit is not to exceed 60" in length for any one application.

3.2 INSTALLATION

- A. Install conduit and tubing in accordance with NEC and National Electrical Contractors Association's "Standard of Installation", and with recognized industry practices. Where NECA and NEC standards differ, use the more stringent requirement.
- B. Complete the installation of raceways before starting installation of wires.
- C. Wherever possible, install horizontal raceway runs above water and steam piping.
- D. Care shall be taken to keep the interior of conduits clean, and each conduit run shall be thoroughly cleaned and dried before any cable is pulled through.
- E. Unless indicated otherwise on drawings, all exposed conduits shall be run parallel with or perpendicular to building structural members.
- F. Conduits entering sheet metal enclosures shall be made up with double locknut and insulating bushing. Locknut shall be of the type which will bite into the metal of the box.
- G. Conduits entering threaded openings in equipment enclosures, boxes, etc., shall have at least five full threads engaged. In outdoor and underground locations, threaded joints shall be made up with a thin application of conducting joint compound. The inside of the fitting shall be thoroughly cleaned of any excess compound.
- H. Power operated bending machines shall be used on conduits 1-1/4" and larger. Heating with torches will not be permitted.
- I. All conduit runs shall be continuous from outlet to outlet with all joints and connections pulled tight to insure an electrically continuous and mechanically secure raceway system.
- J. All raceways in "finished areas" such as offices, corridors, etc., shall be concealed.

3.3 CONDUIT AND TRAY OPENINGS

- A. Contractor's Responsibility. The Contractor shall be responsible for all sleeves and openings through walls and floors necessary for passage of electrical conduits and raceways. Where contractor must provide openings and/or drill concrete floors and/or walls, he shall be responsible for the repair of these openings. Structural members and reinforcing shall not be cut, burned or damaged in any way. All openings in walls and floors, and under switchgear and panels where electrical cables and conduits are installed, shall be closed up by the Contractor to prevent dust, dirt and water from entering.
- B. Sealing. The Contractor shall be responsible for sealing all wall and floor openings and all floor and wall sleeve openings utilized by the contractor whether furnished by Others or by the Contractor.
- C. Sleeves and openings shall be sealed with materials that will withstand fire and heat to the same rating as the wall, floor, or ceiling through which the conduit or tray passes and shall not be less than a 30-minute barrier.

END OF SECTION 260539

SECTION 265119 - LED INTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and all conditions of the procurements contractual documents apply to this Section.

1.2 SUMMARY

- A. Section includes interior solid-state luminaires that use LED technology, and that are shown as new on the fixture schedule.

1.3 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. Lamp: LEDs and associated circuit board assembly.
- F. LED: Light-emitting diode.
- G. Lumen: Measured output of lamp and luminaire, or both.
- H. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Arrange in order of luminaire designation.
 - 2. Include data on features, accessories, and finishes.
 - 3. Include physical description and dimensions of luminaires.
 - 4. Include emergency lighting units, including batteries and chargers.
 - 5. Include life, output (lumens, CCT, and CRI), and energy efficiency data.
 - 6. Photometric data and adjustment factors based on laboratory tests complying with IES Lighting Measurements Testing and Calculation Guides, of each luminaire type.
 - a. Manufacturers' Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
 - b. Testing Agency Certified Data: For indicated luminaires, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.

- B. Shop Drawings: For nonstandard or custom luminaires.
 - 1. Include plans, elevations, sections, and mounting and attachment details.
 - 2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include diagrams for power, signal, and control wiring.
- C. Product Schedule: For luminaires and lamps. Use same designations indicated on Drawings.
- D. Additional Purchasing Information.
 - 1. Immediately upon ordering fixtures, contractor shall provide a complete submittal to the owner (one submittal for each school) containing the following information in the header of the cutsheet for each fixture type ordered:
 - a. Distributer contact information
 - b. PO number to the manufacturer
 - c. School name
 - d. Month and year of order release
 - e. Fixture type designation

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing laboratory providing photometric data for luminaires.
- B. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- C. Product Certificates: For each type of luminaire.
- D. Product Test Reports: For each luminaire, for tests performed by manufacturer and witnessed by a qualified testing agency.
- E. Sample warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.
 - 1. Provide cutsheets of all fixtures used, with photometrics and lumen data.
 - 2. Provide all warranty information required by section 010010, Basic Requirements.

1.7 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.
- B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7, accredited under the NVLAP for Energy Efficient Lighting Products, and complying with the applicable IES testing standards.

- C. Provide luminaires from a single manufacturer for each luminaire type.
- D. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.9 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period. See Warranty section 010010, Basic Requirements.
- B. Warranty Period: Ten years from date of Certified Substantial Completion for complete materials replacement, with one year to include labor.

PART 2 - PRODUCTS

2.1 LUMINAIRE REQUIREMENTS

- A. The set of criteria for the items listed below has been based upon the following considerations:
 - 1. To set a standard of quality for product.
 - 2. To aesthetically upgrade and provide improved lighting quality in existing facilities.
 - 3. To help facilitate and expedite the upgrade process.
 - 4. Ease of maintenance past initial installation.
 - 5. To maintain or improve lighting levels within the facilities as set by OSF standards.
- B. The following is a general set of criteria that all products shall adhere to:
 - 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 2. Product shall be provided from a source which has been in the business of manufacturing lighting for a minimum of 10 years.
 - 3. Manufacturer shall offer a 10 year warranty on all components with a 'no-hassle' parts replacement policy.
 - 4. DLC or Energy Star listed products shall be utilized. All products shall be UL, ETL or CSA listed.
 - 5. Products shall have CRI of 80 minimum, and rated life of 50,000 hours minimum to L70.
- C. The following is criteria set per lighting application which will be the bulk of lighting provided:
 - 1. 2x4 Troffer – new fixture for replacement
 - a. To match the appearance of the retrofit kits.

- b. Available in CCT of 3500K and 4000K.
 - c. Available in lumen packages from 3000 through +7000. See drawings for additional lumen requirements
 - d. Available in 2x2 version to match 2x4.
0-10v dimming driver standard.
 - e. Step-dimming driver option, with multiple field-selectable mA outputs:
Osram # OT*W/CS*/UNV/SD/L.
 - f. Efficacy of 110 or higher.
 - g. Acceptable manufacturers: In addition to manufacturers and part numbers listed in fixture schedule on the drawings, and subject to the description, specifications and part numbers and accessories listed on the bid documents, the following manufacturers are approved to bid for this fixture type. Any fixtures failing to meet these requirements or to provide acceptable documentation will be rejected.
 - 1) Lumen Focus FFL
 - 2) Columbia LCAT
- 2. 2x4 Lay-in Flat Panel – new fixture for replacement
 - a. Must be available in 2x2 and 1x4 configurations.
 - b. Available with option of surface mount and recessed flange mount frame kits in all sizes.
 - c. Available in CCT of 3500K and 4000K.
 - d. Available in lumen packages from 3000 through 5000.
 - e. Lens to be made of material guaranteed not to “yellow” over time.
0-10v dimming driver standard.
 - f. Efficacy of 110 or higher.
 - g. Suitable for damp locations.
- 3. Architectural Wall Mount Fixtures
 - a. Based on H.E. Williams WMA series design.
 - b. Available in 2', 3' and 4' lengths
 - c. Available in lumen packages from 1500 to 6500
 - d. CCT of 3500K or 4000K
 - e. 0-10v dimming driver standard.
- 4. High-Bay Lights – new fixture for replacement
 - a. Lumen package to match that of 400w Metal Halide high-bay fixture.
 - b. CCT of 4000K.
 - c. Option of 120-277v or 347-480v input.
 - d. Available with aluminum and clear acrylic reflector, clear conical lens and wire guard.
 - e. Available with pendent or hook and cord mount options.
- 5. Linear Pendants
 - a. Fixtures shall match drawing requirements. See drawing lighting schedules for requirements.
 - b. Available in lengths of 4' and 8'.
 - c. CCT of 3500K or 4000K.
 - d. 0-10v dimming driver standard.
- 6. Channel Strip Fixtures

- a. Available in lengths of 2', 4' and 8'.
- b. Available with rounded frosted lens and wireguard.
- c. CCT of 3500K or 4000K
- d. Lumen packages of 4000, 5000, and 6500 available per 4' section.
- e. 0-10v dimming driver standard, multi-volt (120-277V)
- f. Efficacy of 110 or higher.
- g. Acceptable manufacturers: In addition to manufacturers and part numbers listed in fixture schedule on the drawings, and subject to the description, specifications and part numbers and accessories listed on the bid documents, the following manufacturers are approved to bid for this fixture type. Any fixtures failing to meet these requirements or to provide acceptable documentation will be rejected.
 - 1) Lumen Focus ECL
 - 2) Cree LS
 - 3) Day-Brite FSS

7. Vaportight Strip Fixtures

- a. Available in multiple lengths to fit a variety of applications.
- b. Frosted acrylic lens, stainless steel latches and mounting clips available.
- c. CCT of 3500K or 4000K
- d. Lumen packages of 4000, 5000, and 6000 available per 4' section.
- e. 0-10v dimming driver standard, multi-volt (120-277V)
- f. Efficacy of 110 or higher.
- g. Wet location rated.
- h. Acceptable manufacturers: In addition to manufacturers and part numbers listed in fixture schedule on the drawings, and subject to the description, specifications and part numbers and accessories listed on the bid documents, the following manufacturers are approved to bid for this fixture type. Any fixtures failing to meet these requirements or to provide acceptable documentation will be rejected.

2.2 MATERIALS

A. Metal Parts:

1. Free of burrs and sharp corners and edges.
2. Sheet metal components shall be steel unless otherwise indicated.
3. Form and support to prevent warping and sagging.

B. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.

C. Housings:

1. Extruded-aluminum heat sink.
2. Powder coat finish.

D. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp characteristics:

- a. "USE ONLY" and include specific lamp type.
- b. Lamp diameter, shape, size, wattage, and coating.
- c. CCT and CRI for all luminaires.

2.3 METAL FINISHES

- A. Variations in finishes are unacceptable in the same piece.

2.4 LUMINAIRE SUPPORT

- A. Single-Stem Hangers: 1/2-inch (13-mm) steel tubing with swivel ball fittings and ceiling canopy. Finish same as luminaire.
- B. Wires: ASTM A 641/A 641 M, Class 3, soft temper, zinc-coated steel, 12 guage (2.68 mm).
- C. Rod Hangers: 3/16-inch (5-mm) minimum diameter, cadmium-plated, threaded steel rod.
- D. Hook Hangers: Integrated assembly matched to luminaire, line voltage, and equipment with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for luminaire to verify actual locations of luminaire and electrical connections before luminaire installation. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 TEMPORARY LIGHTING

- A. If approved by the Architect, use selected permanent luminaires for temporary lighting. When construction is sufficiently complete, clean luminaires used for temporary lighting and install new lamps.

3.3 INSTALLATION

- A. Comply with NECA 1.
- B. Install luminaires level, plumb, and square with ceilings and walls unless otherwise indicated.
- C. Install lamps in each luminaire.
- D. Supports:
 - 1. Sized and rated for luminaire weight.
 - 2. Able to maintain luminaire position after cleaning and relamping.

3. Provide support for luminaire without causing deflection of ceiling or wall.
4. Luminaire mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and vertical force of 400 percent of luminaire weight.

E. Flush-Mounted Luminaire Support

1. Secured to outlet box.
2. Attached to ceiling structural members at four points equally spaced around circumference of luminaire.
3. Trim ring flush with finished surface.

F. Wall-Mounted Luminaire Support

1. Do not attach luminaires directly to gypsum board.

G. Ceiling-Grid-Mounted Luminaires:

1. Secure to any required outlet box.
2. Secure luminaire to the luminaire opening using approved fasteners in a minimum of four locations, spaced near corners of luminaire.
3. Use approved devices and support components to connect luminaire to ceiling grid and building structure in a minimum of four locations, spaced near corners of luminaire.

3.4 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.

B. Luminaire will be considered defective if it does not pass operation tests and inspections.

C. Prepare test and inspection reports.

3.5 ADJUSTING

A. Occupancy Adjustments: Within 3 months of date of Substantial Completion, coordinate a site visit with Owner's Representative to review operation of all fixtures.

1. During visits, inspect all luminaires. Replace lamps or luminaires that are defective.
2. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
3. Adjust the aim of luminaires in the presence of the Owner's Representative.

END OF SECTION 265119

SECTION 265121 - LED LIGHTING RETROFIT KITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. All conditions of the procurement contractual documents apply to this Section.

1.2 SUMMARY

- A. The intent of this specification is to allow for the procurement of LED retrofit kits for the following type fixtures:

1. All 2' and 4' fluorescent recessed troffers and surface fixtures with varying lamp quantities. Submit retrofit kits for the refitting of existing area lighting fluorescent troffers with LED Technology to replace fluorescent lamps and ballasts with new LED kits and Drivers.
2. All recessed downlighting fixtures with varying lamp quantities and wattages. Submit retrofit kits for the refitting of existing area fluorescent/incandescent/HID recessed downlights with LED technology to replace existing lamps and ballasts with new LED kits and drivers.
3. It is recognized that LED technology is evolving and that each manufacturer's standard lumen outputs, efficiencies, etc. may differ somewhat. Each bidder shall provide pricing as shown with informational data as requested in order for the Owner to evaluate the best value.
4. Units shall comply with the requirements of this specification.

1.3 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color Rendering Index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. Lamp: LEDs and associated circuit board assembly.
- F. LED: Light-emitting diode.
- G. Lumen: Measured output of lamp and luminaire, or both.
- H. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product to be provided with bid submittal.
 1. Arrange in order of retrofit kit designation.
 2. Include mounting and attachment details.

3. Include details of retrofit kit assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
4. Include emergency lighting units, including batteries and chargers.
5. Include life, output (lumens, CCT, and CRI), and energy efficiency data.
6. Include replacement door kit.
7. Photometric data and adjustment factors based on laboratory tests IES LM-79 and IES LM-80.
 - a. Manufacturers' Certified Data: Photometric description of data certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products or qualified independent testing agency.
8. Include diagrams for power, signal, and control wiring.

B. Samples for Verification: For each type of retrofit kit.

1. Include Samples of retrofit kit for fluorescent fixtures and downlights.

C. Additional Purchasing Information.

1. Immediately upon ordering fixtures, contractor shall provide a complete submittal to the owner (one submittal for each school) containing the following information in the header of the cutsheet for each fixture type ordered:
 - a. Distributer contact information
 - b. PO number to the manufacturer
 - c. School name
 - d. Month and year of order release
 - e. Fixture type designation

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing laboratory providing photometric data for luminaires with retrofit kits.
- B. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- C. Product Certificates: For each type of kit.
- D. Product Test Reports: For each luminaire, for tests performed by a qualified testing agency.
- E. Warranty.

1.6 QUALITY ASSURANCE

- A. Photometric Data Testing Laboratory Qualifications: Luminaire manufacturer's laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.
- B. Provide retrofit kits from a single manufacturer for each luminaire type.
- C. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering before shipping.

1.8 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of retrofit kits that fail in materials or workmanship within specified warranty period. See Warranty section 010010, Basic Requirements.
- B. Warranty Period: Ten years from date of Certified Substantial Completion for complete materials replacement, with one year to include labor.

PART 2 - PRODUCTS

2.1 RETROFIT REQUIREMENTS

- A. The acceptable manufacturers are listed on the plans. Provide submissions to document specification compliance.
- B. The set of criteria for the items listed below has been based upon the following considerations:
 - 1. To set a standard of quality for product.
 - 2. To aesthetically upgrade and provide improved lighting quality in existing facilities.
 - 3. To help facilitate and expedite the upgrade process.
 - 4. Ease of maintenance past initial installation.
 - 5. To maintain or improve lighting levels within the facilities as set by OSF standards.
- C. The following is a general set of criteria that all products shall adhere to:
 - 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 2. Product shall be provided from a source which has been in the business of manufacturing lighting for a minimum of 10 years.
 - 3. Manufacturer shall offer a 10 year warranty on all components with a 'no-hassle' parts replacement policy.
 - 4. DLC or Energy Star listed products shall be utilized. All products shall be UL, ETL or CSA listed.
 - 5. Products shall have CRI of 80 minimum, and rated life of 50,000 hours minimum to L70.
 - 6. FM Global Compliance: Luminaires for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.
- D. The following is criteria set per lighting application which will be the bulk of lighting provided:
 - 1. 2x4 Troffer Retrofit Kit
 - a. Kit must be Architectural style to match fixture styles indicated on plans.
 - b. Constructed as a hinged type, swing-down type.
 - c. Available in CCT of 3500K and 4000K.
 - d. Available in lumen packages from 3000 through +6000.
 - e. Available in 2x2 version to match 2x4.

- f. 0-10v dimming driver standard.
- g. Efficacy of 110 or higher.
- h. Acceptable manufacturers: In addition to manufacturers and part numbers listed in fixture schedule on the drawings, and subject to the description, specifications and part numbers and accessories listed on the bid documents, the following manufacturers are approved to bid for this fixture type. Any fixtures failing to meet these requirements or to provide acceptable documentation will be rejected.
 - 1) Columbia SLK
 - 2) GE LVR

2. Recessed Downlight Retrofit Kits

- a. CCT of 3500K and 4000K available.
- b. 0-10v dimming driver standard, multi-volt (120-277v).
- c. Multiple lumen outputs available to cover a variety of applications.
- d. Multiple diameters available to cover a variety of applications.
- e. Damp location rated.
- f. Acceptable manufacturers: In addition to manufacturers and part numbers listed in fixture schedule on the drawings, and subject to the description, specifications and part numbers and accessories listed on the bid documents, the following manufacturers are approved to bid for this fixture type. Any fixtures failing to meet these requirements or to provide acceptable documentation will be rejected.
 - 1) GE LRC

3. Channel strip retrofit kit

- a. Kit must be single-piece "pan" type to fit over existing channel strip fixture, with multiple widths available to accommodate existing fixture widths.
- b. Kit must include rounded frosted lens, end caps and screw-retained wire guard option.
- c. CCT of 3500K and 4000K available.
- d. 0-10v dimming driver standard, multi-volt (120-277v).
- e. Lumen outputs available between 4000 and 6500 lumens.
- f. Efficacy of 110 or higher.
- g. Acceptable manufacturers: In addition to manufacturers and part numbers listed in fixture schedule on the drawings, and subject to the description, specifications and part numbers and accessories listed on the bid documents, the following manufacturers are approved to bid for this fixture type. Any fixtures failing to meet these requirements or to provide acceptable documentation will be rejected.
 - 1) Lumen Focus RCL
 - 2) Philips SL

2.2 MATERIALS

A. Metal Parts:

- 1. Free of burrs and sharp corners and edges.
- 2. Sheet metal components shall be steel unless otherwise indicated.
- 3. Form and support to prevent warping and sagging.

B. Factory-Applied Labels: Comply with UL 1598C. Include recommended lamps. Locate labels where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. After contract has been awarded, but prior to start of construction, contractor shall schedule a site walk-through with Owner's representative to identify areas where special lighting outputs or provisions may be required.

3.2 INSTALLATION

- A. Provide detailed mounting instructions with kits.
- B. Install kits level, plumb, and square with existing fixtures unless otherwise indicated.
- C. Install kits in each luminaire.
- D. Clean all areas of installation daily such that space can be used for intended purpose the next day.

3.3 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
 - 1. Operational Test: After installing kits, batteries and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
 - 2. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery power and retransfer to normal.
- B. Retrofit kit will be considered defective if it does not pass operation tests and inspections.
- C. Prepare test and inspection reports.

3.4 LIGHT LEVELS

- A. Light levels shall be tested upon completion of the installation to comply with the following initial light levels for space indicated.

IES Recommended Light Levels for Education (FC)		
SPACE	IES	W/SQFT
AUDITORIUM - LECTURE HALL (HOUSE,SPEAKER)	10,50	1.1
AUDITORIUM - MULTIPURPOSE ASSEMBLY (HOUSE,SPEAKER)	10,50	1.1
AUDITORIUM - PERFORMANCE (HOUSE,STAGE,PRESENTATION)	7.5,30,100	1.1
BREAKROOM	10	1.2
CAFETERIA	15	1.4
CLASSROOMS - LABS	50	1.4
CLASSROOMS - READING/WRITING	40	1.2
CLASSROOMS - SHOPS	100	1.4
CONFERENCE	30	1.2
COPY/PRINT ROOMS - GENERAL	10	1.2
COPY/PRINT ROOMS - MACHINES	30	1.2
CORRIDORS	10--20	1.2
EQUIPMENT ROOMS	20	1.2
GYMNASIUMS (SEE IES SPORTS SECTION IES FOR COMPETITIVE PLAY)	50	1.1
JANITOR	10	1.2
KITCHEN (PREP)	50	1.4
LIBRARY - COMPUTERS	15	1.3
LIBRARY - GENERAL LENDING	20--30	1.3
LIBRARY - READING	30--50	1.3
LIBRARY - STAFFED DESKS	50	1.3
LOBBIES - GENERAL	10	1.2
LOBBIES - RECEPTION DESK	40	1.2
LOBBIES - WAITING	20	1.2
OFFICES - READING/WRITING	30--50	1
STAIRS	10	1.2
STORAGE (FREQUENT)	10	1.2
TOILETS/LOCKER ROOM - FIXTURES	15	1.2
TOILETS/LOCKER ROOM - SHOWER	10	1.2
TOILETS/LOCKER ROOM - GENERAL	5	1.2
	AVERAGE W/SQFT	1.22

3.5 ADJUSTING

- A. Occupancy Adjustments: Within 3 months of date of Substantial Completion, coordinate a site visit with Owner's Representative to review operation of all fixtures.
 - 1. During visits, inspect all luminaires. Replace lamps or luminaires that are defective.
 - 2. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
 - 3. Adjust the aim of luminaires in the presence of the Owner's Representative.

END OF SECTION 265121

SECTION 265619 – LED EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and all conditions of the procurement contractual documents apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Exterior solid-state luminaires that are designed for and exclusively use LED lamp technology.
 - 2. Luminaire supports.
 - 3. Luminaire-mounted photoelectric relays.

1.3 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color rendering index.
- C. Fixture: See "Luminaire."
- D. IP: International Protection or Ingress Protection Rating.
- E. Lamp: LEDs and associated circuit board assembly.
- F. LED: Light-emitting diode.
- G. Lumen: Measured output of lamp and luminaire, or both.
- H. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of luminaire.
 - 1. Arrange in order of luminaire designation.
 - 2. Include data on features, accessories, and finishes.
 - 3. Include physical description and dimensions of luminaire.
 - 4. Lamps, include life, output (lumens, CCT, and CRI), and energy-efficiency data.
 - 5. Photometric data and adjustment factors based on laboratory tests, complying with IES Lighting Measurements Testing and Calculation Guides, of each luminaire type.
 - a. Manufacturer's Certified Data: Photometric data certified by manufacturer's laboratory with a current accreditation under the NVLAP for Energy Efficient Lighting Products.

- b. Testing Agency Certified Data: For indicated luminaires, photometric data certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.
 - 6. Photoelectric relays.
 - 7. Means of attaching luminaires to supports and indication that the attachment is suitable for components involved.
- B. Shop Drawings: For nonstandard or custom luminaires.
- 1. Include plans, elevations, sections, and mounting and attachment details.
 - 2. Include details of luminaire assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
 - 3. Include diagrams for power, signal, and control wiring.
- C. Product Schedule: For luminaires and lamps. Use same designations indicated on Drawings.

1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For testing laboratory providing photometric data for luminaires.
- B. Seismic Qualification Data: For luminaires, accessories, and components, from manufacturer.
- 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
 - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
 - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- C. Product Certificates: For each type of the following:
- 1. Luminaire.
 - 2. Photoelectric relay.
- D. Product Test Reports: For each luminaire, for tests performed by manufacturer and witnessed by a qualified testing agency.
- E. Sample warranty.

1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For luminaires and photoelectric relays to include in operation and maintenance manuals.
- 1. Provide cut sheets of all fixtures used, with photometrics and lumen data.
 - 2. Provide all warranty information required by section 010010, Basic Requirements.

1.7 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Luminaire manufacturers' laboratory that is accredited under the NVLAP for Energy Efficient Lighting Products.

- B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.7, accredited under the NVLAP for Energy Efficient Lighting Products and complying with applicable IES testing standards.
- C. Provide luminaires from a single manufacturer for each luminaire type.
- D. Each luminaire type shall be binned within a three-step MacAdam Ellipse to ensure color consistency among luminaires.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Protect finishes of exposed surfaces by applying a strippable, temporary protective covering prior to shipping.

1.9 WARRANTY

- A. Warranty: Manufacturer and Installer agree to repair or replace components of luminaires that fail in materials or workmanship within specified warranty period. See "Warranty" portion of section 010010, Basic Requirements.
 - 1. Warranty Period: Ten years from the date of certified substantial completion for complete materials replacement, with one year to include labor.

PART 2 - PRODUCTS

2.1 LUMINAIRE REQUIREMENTS

- A. The set of criteria for the items listed below has been based upon the following considerations:
 - 1. To set a standard of quality for product.
 - 2. To aesthetically upgrade and provide improved lighting quality in existing facilities.
 - 3. To help facilitate and expedite the upgrade process.
 - 4. Ease of maintenance past initial installation.
 - 5. To maintain or improve lighting levels within the facilities as set by OSF standards.
- B. The following is a general set of criteria that all products shall adhere to:
 - 1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 2. Product shall be provided from a source which has been in the business of manufacturing lighting for a minimum of 10 years.
 - 3. Manufacturer shall offer a 10 year warranty on all components with a 'no-hassle' parts replacement policy.
 - 4. DLC or Energy Star listed products shall be utilized. All products shall be UL, ETL or CSA listed.
 - 5. Products shall have CRI of 80 minimum, and rated life of 50,000 hours minimum to L70.
- C. The following is criteria set per lighting application which will be the bulk of lighting provided:
 - 1. Pole Mounted Area and Site:

- a. To match the appearance, finish and performance of fixtures specified on drawings.
- b. Available in CCT of 4000K and 5000K.
- c. Available in lumen packages from 10,000 thru 18,000. See drawings for additional lumen requirements.
- d. Full cutoff optics, available in IES distribution types II, III, IV, and V.
- e. Efficacy of 80 or higher.
- f. 0-10v dimming driver standard, Multi-volt (120-277V) and 480V available.
- g. Acceptable manufacturers: In addition to manufacturers and part numbers listed in fixture schedule on the drawings, and subject to the description, specifications and part numbers and accessories listed on the bid documents, the following manufacturers are approved to bid for this fixture type. Any fixtures failing to meet these requirements or to provide acceptable documentation will be rejected.
 - 1) Gardco ECF
 - 2) Cree OSQ

2. Wall Packs:

- a. To match the appearance, finish and performance of fixtures specified on drawings.
- b. Available in CCT of 4000K and 5000K.
- c. Available in lumen packages from 3,500 thru 7,000. See drawings for additional lumen requirements.
- d. Full cutoff optics, available in wide and forward throw distribution types.
- e. Efficacy of 90 or higher.
- f. 0-10v dimming driver standard, Multi-volt (120-277V) and 480V available
- g. Acceptable manufacturers: In addition to manufacturers and part numbers listed in fixture schedule on the drawings, and subject to the description, specifications and part numbers and accessories listed on the bid documents, the following manufacturers are approved to bid for this fixture type. Any fixtures failing to meet these requirements or to provide acceptable documentation will be rejected.
 - 1) Gardco 101L

2.2 LUMINAIRE-MOUNTED PHOTOELECTRIC RELAYS

- A. Comply with UL 773 or UL 773A.
- B. Contact Relays: Factory mounted, single throw, designed to fail in the on position, and factory set to turn light unit on at 1.5 to 3 fc and off at 4.5 to 10 fc with 15-second minimum time delay. Relay shall have directional lens in front of photocell to prevent artificial light sources from causing false turnoff.
 1. Relay with locking-type receptacle shall comply with ANSI C136.10.
 2. Adjustable window slide for adjusting on-off set points.

2.3 MATERIALS

- A. Metal Parts: Free of burrs and sharp corners and edges.
- B. Sheet Metal Components: Corrosion-resistant aluminum. Form and support to prevent warping and sagging.
- C. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses.

D. Diffusers and Globes:

1. Acrylic Diffusers: 100 percent virgin acrylic plastic, with high resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
2. Glass: Annealed crystal glass unless otherwise indicated.

E. Lens and Refractor Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.

F. Housings:

1. Rigidly formed, weather- and light-tight enclosure that will not warp, sag, or deform in use.
2. Provide filter/breather for enclosed luminaires.

G. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

1. Label shall include the following lamp characteristics:
 - a. "USE ONLY" and include specific lamp type.
 - b. Lamp diameter, shape, size, wattage and coating.
 - c. CCT and CRI for all luminaires.

2.4 FINISHES

- A. Variations in Finishes: Noticeable variations in same piece are unacceptable.
- B. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.
- C. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- D. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- B. Examine roughing-in for luminaire electrical conduit to verify actual locations of conduit connections before luminaire installation. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 TEMPORARY LIGHTING

- A. If approved by the Architect, use selected permanent luminaires for temporary lighting. When construction is substantially complete, clean luminaires used for temporary lighting and install new lamps.

3.3 GENERAL INSTALLATION REQUIREMENTS

- A. Comply with NECA 1.
- B. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
- C. Install lamps in each luminaire.
- D. Fasten luminaire to structural support.
- E. Supports:
 - 1. Sized and rated for luminaire weight.
 - 2. Able to maintain luminaire position after cleaning and relamping.
 - 3. Support luminaires without causing deflection of finished surface.
 - 4. Luminaire-mounting devices shall be capable of supporting a horizontal force of 100 percent of luminaire weight and a vertical force of 400 percent of luminaire weight.
- F. Wall-Mounted Luminaire Support:
 - 1. Attached to structural members in.
- G. Wiring Method: Install cables in raceways. Conceal raceways and cables.
- H. Install luminaires level, plumb, and square with finished grade unless otherwise indicated. Install luminaires at height and aiming angle as indicated on Drawings.
- I. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources, favoring a north orientation.

3.4 BOLLARD LUMINAIRE INSTALLATION:

- A. Align units for optimum directional alignment of light distribution.

3.5 INSTALLATION OF INDIVIDUAL GROUND-MOUNTED LUMINAIRES

- A. Aim as indicated on Drawings.

3.6 CORROSION PREVENTION

- A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.

3.7 FIELD QUALITY CONTROL

- A. Inspect each installed luminaire for damage. Replace damaged luminaires and components.
- B. Perform the following tests and inspections:
 - 1. Operational Test: After installing luminaires, switches, and accessories, and after electrical circuitry has been energized, test units to confirm proper operation.
 - 2. Verify operation of photoelectric controls.
- C. Luminaire will be considered defective if it does not pass tests and inspections.
- D. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

3.8 ADJUSTING

- A. Occupancy Adjustments: Within 3 months of date of Substantial Completion, coordinate a site visit with Owner's Representative to review operation of all fixtures.
 - 1. During visits, inspect all luminaires. Replace lamps or luminaires that are defective.
 - 2. Parts and supplies shall be manufacturer's authorized replacement parts and supplies.
 - 3. Adjust the aim of luminaires in the presence of the Owner's Representative.

END OF SECTION 265619

OWNER-CONTRACTOR AGREEMENT

OWNER PROJECT NO. _____

CONTRACT NO. _____

JOB: _____

THIS CONTRACT AGREEMENT made and entered into this _____ day of _____, 20_____, by and between The School District of Greenville County hereinafter called Owner and _____

_____ hereinafter called Contractor.

WITNESSETH:

WHEREAS, it is agreed that work is to be performed by Contractor under the terms and conditions hereinafter set forth; NOW, THEREFORE, in consideration of the premises and the covenants and conditions herein contained, it is mutually agreed as follows:

1. Hereby made a part of and incorporated into this Contract Agreement by reference thereto are all plans, specifications, general conditions, agreements and documents pertaining thereto and all regulations, rulings, specifications now in effect or which may be adopted applicable or pertaining to said Work, all of which are hereinafter referred to collectively as the Contract, and Contractor shall be bound thereby in the performance of this Contract and agrees to comply therewith and perform said Work in accordance therewith.
2. Contractor acknowledges and agrees that he has examined sufficiently to his satisfaction the site of the Work and is fully familiar with the aforesaid Contract. Contractor assumes full responsibility for all conditions of the Work.
3. Contractor agrees to perform said Contract as set forth on ~~Attachment "A"~~ attached drawing of specifications hereby made a part of this Contract Agreement.

4. Owner agrees to pay Contractor, subject to other provisions hereof, the prices set forth hereinafter for the respective items of Work, or if said prices are not itemized, the total sum of _____ Dollars (\$_____).

a. Payments shall be made monthly upon proper application by Contractor. Under this Contract, the billing cycle ends on the twenty-fifth (25th) day of each month. Contractor's Application for Payment shall reflect Work in place by this day and shall be delivered to Owner on or by the last working day of the month. In no event shall a final Application for Payment be delivered to Owner later than June 25 of the Owner's fiscal year in which the Contract is dated. Fiscal year begins July 1 and ends July 30. Owner shall pay contractor by the twenty-fifth (25th) day of the month following receipt of Application. (See also Paragraph 7).

b. Each Application for Payment shall be based upon a Schedule of Values submitted by Contractor for Owner's approval within thirty (30) days of the Contract date. The Schedule of values shall, where applicable, allocate the entire Contract sum among the various portions of the Work.

c. Applications for Payment shall be made on or in the form of ~~complete Attachment "B"~~ AIA Document G702-1992. Retainage calculated at ten percent (10%) of completed Work and materials shall be withheld until final acceptance and final payment by Owner.

d. Payment will be made to Contractor only for actual Work performed to the satisfaction of Owner. Final payment to Contractor is to be made upon acceptance of the work by Owner subject to the conditions set forth in paragraph 11 below. Amounts due and unpaid ten (10) days after the due date shall bear interest at the rate of one percent (1%) per month.

e. The making of final payment shall constitute a waiver of claims by both parties except those arising from:

- i. Liens, claims previously submitted but unresolved, security interests or Encumbrances arising out of the Contract;
- ii failure of the Work to comply with the requirements of the Contract; or
- iii terms of warranties required by the Contract.

f. Contractor may apply for payment for materials properly stored at the project site; such application must be accompanied by invoices for those materials. Contractor retains responsibility for quantity of all materials under this Contract Agreement.

5. Contractor shall furnish at his own expense all labor, equipment, materials, apparatus, fuel, energy, tools and other facilities necessary for the expeditious execution and completion of said Work, including Contractor's own clean up. Clean up and

housekeeping will be strictly enforced. Contractor shall remove construction debris and refuse from the work area on a daily basis. In the event of non-conformance, Owner may self-perform and back charge Contractor for actual cost or terminate the Contract as provided in paragraphs 12 and 13.

6.
 - a. Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, only through written change order by Owner's project manager.
 - b. Change orders shall be signed by Owner and Contractor and shall state their agreement upon the following:
 - I. Unit price stated in the Contract;
 - ii. the amount of the adjustment in the Contract sum, if any; and
 - iii. the extent of the adjustment in the Contract time, if any.
 - c. In the event a change provides for an adjustment to the Contract sum, the adjustment shall be based upon one of the following methods and in the following precedence:
 - I. Unit price stated in the Contract;
 - ii. mutual acceptance of a lump sum properly itemized and supported by sufficient sustaining data to permit evaluation;
 - iv. actual documented cost and a fixed fifteen percent (15%) for Contractor-performed or seven percent (7%) for subcontracted work covering overhead and profit.
 - d. Changes in the Work must be identified and submitted to the Owner in the form of a Change Order within seven days of identification. Any work executed without and executed change order will be deemed as part of this Contract.
7. Contractor is to commence the Work on _____ and shall complete the same not later than _____ and shall maintain such rate of progress in performance of said Work as to not impede Owner or Contractor in the performance of its work and so as to satisfy Owner with the rate of progress of such Work. Contractor shall submit, for Owner's approval, within thirty (30) days of Contract date, a detailed Construction Schedule within the constraints of this paragraph and which coincides with the Schedule of Values required by subparagraph 4.b.

Upon request by Owner, during the scheduling process and if mutually agreed to by both parties, certain parts of the Work covered by this Contract Agreement shall be prosecuted in preference to others. Owner or another contractor may, upon agreement of Contractor, perform certain parts of the Work herein contracted for without affecting the validity of the Contract.

8. If Contractor is delayed at any time in the progress of the Work by an act or neglect of Owner, or by changes ordered in the Work, or by labor disputes, poor weather conditions which could not reasonably anticipated for this particular geographic location or other causes beyond the Contractor's control, and if requested in writing by Contractor, the contract time shall be extended accordingly by change order.
9. To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner and the Architects and their agents and employees from and against all claims, damages, losses and expenses, including but not limited to attorney's fees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss of expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than Work itself), including the loss of use resulting therefrom, and (2) is caused in whole or in part by any negligent act or omission of the Contractor, and Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right of obligation of indemnity which would otherwise exist as to any party or person described in this paragraph 9. in any and all claims against the owner or the Architect or any of their agents or employees, by any employee of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this paragraph 9 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any Subcontractor under Workers' or Workman's Compensation acts, disability benefit acts or other employee benefit acts. The obligations of the Contractor under this paragraph 9 shall not extend to the liability of the Architect, his agents or employees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications, or (2) the giving of or the failure to give directions or instructions by the Architect, his agents or employees provided such giving or failure to give is the primary cause of the injury or damage. Contractor assumes full responsibility for securing necessary permits and licenses and for payment of all state and federal and local taxes, including, but not limited to, federal unemployment insurance, old age benefits, sales taxes, property taxes and income taxes and agrees to comply with all laws, ordinances, regulations or requirements applicable to Contractor promulgated by national, state, municipal or other governments or agencies.

a. Insurance

Insurance required shall be written for not less than any limits of liability specified in the Contract documents (listed below) or required by laws of South Carolina, whichever is greater.

Workman's Compensation Insurance – Statutory, required of all contractors regardless of number of employees.

Comprehensive General Liability shall include: (1) Contractor's liability, (2) Owner's and Contractor's liability, and (3) Contractual Liability, all having limits of not less than:

Bodily Injury \$ 500,000 --- per occurrence
\$1,000,000 --- aggregate

Property Damage \$ 500,000 --- per occurrence
\$ 500,000 --- aggregate

Comprehensive Automobile Liability shall include coverage for all owned, non-owned, and hired automotive equipment, all having limits of not less than:

Bodily Injury \$ 500,000 --- per person
\$1,000,000 --- per occurrence

Property Damage \$ 200,000 --- per occurrence

Comprehensive Excess ("umbrella") coverage shall be provided in an amount of not less than \$1,000,000. _____

In addition to the insurance required above, the following special insurance shall be required when marked with "X":

(X) Explosion, Collapse, Underground (X C U) coverage in the highest amounts specified above for Comprehensive General Liability.

() Completed Operations coverage is to be maintained for _____ years after final acceptance of the Work.

() Maritime and federal Employers Liability (Longshoremen's and Harbor, Worker's Coverage) in the amount required by Federal law.

() Railroad Protective Insurance.

Until said Certificate of Insurance is properly executed and delivered to the Owner, the Contractor shall not be permitted to begin performance of the Work under this Contract. Contractor's insurance certificate shall list the Owner as an "Additional Insured".

10. Contractor warrants that he has sufficient funds and credit to pay currently all bills incurred in the performance of the Work hereunder without the necessity of resorting to earnings for Work performed hereunder and agrees that failure to pay such bills shall be a breach of the Contract for which Owner may terminate this Contract or may, but shall not be required to withhold all sums otherwise payable hereunder for past and future earnings

until Contractor, presents satisfactory evidence of payment, and in case any such bill or claim is disputed by Contractor, Owner may, for the purposes of this Contract, consider the same to be valid until discharged and released or until satisfactory security is given for Owner's owner-indemnification. The failure of Owner to invoke this paragraph on any one occasion or on any series of occasions shall not amount to a waiver of the rights granted hereunder. At Owner's option, Owner may, but shall not be required to, pay any such bill or claim and recover the same from Contractor or any surety or deduct the same from any payments (progress or retainage) otherwise due hereunder. Any and all payments made in good faith in the belief that Contractor is liable, whether liable or not shall be conclusive of Owner's right to reimbursement and a sworn itemized statement thereof or the checks or other evidence of payment shall be conclusive evidence of the fact and extent of Contractor's liability to Owner.

11. Prior to final payment, Contractor agrees to sign and deliver to Owner affidavits of payment and waivers of liens as to this the Contract and Owner.
12. In the event Contractor fails at any time to comply strictly with the terms of this Contract or fails to furnish sufficient satisfactory materials, qualified labor or equipment or facilities in performance of the Work covered by this Contract or refuses, neglects or fails to prosecute the Work with promptness and diligence, or fails to perform said Work in accordance with the approved progress schedule or fails to make prompt payment for materials, labor, equipment or taxes, or becomes involved in a labor dispute that delays or impedes any part of the Contract, this Contract may be terminated after seven days written notice by Owner. It is recognized that time is of the essence of the Contract and that delay in the prosecution of the Work by Contractor or improper performance of this Contract are prejudicial to the interest of the Owner. Contractor agrees that Owner has the right and power for cause or convenience to terminate this Contract. This Contract may be terminated in the event Contractor becomes insolvent or is adjudged as bankrupt or files or has filed against him any proceedings in bankruptcy, arrangement or reorganization, or in the event Contractor makes a general assignment for the benefit of creditors or a receiver is appointed for the Contractor.
13. In the event of termination of this Contract for cause, Owner may take over the performance for the Work covered by this Contract and complete the same or may contract all or any part thereof, retaining any money that may otherwise have been due Contractor so far as is necessary to defray the cost of completing the work covered hereunder. Any excess of the amount retained after defraying the costs of completing the Work covered under this Contract (including overhead and indirect cost to Owner) and any damages sustained by Owner by reason of breach of the Contract by Contractor shall be paid over the Contractor after completion and acceptance of the Work. In the event the amount retained is not sufficient to cover such costs, expenses, and damages, Contractor shall pay upon demand the balance due to the Owner. Owner is hereby authorized in the event of termination of this Contract to retain any and all equipment of Contractor being used in the performance of the Work and use the same or authorize the use by some other contractor for the completion of said Work without any payment of liability for the use of

the same except a reasonable rental value, which may be offset against any sums due Owner for completing the performance of the Work.

If the Owner fails to make payment for a period of thirty (30) days through no fault of the Contractor, the Contractor may upon seven (7) days additional written notice to the Owner, terminate the Contract. Upon such termination by Owner for convenience, Contractor may recover from the Owner payment for all work properly executed, and for any proven loss sustained upon any materials, equipment, tolls and construction equipment and as reduced by the amount of payments otherwise made.

14. Contractor agrees to turn over and deliver to Owner, said Work substantially completed within the aforesaid time in good condition and free and clear of any liens, encumbrances or claims, and shall protect and save harmless Owner from any and all claims, encumbrances and liens against said Work or against Owner. Should Contractor cause any delay which results in a penalty, or liquidated or other delay damages, such penalty or damages shall be paid by Contractor. Final completion and acceptance shall be achieved within thirty (30) days of substantial completion.
15. Contractor agrees to deliver to Owner upon demand properly executed surety bonds in a form satisfactory to Owner in the penal sum of the total amount of this Contract with surety or sureties satisfactory to Owner conditioned upon faithful performance of this Contract and payment of all sums due for the performance of said Work and which may be due under this Contract. The premiums of such bonds are to be paid by Contractor. Payment for the work under this Contract shall not be made until the bonds are delivered to and approved by Owner. Failure to deliver such bonds to Owner shall be deemed to be a breach of this Contract at the option of Owner, this Contract may be terminated and Contractor shall be responsible for any and all damages which Owner may sustain in performing said Work or in having it performed by another contractor. Insofar as said surety bonds are concerned, Owner reserves the right to change and vary the terms of this Contract without notice to said surety, but without affecting the validity of said bonds of the liability of the surety thereunder. The surety or sureties for any such bonds agree to be bound by any decision affecting Contractor's rights rendered in accordance with the procedures in Article 22, "Disputes".
- 16.1 Unless otherwise provided, the Owner shall purchase and maintain property insurance upon the entire Work at the site to the full insurable value thereof, with a \$5,000 deductible applying to each loss. The amount if this deductible and any other losses not specifically covered under the Owner's property insurance shall be borne by the Contractor. This insurance does not cover any tools owned by mechanics, any tools, equipment, scaffolding, staging, towers, forms and machinery owned or rented by the Contractor which are not intended to become part of the project. This insurance shall include the interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Work and shall insure against the perils of fire, extended coverage, vandalism and malicious mischief.

- 16.2 Any loss insured under paragraph 16.1 is to be adjusted with the Owner and made payable to the Owner as trustee for the insured, as their interests may appear, subject to the requirements of any mortgagee clause.
- 16.3 The Owner and Contractor waive all rights against each other for damages caused by fire or other perils to the extent covered by insurance obtained pursuant to this Article or any other property insurance applicable to Work, except such rights as they may have to the proceeds of such insurance held by the Owner as trustee. The Contractor shall require similar waivers in favor of the Owner and the Contractor by Subcontractors and Sub-subcontractors.
17. Contractor shall not assign all or any part of this Contract or sub-let all or any part of the Work provided for hereunder without the prior written consent of Owner, but in any event, and without regard to whether such consent is given or not, Contractor agrees to indemnify and save Owner harmless, as hereinabove set forth, even though claims might be based upon items supplied to or by an assignee or subcontractor of the undersigned Contractor or to or by any other party (no matter how remote or disconnected) performing or having any connection whatever with the performance of the Work and for which Owner may be liable.
18. Contractor shall remedy any defects in said Work and pay for any damages to any Work resulting from failure to perform its Work in accordance with the contract and shall indemnify and save harmless Owner from any and all suits, claims or liabilities of any nature including, but not limited to property damage and/or personal injury by reason of the performance of this Contract or failure to perform the Contract in accordance with its terms, or arising out of any other acts or activities of Contractor, its employees or agents.
19. Contractor acknowledges familiarity with, and understanding of, the Federal occupational Safety and Health Act of 1970 (Public Law 91-596). Contractor agrees that should he fail to abide by any portion of these standards, he will accept full and total responsibility for all consequences due to this neglect. Contractor agrees that Owner is not responsible for notifying Contractor of violation of said law. In cases where Owner notifies Contractor in writing of safety violations, if contractor fails to remedy such safety violations Owner has the option (but not the obligation) to remedy the violation at Contractor's expense and/or terminate Contract.
20. Included herewith is the text of a clause which shall be returned to the Owner, properly endorsed by the Contractor, prior to Award of this Contract.
 - A. The undersigned hereby certifies that the Contractor will provide a "Drug Free Workplace" as defined in Section 44-107-30 of the Code of Laws of South Carolina, 1976, as amended, by complying with the requirements set for Title 44, Chapter 107. Further, the Contractor acknowledges Board of Trustees Policies mandating that all District property shall be "Weapons Free" (including all permitted concealed weapons), "Tobacco Free" and "Drug Free". The undersigned hereby certifies that the Contractor (and any sub-contractors) will

observe and enforce the “Weapons Free”, “Tobacco Free” and “Drug Free” policy. Failure to comply could result in being asked to leave the facility.

- B. The undersigned hereby certifies that Contractors and subcontractors shall verify that any employees who have been charged with, are under investigation for or convicted of any crime related to children (or) any employee of the contractor or subcontractor charged with, under investigation for or convicted as a sex offender, shall not be allowed on District property at any time as a result of an award for this Contract or any other solicitation. Failure on the part of the contractor and/or subcontractor to enforce this Policy shall result in the immediate termination of any existing contract(s) and the cancellation of any other solicitation or award at no cost to the District. Contractor’s and subcontractor’s employees shall not interact with students at any time.

Please acknowledge and certify your compliance:

_____/_____
Contractor Representative Signature / Date

21. Neither Contractor nor any of contractor’s agents, employees or subcontractors shall employ or keep any workman whose employment on the Work covered by this Contract is reasonably objected to by the Owner. Nor shall the contractor be required to Contract with anyone to whom he has a reasonable objection.
22. The failure of either party to invoke any provisions hereof or assert any right given hereunder on any one occasion or on any series of occasions shall not amount to or be interpreted as a waiver or release of any such provisions or rights.
23. Disputes/Changes
- A. Claims

Contractor shall provide written notice to Owner and shall receive Owner’s written response before proceeding to execute any Work subject to claims for additional cost, time, or damages as follows:

- i. Subsurface or concealed conditions which differ materially from those indicated in the Contract documents and which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities;
- ii. Weather conditions adversely affecting scheduled construction, documented to be abnormal for the period of time and which could not have been reasonably anticipated;

- iii. Injury or damage suffered by either party as a result of an act, omission or breach of Contract by the other party. Owner specifically reserves its right to make similar claims.

Claims notification must be made in writing within twenty-one (21) days after occurrence of the event giving rise to such claim or with twenty-one (21) days after the claimant first recognizes the conditions giving rise to the claim. No claim or dispute shall interfere with the progress of the Work. Contractor shall proceed diligently with performance of the Contract and Owner shall continue to make payments in accordance with the Contract.

B. Disputes

If, at any time, any controversy should arise between the Owner and Contractor with respect to any matter or thing involved in, arising out of, or related to the Contract (or breach thereof), or work, which controversy is not controlled or determined by Section (A) above or other provisions of the Contract, then the decision of the Owner shall be followed by the Contractor, and said controversy shall be decided as follows:

- i. The Contractor shall be bound conclusively by and abide by the Owner's decision, unless the Contractor shall commence legal proceedings as hereinafter provided.
- iii. By executing this Contract, the Contractor agrees to submit itself to the jurisdiction of the courts of the State of South Carolina for all matters arising or to arise hereunder, including but not limited to performance of said Contract and payment of all licenses and taxes and whatever nature applicable thereto.
- iii. No dispute or controversy shall interfere with the progress of the Work, and Contractor shall proceed with its work without interruption, deficiency or delay.

C. Expenses

In any instance whereby either party is entitled, under this Contract, to be indemnified by or recover any monies from the other party, he shall be entitled, in addition, to recover from the other party (a) interest of any sums due from the date due until paid; (b) reasonable attorneys' fees incurred for all investigation, negotiation, litigation, and other such services commonly performed by attorneys; and, (c) all court costs, fees paid to experts, and like expenses.

24. Contractor warrants that all Work will be free from defects in material and workmanship for a period of one (1) year after final acceptance or beneficial occupancy by Owner whichever occurs first, and that repairs or replacements of said defects shall be performed in a timely manner at no expense to Owner.

25. The terms and conditions of this Contract are to be considered severable, and a determination of the invalidity of any term(s) or condition(s) shall not affect the validity of the remaining terms and conditions of the Contract which shall remain in full force and effect.

WITNESS our hands and seals the day and year first above written.

THE SCHOOL DISTRICT OF GREENVILLE COUNTY

By: _____

Witness:

As to Contractor By: _____
President

Distribution: School Facilities
Contractor
Legal Counsel
Insurance