

**PROJECT MANUAL  
FOR**

**PEDESTRIAN LIGHTING AND INCIDENT RECORDING  
DES PLAINES CAMPUS – DES PLAINES, ILLINOIS  
SKOKIE CAMPUS – SKOKIE, ILLINOIS**

**OWNER**

OAKTON COLLEGE  
1600 E. GOLF ROAD  
DES PLAINES, ILLINOIS 60016

**ARCHITECT / ENGINEER**

KLUBER, INC.  
41 W. BENTON STREET  
AURORA, ILLINOIS 60506



**SECTION 00 01 01  
PROJECT TITLE PAGE**

**PROJECT MANUAL**

**FOR**

**PEDESTRIAN LIGHTING AND INCIDENT RECORDING**

**DES PLAINES CAMPUS  
1600 E. GOLF ROAD  
DES PLAINES, ILLINOIS 60016**

**SKOKIE CAMPUS  
7701 N. LINCOLN AVENUE  
SKOKIE, ILLINOIS 60077**

**OWNER**

**OAKTON COLLEGE  
1600 E. GOLF ROAD  
DES PLAINES, ILLINOIS 60016**

**ARCHITECT / ENGINEER**

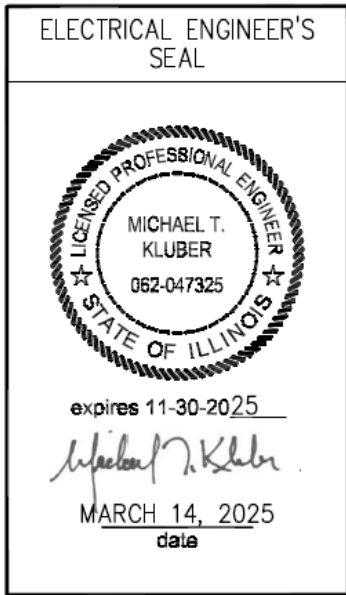
**KLUBER ARCHITECTS + ENGINEERS  
41 W. BENTON STREET  
AURORA, ILLINOIS 60506**

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SEALS PAGE

1.01 DESIGN PROFESSIONALS' SEALS

A. ELECTRICAL  
ENGINEER



"G" SERIES, "E" SERIES

END OF DOCUMENT

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**ELECTRICAL**

**DES PLAINES CAMPUS**

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**SKOKIE CAMPUS**

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**END OF DOCUMENT**



**SECTION 00 31 13  
PRELIMINARY SCHEDULE**

**1.01 GENERAL**

A. The following represents the preliminary construction schedule for the Work. This schedule is the current estimate of the Owner to be used for purposes of bidding. All Bidders shall include the costs of all overtime, double-shift, or so-called "premium" time that may be necessary to meet this milestone.

**1.02 PRELIMINARY SCHEDULE**

A. Award of Contract:	May 20th, 2025
B. Commencement of Construction:	June 1st, 2025
C. Substantial Completion:	October 2026

**END OF DOCUMENT**

**SECTION 00 41 13  
BID FORM - STIPULATED SUM  
SINGLE CONTRACT**

**PROJECT:** PEDESTRIAN LIGHTING AND INCIDENT RECORDING  
1600 E. GOLF ROAD  
DES PLAINES, ILLINOIS 60016

**BID TO:** OAKTON COLLEGE  
1600 E. GOLF ROAD  
DES PLAINES, ILLINOIS 60016

**BID FROM:** CORPORATE \_\_\_\_\_  
NAME: \_\_\_\_\_  
ADDRESS: \_\_\_\_\_  
CITY, STATE, ZIP: \_\_\_\_\_  
TELEPHONE NO.: \_\_\_\_\_  
FAX NO.: \_\_\_\_\_  
EMAIL ADDRESS: \_\_\_\_\_  
CONTACT \_\_\_\_\_  
PERSON: \_\_\_\_\_

**1.01 ACCEPTANCE**

**THE UNDERSIGNED BIDDER AGREES, IF THIS BID IS ACCEPTED, TO ENTER INTO AN AGREEMENT WITH THE OWNER, IN THE FORM INCLUDED IN THE BIDDING DOCUMENTS, TO PERFORM AND FURNISH THE WORK AS INDICATED IN THE BIDDING DOCUMENTS FOR THE BID PRICE AND WITHIN THE BID TIMES INDICATED IN THIS BID AND IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE CONTRACT DOCUMENTS.**

**1.02 ACKNOWLEDGMENTS**

**IN SUBMITTING THIS BID, THE BIDDER REPRESENTS THAT:**

- A. This Bid will remain open for acceptance for a period of 45 days from the Bid opening date;
- B. The Owner has the right to reject this Bid;
- C. The Bidder accepts the provisions of the Instructions and Supplementary Instructions to Bidders regarding the disposition of the Bid;
- D. The Bidder agrees to sign and submit the Agreement and other documents required by the Bidding Requirements within 15 days after the Owner's Notice of Award;

- E. The Bidder has examined the complete set of Bidding Documents;
- F. The Bidder has visited the site and become familiar with the general, local, and site conditions;
- G. The Bidder is familiar with Federal, State and Local Laws and Regulations;
- H. The Bidder has correlated the information known to the Bidder; information and observations obtained from visits to the site, reports and drawings identified in the Bidding Documents and additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;
- I. This Bid is genuine and not made in the interest of or on behalf of an undisclosed person, firm, or corporation and is not submitted in conformity with an Agreement or rules or group, association, organization, or corporation;
- J. The Bidder has not directly or indirectly induced or solicited another Bidder to submit a false or sham Bid; sought by collusion to obtain for itself an advantage over another Bidder or over the Owner;
- K. The Bidder is/has an ICC Certified Energy Efficiency Measures Installer to qualify for Utility Energy Incentives.
- L. The Bidder acknowledges that the Owner has determined that the services to be provided hereunder are subject to the Prevailing Wage Act, 820 ILCS 130/1-12.
- M. The Bidder acknowledges that the Owner is exempt from the payment of the Illinois Retailer's Occupation Tax.
- N. The Bidder has received the following Addenda, receipt of which is hereby acknowledged:

1. Addendum No. \_\_\_\_\_ Date \_\_\_\_\_

2. Addendum No. \_\_\_\_\_ Date \_\_\_\_\_

3. Addendum No. \_\_\_\_\_ Date \_\_\_\_\_

**THE BIDDER UNDERSTANDS THAT, IN SUBMITTING THIS BID, HE WAIVES ALL RIGHT TO PLEAD ANY MISUNDERSTANDINGS REGARDING THE FOREGOING.**

**1.03 SINGLE CONTRACT - BASE BID PRICE:**

- A. Refer to Section 01 10 00 - Summary.

B. The Bidder will complete the Work of the Project in accordance with the Contract Documents for the following price:

Stipulated Sum Bid Price:

\_\_\_\_\_

(Use Numerals)

\_\_\_\_\_

(Use Words)

**1.04 UNIT PRICES**

A. The Bidder has attached Document 00 43 22 - Bid Form Supplement - List of Unit Prices with this Bid.

**1.05 ALTERNATES**

A. The Bidder has attached Document 00 43 23 - Bid Form Supplement - List of Alternates with this Bid. Refer to Section 01 23 00 - Alternates for description of Alternates.

**1.06 CONTRACT TIME**

A. The Bidder agrees to begin and complete Work as indicated in Document 00 31 13 - Preliminary Schedule.

**1.07 OTHER BID FORM SUPPLEMENTS**

A. The following additional Documents are attached to and made a condition of this Bid:

**1.08 SIGNATURES**

Respectfully submitted this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

Type of Firm: (check one)

\_\_\_\_\_ Individual

\_\_\_\_\_ Partnership

\_\_\_\_\_ Corporation

\_\_\_\_\_ Joint Venture

Corporate Seal:

(SEAL)

Full name of firm: \_\_\_\_\_

Authorized Signing Officer: \_\_\_\_\_

Title: \_\_\_\_\_

Authorized Signing Officer: \_\_\_\_\_

Title: \_\_\_\_\_

**END OF DOCUMENT**

**SECTION 00 43 13  
BID SECURITY FORM**

**1.01 FORM OF BID BOND**

- A. AIA Document A310 (2010 Edition) - Bid Bond Form.
- B. The above document may be examined at the Architect/Engineer's office or purchased at the American Institute of Architects, <http://www.aia.org/contractdocs/>.

**END OF DOCUMENT**

**SECTION 00 43 22**  
**BID FORM SUPPLEMENT - LIST OF UNIT PRICES**

**CONSTRUCTION DELIVERY METHOD:**

**1.01 SINGLE CONTRACT (GENERAL CONSTRUCTION)**

**PARTICULARS**

A. The following is the list of Unit Prices referenced in the bid submitted by:

Bidder) \_\_\_\_\_

dated \_\_\_\_\_ and which is an integral part of the Bid Form.

B. THE FOLLOWING ARE UNIT PRICES FOR SPECIFIC PORTIONS OF THE WORK AS LISTED, AND ARE APPLICABLE TO AUTHORIZED VARIATIONS FROM THE CONTRACT DOCUMENTS.

1. Costs Included in Unit Prices: Products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment, fuel, maintenance.

**UNIT PRICE LIST**

UNIT ITEM DESCRIPTION      UNITS    VALUE

A. Electrical

- |   |    |          |
|---|----|----------|
| 1. Provide fixture type "OA1" including pole, foundation, and all accessories | EA | \$ _____ |
| 2. Provide fixture type "OA2" including pole, foundation, and all accessories | EA | \$ _____ |
| 3. Provide fixture type "OA3" including pole, foundation, and all accessories | EA | \$ _____ |
| 4. Provide fixture type "OB1" including pole, foundation, and all accessories | EA | \$ _____ |
| 5. Provide fixture type "OB2" including pole, foundation, and all accessories | EA | \$ _____ |
| 6. Provide fixture type "OC" including pole, foundation, and all accessories  | EA | \$ _____ |
| 7. Provide fixture type "OH1" including pole, foundation, and all accessories | EA | \$ _____ |
| 8. Provide NEMA Box (pedestal mount) including concrete base.                 | EA | \$ _____ |
| 9. Provide NEMA Box (pole mount).   | EA | \$ _____ |
| 10. Provide power feeder to pole light (4#8,2#10,#10G,1 1/4"C)                | LF | \$ _____ |

**SECTION 00 43 23  
BID FORM SUPPLEMENT - LIST OF ALTERNATES**

**1.01 PARTICULARS**

A. The following is the list of Alternates referenced in the bid submitted by:

(Bidder) \_\_\_\_\_

Dated \_\_\_\_\_ and which is an integral part of the Bid Form.

**1.02 ALTERNATES LIST**

A. The following amounts shall be added to or deducted from the Bid Amount. Refer to Section 01 23 00 - Alternates: Schedule of Alternates.

(Circle One)

1. Alternate # \_\_\_\_: (Add) (Deduct) \$ \_\_\_\_\_

**END OF DOCUMENT**



**SECTION 00 52 00  
AGREEMENT FORM**

**1.01 FORM OF AGREEMENT**

- A. AIA Document A101, Owner-Contractor Agreement Form - Stipulated Sum (2017 Edition), forms the basis of Contract between the Owner and Contractor.
- B. The above document may be examined at the Architect's office or purchased at the American Institute of Architects, <https://aiacontracts.com>.

**1.02 RELATED REQUIREMENTS**

- A. Document 00 72 00 - General Conditions.
- B. Document 00 73 00 - Supplementary Conditions.

**END OF DOCUMENT**

**SECTION 00 72 00  
GENERAL CONDITIONS**

**1.01 FORM OF GENERAL CONDITIONS**

- A. AIA Document A201 - 2017 "General Conditions of the Contract for Construction" is the General Conditions between the Owner and Contractor.
- B. The above document may be examined at the Architect's office or purchased at the American Institute of Architects, <https://aiacontracts.com>.

**1.02 RELATED REQUIREMENTS**

- A. Section 00 73 00 - Supplementary Conditions.

**1.03 SUPPLEMENTARY CONDITIONS**

- A. Refer to Document 00 73 00 for amendments to these General Conditions.

**END OF DOCUMENT**

**SECTION 00 73 00  
SUPPLEMENTARY CONDITIONS**

**1.01 GENERAL**

- A. The Supplementary Conditions contain modifications and additions to AIA Document A201 - 2017 "General Conditions of the Contract for Construction". Where a portion of the General Conditions is modified, deleted or voided by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect. Where there is a conflict between these Supplementary Conditions and the General Conditions, the terms of these Supplementary Conditions shall prevail.
- B. The Owner's Document entitled "General Conditions For Construction And Maintenance Work At Oakton College, Des Plaines And Ray Hartstein Campuses" contains further modifications and additions to AIA Document A201 - 2017 "General Conditions of the Contract for Construction". Where a portion of the General Conditions is modified, deleted or voided by this Document, the unaltered portions of the General Conditions shall remain in effect. Where the provisions of the Owner's Document conflict with the provisions of AIA Document A201 or these Supplementary Conditions, the Owner's Document provisions shall prevail.

**1.02 ARTICLE 1 GENERAL PROVISIONS**

**A. 1.2 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS**

- 1. At the end of the last sentence of Section 1.2.1, replace the words "indicated results." with the following: "intended results. In the event the Contract Documents conflict, the Contractor shall comply with the more stringent of the requirements."
- 2. Add new Section 1.2.2.1 as follows:
  - a. "§ 1.2.2.1 Sections of Division 1 - General Requirements govern the execution of the Work of all Sections of the specifications."

**B. 1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE**

- 1. After the first sentence of Section 1.5.1, insert the following:
  - a. "These Instruments of Service are the tangible rendering of professional opinions and service for the Owner and are not, therefore, a commodity, product or good. No warranties, express or implied, are made by the Architect to the Contractor concerning those Instruments of Service."

**1.03 ARTICLE 2 OWNER**

**A. 2.2 INFORMATION AND SERVICES REQUIRED OF THE OWNER**

- 1. Delete the third sentence of Section 2.2.1.
- 2. Delete Section 2.2.5 in its entirety and replace with the following:
  - a. "§ 2.2.5 The Owner shall furnish to the Contractor one (1) PDF copy of the Contract Documents for the purposes of making reproductions pursuant to Section 1.5.2."

**B. Add new Section 2.5 as follows:**

- 1. "§ 2.5 OWNER'S REMEDIES NOT EXCLUSIVE
- 2. 2.5.1 The rights and remedies of Owner stated in this Article 2 shall be in addition to and not in limitation of any other rights of the Owner granted in the Contract Documents or at law or in

equity."

#### 1.04 ARTICLE 3 CONTRACTOR

##### A. 3.2 REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTACTOR

1. Delete Section 3.2.1 in its entirety and replace with the following:
  - a. "§ 3.2.1 Execution of the Contract by the Contractor is a representation by the Contractor that, prior to the submission of its bid, the Contractor has (1) thoroughly examined the Contract Documents and determined them to be full, complete and sufficient to enable the Contractor to construct the Work outlined therein, in accordance with applicable laws and regulations, for an amount not in excess of the Contract Sum on or before the date(s) of Substantial Completion established in the Agreement; (2) visited and examined the Project site and is familiar with all of the conditions thereon; (3) examined the nature, location and character of the general area in which the Project is located, including, without limitation, its climactic conditions, available labor supply, labor costs and available equipment supply and costs; and (4) examined the quality and quantity of materials, supplies, tools, equipment, labor and professional services necessary to complete the Work in the manner and within the cost and time frame required by the Contract Documents."
2. Delete Section 3.2.3.
3. Add new Section 3.2.5 as follows:
  - a. "§ 3.2.5 Prior to any excavation, the Contractor shall determine the locations of all existing water, gas, sewer, electric, telephone, telegraph, television, irrigation, petroleum pipelines, and other underground utilities and structures. Where the locations of existing underground and surface utilities and structures are indicated, these locations are generally approximate, and all items that may be encountered during the work are not necessarily indicated. The Contractor shall determine the exact locations of all items indicated, and the existence and locations of all items not indicated."

##### B. 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES

1. Add new Sections 3.3.4 through 3.3.7 as follows:
  - a. "§ 3.3.4 The Contractor has the responsibility to ensure that all material suppliers and Subcontractors, their agents, and employees adhere to the Contract Documents, and that they order materials on time, taking into account the current market and delivery conditions and that they provide materials on time. The Contractor shall coordinate its Work, including without limitation, deliveries, storage, installations, and construction utilities with that of all others on the Project. The Contractor shall be responsible for the space requirements, locations, and routing of its equipment. In areas and locations where the proper and most effective space requirements, locations and routing cannot be made as indicated, the Contractor shall meet with all others involved, before installation, to plan the most effective method of overall installation.
  - b. 3.3.5 All manufactured articles, material and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned as directed by the manufacturer, unless herein specified to the contrary.
  - c. 3.3.6 After commencing the work, the Contractor shall use every precaution to avoid interferences with existing underground and surface utilities and structures, and protect them from damage. The Contractor shall repair or pay for all damage caused by his operations to all existing utility lines, public property, and private property, whether it is below ground or above ground, and he shall settle in total cost of all damage suits which may arise as a

result of his operations at no additional costs to the Owner. To avoid unnecessary interferences or delays, the Contractor shall coordinate all utility removals, replacements and construction with the appropriate utility company. The cost of temporarily relocating utilities for convenience of the Contractor, shall be paid by Contractor.

- d. **3.3.7** The Contractor shall establish and maintain benchmarks and all other grades, lines, and levels necessary for the Work, report errors or inconsistencies to the Owner and Architect before commencing Work, and review the placement of the building and permanent facilities on the site with the Owner and Architect after all lines are staked out and before foundation Work is started."

**C. 3.4 LABOR AND MATERIALS**

1. Delete Section 3.4.2 in its entirety and replace with the following:
  - a. "**§ 3.4.2** After the Contract has been executed, the Owner and the Architect will consider a formal request for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Section 01 60 00)."
2. Add new Section 3.4.4 as follows:
  - a. "**§ 3.4.4** The Contractor and each Subcontractor shall pay not less than the general prevailing rate of hourly wages for work of a similar character in the locality in which the work is performed and not less than general prevailing rate of hourly wages for legal holidays and overtime work in the performance of work under this Contract, as established by the Illinois Department of Labor, pursuant to an act of the General Assembly of the State of Illinois. In accordance with applicable law, Contractor and each Subcontractor shall keep an accurate record showing the names and occupation of all laborers, workers and mechanics employed by them, and also showing the actual hourly wages paid to each such individual, which record shall be open at all reasonable hours to inspection by the Owner, its officers and agents, and to agents of the Illinois Department of Labor. The Contractor and each Subcontractor hereby agree, jointly and severally, to defend, indemnify and hold harmless the Owner from any and all claims, demands, liens or suits of any kind or nature whatsoever (including suits for injunctive relief) by the Illinois Department of Labor under the Illinois Prevailing Wage Act, or by any laborer, worker or mechanic employed by the Contractor or the Subcontractor who alleges that he has been paid for his services in a sum less than prevailing wage rates required by Illinois law. The Owner agrees to notify the Contractor or Subcontractor of the pendency of any such claim, demand, lien or suit. Contractor must pay prevailing wages in effect at time labor is performed."

**D. 3.6 TAXES**

1. Delete Section 3.6 in its entirety and replace with the following:
  - a. "**§ 3.6 TAXES**
  - b. The Owner is exempt from the Illinois Use Tax Act and the Retailer's Occupation Tax. Certificate will be furnished upon request. Any taxes for which the Owner is not exempt shall be paid by the Contractor."

**E. 3.7 PERMITS, FEES, NOTICES AND COMPLIANCE WITH LAWS**

1. Delete Section 3.7.4 in its entirety.

**F. § 3.9 SUPERINTENDENT**

1. After the last sentence in Section 3.9.1, add the following:

- a. "The Superintendent shall have knowledge of, and control over, the entirety of the Work, and upon request of the Owner or Architect, the Superintendent shall communicate directly to the Owner."

**G. 3.10 CONTRACTOR'S CONSTRUCTION SCHEDULES**

1. Delete Section 3.10.1 in its entirety and replace with the following:
  - a. "**§ 3.10.1** The Contractor, promptly after being awarded the Contract, shall prepare and submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall indicate the proposed completion dates for the various subdivisions of the Work, as well as the totality of the Work. The schedule shall be updated every thirty (30) days and submitted to Architect with Contractor's Applications for Payment. Each schedule shall contain a comparison of actual progress with the estimated progress for such point in time stated in the original schedule. If any schedule submitted sets forth a date for Completion for the Work or any phase of the Work beyond the date(s) of Completion established in the Contract (as the same may be extended as provided in the Contract Documents), then Contractor shall submit to Architect and Owner for their review and approval a narrative description of the means and methods which Contractor intends to employ to expedite the progress of the Work to ensure timely completion of the various phases of the Work as well as the totality of the Work. To ensure such timely completion, Contractor shall take all necessary action including, without limitation, increasing the number of personnel and labor on the Project and implementing overtime and double shifts. In that event, Contractor shall not be entitled to an adjustment in the Contract Sum of the schedule. The Owner may, in its discretion, choose to withhold any payment due the Contractor until an updated schedule is submitted. The Owner's or Architect's failure to object to a submitted schedule that exceeds time limits current under the Contract Documents shall not relieve the Contractor of its obligations to meet the time limits in the Contract Documents, nor shall it make the Owner or Architect liable for any of the Contractor's damages incurred as a result of increased construction time or not meeting the time limits in the Contract Documents. Similarly, the Owner's or Architect's failure to object to a Contractor's schedule showing completion in advance of the time limits in the Contract Documents shall not create or infer any rights in favor of the Contractor for acceleration of the Work."

**H. 3.18 INDEMNIFICATION**

1. Delete Section 3.18.1 and replace with the following:
  - a. "**§ 3.18.1** To the fullest extent permitted by law, the Contractor shall waive any right of contribution against the Owner and shall indemnify and hold harmless the Owner and the Architect and their officers, officials, employees, volunteers and agents from and against all claims, damages losses and expenses, including, but not limited to, legal fees (attorney's and paralegal's fees, expert fees and court costs), arising out of or resulting from the performance of the Contractor's work provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or injury to or destruction of property, other than the work itself, including the loss of use resulting therefrom to the extent it is caused in whole or in part by any wrongful or negligent act or omission 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. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right to indemnity which the Owner would otherwise have. The Contractor shall similarly, protect, indemnify and hold and save harmless, the Owner, its officers, officials, employee, volunteers and agents against and

from any and all claims, costs, causes, actions and expenses, including, but not limited to, legal fees, incurred by reason of Contractor's breach of any of its obligations under, or Contractor's default of any provisions of the Contract."

2. Add new Section 3.18.1.1 as follows:
  - a. "§ 3.18.1.1 The Contractor and every subcontractor expressly waive all so-called Kotecki rights under the Illinois workers' compensation statutes even though owner has retained all such rights."

## **1.05 ARTICLE 7 CHANGES IN THE WORK**

### **A. 7.1 GENERAL**

1. Add new Section 7.1.4 as follows:
  - a. "§ 7.1.4 For adjustments to the Contract Sum based on other than the unit price method, overhead, profit and general conditions combined shall be calculated at the following percentages of the cost attributable to the change in the work:
    - 1) .1 For the Contractor, for any Work performed by the Contractor's own forces: 10 percent of the cost.
    - 2) .2 For the Contractor, for Work performed by his Subcontractor: 5 percent of the amount due the Subcontractor.
    - 3) .3 For each Subcontractor or Sub-subcontractor involved, for any Work performed by the Subcontractor's own forces: 10 percent of the cost.
    - 4) .4 For each Subcontractor, for Work performed by his sub-contractors: 5 percent of the amount due the Sub-subcontractor.
    - 5) .5 All proposals, except those less than \$200.00, shall be accompanied by a complete itemization of costs including labor, materials and subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are subcontracts, they shall be itemized also. In no case will a change involving over \$200.00 be approved without such itemization."

### **B. 7.3 CONSTRUCTION CHANGE DIRECTIVES**

1. In the first sentence of Section 7.3.7, delete the words: "as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount." and replace with the words: "in accordance with Section 7.1.4".

## **1.06 ARTICLE 9 PAYMENTS AND COMPLETION**

### **A. 9.3 APPLICATIONS FOR PAYMENT**

1. Add new Section 9.3.1.3 as follows:
  - a. "§ 9.3.1.3 Until substantial completion, the Owner shall pay 90 percent of the amount due the Contractor on account of progress payments."
2. Add new Section 9.3.2.1 as follows:
  - a. "§ 9.3.2.1 In accordance with Section 9.3.2, the Contractor shall be permitted to make written petition to the Owner requesting payment for 75% of the cost of materials and equipment suitably stored off the site at a location agreed upon in writing between the Owner and the Contractor. In order to receive such payment, title to the materials and/or equipment must pass to the Owner; the materials and/or equipment must be stored in a protected, insured facility agreed to by the Owner, with the Owner named as an additional insured; and all storage costs and costs associated with handling and transporting the materials and/or equipment to the Project site must be paid for by the Contractor."

**B. 9.8 SUBSTANTIAL COMPLETION**

1. Delete the last sentence of Section 9.8.5 and replace with the following: "The payment shall be sufficient to increase the total payments to 95 percent of the Contract sum, less such amounts as the Architect shall determine for incomplete Work and unsettled claims."

**C. 9.10 FINAL COMPLETION AND FINAL PAYMENT**

1. Delete Section 9.10.4 in its entirety.

**1.07 ARTICLE 11 INSURANCE AND BONDS**

**A. 11.1 CONTRACTOR'S LIABILITY INSURANCE**

1. Delete the semicolon at the end of Clause 11.1.1.1 and append the following: ", including private entities performing work at the site and exempt from the coverage on account of number of employees or occupation, which entities shall maintain voluntary compensation coverage at the same limits specified for mandatory coverage for the duration of the project;"
2. Delete the semicolon at the end of Clause 11.1.1.2 and append the following: ", or persons or entities excluded by statute from the requirements of Clause 11.1.1.1 but required by the contract documents to provide the insurance required by that clause;"
3. Delete the semicolon at the end of Clause 11.1.1.6 and append the following: ", and coverage should be written on a comprehensive automobile policy which will include coverage for owned, non-owned and hired motor vehicles."
4. Add new Section 11.1.2.1 as follows:
  - a. **"§ 11.1.2.1** The insurance required by Section 11.1.1 shall be written for not less than the following limits, or greater if required by law:
    - 1) Workers' Compensation:
      - a) State: Statutory Limit.
      - b) Applicable Federal (e.g., Longshoremens): Statutory
      - c) Employer's Liability
        - (1) \$500,000.00 Per Accident
        - (2) \$500,000.00 Disease, Policy Limit
        - (3) \$500,000.00 Disease, Each Employee
    - 2) If written under Comprehensive General Liability Policy Form (including sub-lines specified in Clause 11.1.1.8):
      - a) Bodily Injury:
        - (1) \$1,000,000.00 Per Occurrence
        - (2) \$2,000,000.00 Aggregate Per Project
      - b) Property Damage:
        - (1) \$500,000.00 Per Occurrence
    - 3) If written under Commercial General Liability Policy Form:
      - a) \$3,000,000.00 General Aggregate Per Project
      - b) \$1,000,000.00 Products Completed Operations Aggregate
      - c) \$1,000,000.00 Personal and Advertising Injury
      - d) \$1,000,000.00 Per Occurrence
    - 4) Business Automobile Liability (including owned, non-owned and hired vehicles):
      - a) Bodily Injury and Property Damage Combined:
        - (1) \$1,000,000.00 Per Occurrence
5. Add new Sections 11.1.2.2 through 11.1.2.6 as follows:



- a. "§ 11.1.2.2 Liability insurance should be written on the comprehensive general liability basis, and shall include, but not be limited to the following sub-lines:
  - 1) Premises and Operations including x, c, u coverages (explosion, collapse, underground).
  - 2) Products and Completed Operations.
  - 3) Independent Contractor's Protective.
  - 4) Broad Form Comprehensive General Liability Endorsement:
    - a) Contractual Liability, including contractors obligation under Section 3.18.
    - b) Personal Injury & Advertising Injury Liability
    - c) Premises Medical Payments
    - d) Host Liquor Law Liability
    - e) Fire Legal Liability - Real Property
    - f) Broad Form Property Damage Liability (including completed Operations)
    - g) Incidental Medical Malpractice Liability
    - h) Non-owned Watercraft Liability
    - i) Limited Worldwide Liability
    - j) Additional Persons Insured, including employees for personal and advertising injury.
    - k) Extended Bodily Injury Liability
    - l) Automatic Coverage - Newly acquired Organizations (90 days)
- b. 11.1.2.3 If liability insurance is written under the new simplified form Commercial General Liability, the above listed coverages should be included.
- c. 11.1.2.4 If the General Liability coverages are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or retroactive date shall predate the contract; the termination date of the policy shall be no earlier than the termination date of coverages required to be maintained after final payment, certified in accordance with Section 9.10.2, and extended period endorsement "Supplemental Tail", must be purchased."
- d. 11.1.2.5 All policies of insurance purchased or maintained in fulfillment of Section 11.1.1 shall name the Owner and Architect as additional insureds on a primary and noncontributory basis thereunder.
- e. 11.1.2.6 The Contractor shall provide the Owner with the Original policy and shall furnish the Architect with a memorandum copy of said policy. The additional insureds on the Contractor's Liability policy shall be:

Oakton College  
 1600 E. Golf Road  
 Des Plaines, Illinois 60016

KLUBER, INC.  
 41 W. Benton Street  
 Aurora, Illinois 60506

- 6. In Section 11.1.3:
  - a. In the second sentence, delete the words "Section 11.1" and replace with the words "Article 11".
  - b. Append the following sentence to the end of the Section:
    - 1) "On the Certificate of Insurance, delete in the cancellation provision the following words, "Endeavor to" and "but failure to mail such notice shall impose no obligation or liability of

any kind upon the company, its agents or representatives".

7. Add new Section 11.1.3.1 as follows:
  - a. "§ 11.1.3.1 Failure of the Owner to demand any certificate, policy, endorsement or other evidence of full compliance with the insurance requirements of Article 11 or failure of the Owner to identify a deficiency from evidence that is provided shall not be construed as a waiver of the Contractor's obligation to maintain such insurance. The Contractor agrees that the obligation to provide the insurance required by these documents is solely its responsibility and that this is a requirement which cannot be waived by any conduct, action, inaction or omission by the Owner."
8. Add new Section 11.1.5 as follows:
  - a. "§ 11.1.5 Nothing contained in the insurance requirements of the Contract Documents is to be construed as limiting the liability of the Contractor, the liability of any Subcontractor or any tier or either of their respective insurance carriers. The Owner, does not in any way, represent that the coverages or limits of insurance specified is sufficient or adequate to protect the Owner, Contractor, Architect, or any Subcontractor's interests or liabilities but are merely at minimums. The obligation of the Contractor, the Architect, and any Subcontractor of any tier to purchase insurance, shall not, in any way, limit their obligations to the Owner in the event the Owner should suffer an injury or loss in excess of the amount recoverable through insurance, or any loss or portion of the loss which is not covered by either the Contractor's or any Subcontractor's insurance."

#### B. 11.3 PROPERTY INSURANCE

1. In the last sentence of Section 11.3.1, after "Owner, " insert "the Architect,".
2. Delete Section 11.3.1.2. in its entirety.
3. Delete Section 11.3.1.3. in its entirety.
4. Delete Section 11.3.3 in its entirety.
5. Delete Section 11.3.5 in its entirety.
6. Delete Section 11.3.6 in its entirety.
7. Delete Section 11.3.7 in its entirety.
8. In the third sentence of Section 11.3.9 delete the phrase ", or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor."

#### C. 11.4 PERFORMANCE AND PAYMENT BOND

1. Delete Section 11.4.1 in its entirety and replace with the following:
  - a. "§ 11.4.1 The Contractor, before commencing the Work, shall furnish a Performance Bond and a Labor and Material Bond. The Performance Bond shall be in an amount equal to 100% of the full amount of the Contract Sum as security for the faithful performance of the obligation of the Contract Documents, and the Labor and Material Payment Bond shall be in an amount equal to 100% of the full amount of the Contract Sum as security for the payment of all persons performing labor and furnishing materials in connections with the Contract Documents. Such bonds shall be on standard AIA Documents, issued by the American Institute of Architects, shall be issued by a surety satisfactory to the Owner, and shall name the Owner as primary co-obligee.
  - b. 11.4.1.1 The Contractor shall deliver the required bonds to the Owner not later than three days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds

shall be furnished.

- c. **11.4.1.2** The Contractor shall require the attorney-in-fact who executed the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney."
2. Add new Section 11.4.3 as follows:
  - a. "**§ 11.4.3** Whenever the Contractor shall be and is declared by Owner to be in default under the Contract, the Surety and the Contractor are each responsible to make full payment to the Owner or any and all extra Work incurred by the Architect as a result of the Contractor's default, and to pay to Owner all attorney's fees and court costs incurred by Owner as a result of the Contractor's default, and in protecting Owner's rights under the Agreement to remedy Contractor's default."
3. Add new Section 11.4.4 as follows:
  - a. "**§ 11.4.4** The Contractor shall (i) furnish all Surety Company's bonds through Surety Company's local agents approved by and/or as directed by Owner; (ii) fully covered and guarantee with said bond the faithful performance and completion of the entire Contract, including without limitation, the faithful performance of prevailing wage requirements; and (iii) guarantee with said bond payment in all cases by the Contractor or by the Surety Company for all labor performed, material and supplies furnished with the entire Work in the Contract. Said Bond shall remain in full force and effect during the entire period of all general guarantees given by the Contractor with the Contract as called for in the Specifications and Contract, except in cases where other bonds are specifically called for in the specifications and Contract in connection with special guarantees."

D. Add new Section 11.5 as follows:

1. "**§ 11.5 OWNERS AND CONTRACTORS PROTECTIVE LIABILITY INSURANCE**
2. **11.5.1** The Contractor shall purchase and maintain Owners and Contractors Protective (OCP) liability insurance covering the Owner's contingent liability for claims which may arise from operations under the Contract and that will protect the Owner and the Architect and their agents and employees from and against all claims, damages, losses and expenses including attorney's fees arising out of or resulting from the performance of the work specifically pertaining to the Illinois Structural Works Act, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury or to destruction of tangible property (other than the work itself) including the loss of use resulting therefrom and (2) is cause in whole or in part by any negligent act of 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, including by assignment, regardless of whether or not it is caused in part by a party to whom insurance is afforded pursuant to this paragraph. The minimum Per Occurrence and Aggregate limits of liability purchased for such coverage shall be equal, respectively, to the Per Occurrence and Aggregate limits required for the Contractor's Liability insurance, as listed in Section 11.1.2.1, above.
3. **11.5.2** 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 other contractor assigned to the Contractor, Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the insurance obligation under this Section 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 Workmen's Compensation Acts, disability benefit acts or other employee benefit acts.

4. **11.5.3** The insurance obligations of the Contractor under this Section 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 failure to give directions or instruction by the Architect, his agents or employees provided that such giving or failure to give is the primary cause of the injury damage.
5. **11.5.4** The Contractor shall provide the Owner with the Original policy and shall furnish the Architect with a memorandum copy of said policy. The named insured on the Owners and Contractors Protective (OCP) liability policy shall be:

Oakton College  
1600 E. Golf Road  
Des Plaines, Illinois 60016

KLUBER, INC.  
41 W. Benton Street  
Aurora, Illinois 60506

## **1.08 ARTICLE 12 UNCOVERING AND CORRECTION OF WORK**

### **A. § 12.2.2 AFTER SUBSTANTIAL COMPLETION**

1. Delete Sections 12.2.2.1, 12.2.2.2 and 12.2.2.3 in their entireties and replace with the following:
  - a. "§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within two years after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the two-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.4.
  - b. **12.2.2.2** The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.
  - c. **12.2.2.3** The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2."
2. Delete Section 12.2.2.5 in its entirety and replace with the following:
  - a. "§ **12.2.2.5** Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the two-year period for correction of Work as described in Section 12.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced nor the time within which proceedings may be commenced to

establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work."

## **1.09 ARTICLE 13 MISCELLANEOUS PROVISIONS**

### **A. 13.6 INTEREST**

1. Delete Section 13.6 in its entirety. All references to interest payments throughout the Contract Documents are hereby voided.

### **B. Add Section 13.8 as follows:**

#### **1. "§ 13.8 REGULATIONS**

2. **13.8.1** The Contractor or Subcontractor warrants that he is familiar with and he shall comply with Federal, State and local laws, statutes, ordinances, rules and regulations and the orders and decrees of any courts or administrative bodies or tribunals in any manner affecting the performance of the Contract including without limitation Workmen's Compensation Laws, minimum salary and wage statutes and regulations, laws with respect to permits and licenses and fees in connection therewith, laws regarding maximum working hours. No plea of misunderstanding or ignorance thereof will be considered.
3. **13.8.2** Whenever required, the Contractor or Subcontractor shall furnish the Architect and Owner with satisfactory proof of compliance with said Federal, State and local laws, statutes, ordinances, rules, regulations, orders, and decrees.
4. **13.8.3** Each bidder shall carefully examine the Occupational Safety and health Act as issued by the Federal Register (OSHA), and the specific regulations governing procedures, techniques, safety precautions, equipment design, and the configuration of the same as required under this Act and each bidder agrees as evidenced by his submission of a bid to comply with all terms of the Act and to perform and complete in a workmanlike manner all work required in full compliance with said Act.
5. **13.8.4** Each bidder agrees as evidenced by his submission of a bid to comply with all terms of the Equal Employment Opportunity Clause of the Illinois Fair Employment Practices Commission.
6. **13.8.5** At all times Contractor shall remain in compliance with the Illinois Public Works Employment Discrimination Act (775 ILCS 10/1, et seq.) and the Illinois Human Rights Act (775 ILCS 5/2-101, et seq.) and in addition shall at all times comply with Section 2-105 of the Illinois Human Rights Act.
7. **13.8.6** By execution of this Contract, the Contractor understands, represents and warrants to the Owner that the Contractor and its Subcontractors (for which the Subcontractor takes responsibility to insure that they comply with the above-mentioned Acts) are in compliance with all requirements provided by the Acts set forth in Article 13 and that they will remain in compliance for the entirety of the Work. A violation of any of the Acts set forth in this Article is cause for the immediate cancellation of the Contract. However, any forbearance or delay by the Owner in canceling this Contract shall not be considered as, and does not constitute, Owner's consent to such violation and a waiver of any rights the Owner may have, including without limitation, cancellation of this Contract."

## **1.10 ARTICLE 15 CLAIMS AND DISPUTES**

### **A. 15.1.6 CLAIMS FOR CONSEQUENTIAL DAMAGES**

1. Delete Section 15.1.6 in its entirety.

**B. 15.2 INITIAL DECISION**

1. Delete Section 15.2.1 in its entirety and replace with the following:

- a. "**§ 15.2.1** Claims, excluding those arising under Sections 10.3, 10.4, 11.3.9 and 11.3.10, may be referred to the Initial Decision Maker for action. A decision by the Initial Decision Maker shall not be binding and shall not be required as a condition precedent to litigation."

**END OF SECTION**

**SECTION 01 10 00  
SUMMARY**

**PART 1 GENERAL**

**1.01 PROJECT**

- A. Project Name: PEDESTRIAN LIGHTING AND INCIDENT RECORDING.
- B. Owner's Name: Oakton College.
- C. Architect/Engineer's Name: Kluber Architects + Engineers.
- D. The Project consists of the alteration of Removal and replacement of the exterior campus pedestrian, parking, and roadway lighting systems at both Skokie and Des Plaines Campuses. This work includes but is not limited to: concrete pedestals, pedestrian lighting, parking lot lighting, data cabling upgrades, data power and conduit infrastructure, mesh network lighting controls system, asphalt repair and ground cover replacement. This project must be sequenced in such a way to facilitate Owner access to building and access to parking lots. At no time should more than 20% of the available parking be reduced for the College patrons. Refer to phasing plan.

**1.02 CONTRACT DESCRIPTION**

- A. Contract Type: A single prime contract based on a Stipulated Price as described in Document 00 52 00 - Agreement Form.

**1.03 WORK BY OWNER**

- A. Owner will supply the following for installation by Contractor:

**1.04 OWNER OCCUPANCY**

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

**1.05 CONTRACTOR USE OF SITE AND PREMISES**

- A. Provide access to and from site as required by law and by Owner:
  - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
  - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.

**1.06 WORK SEQUENCE**

- A. Construct Work in stages during the construction period for Des Plaines Campus:
  - 1. Stage 1: Work area designated as P2.
  - 2. Stage 2: Work area designated as P1.
  - 3. Stage 3: Work area designated as A1.
  - 4. Stage 4: Work area designated as D1.
  - 5. Stage 5: Work area designated as D2.
  - 6. Stage 6: Work area designated as C.

7. Stage 7: Work area designated as R1.
8. Stage 8: Work area designated as R2.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**



**SECTION 01 20 00  
PRICE AND PAYMENT PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Procedures for preparation and submittal of applications for progress payments.
- B. Documentation of changes in Contract Sum and Contract Time.
- C. Change procedures.
- D. Correlation of Contractor submittals based on changes.
- E. Procedures for preparation and submittal of application for final payment.

**1.02 RELATED REQUIREMENTS**

- A. Section 00 52 00 - Agreement Form: Contract Sum, retainages, payment period, monetary values of unit prices.
- B. Section 00 72 00 - General Conditions: Additional requirements for progress payments, final payment, changes in the Work.
- C. Section 00 73 00 - Supplementary Conditions: Percentage allowances for Contractor's overhead and profit.
- D. Section 01 78 00 - Closeout Submittals: Project record documents.
- E. Section 01 77 00 - Closeout Procedures: Final Payment.

**1.03 SCHEDULE OF VALUES**

- A. Use Schedule of Values Form: AIA G703, edition stipulated in the Agreement.
- B. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect/Engineer for approval.
- C. Forms filled out by hand will not be accepted.
- D. Submit Schedule of Values to the Architect/Engineer at earliest possible date, but no later than 14 days prior to first Pay Request Meeting.
  - 1. After review by the Architect/Engineer, revise and resubmit Schedule as directed.
- E. Format: Utilize the Table of Contents of this Project Manual as a format for the listing of the Work.
- F. Identify as separate line items on the Schedule the costs for the following items:
  - 1. Bonds.
  - 2. Insurance.
  - 3. Site Mobilization.
  - 4. Construction Submittals.
  - 5. General Conditions.
  - 6. Demonstration and Training.
  - 7. Closeout Submittals.

8. Contractor's overhead and profit.
- G. Submit Schedule of Values in sufficient detail for the Architect/Engineer to use in evaluation of Applications for Payment.
  1. Itemize the cost of the work of:
    - a. Contractor's materials from stock.
    - b. Contractor's own shop labor.
    - c. Contractor's own field labor.
    - d. Subcontractors' materials from stock.
    - e. Subcontractors' shop labor.
    - f. Subcontractors' field labor.
    - g. Suppliers of products and equipment.
- H. Revise Schedule of Values to list approved Change Orders, with each Application For Payment.

#### **1.04 APPLICATIONS FOR PROGRESS PAYMENTS**

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Use Form AIA G702 and Form AIA G703, edition stipulated in the Agreement.
- C. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit sample to Architect/Engineer for approval.
- D. Forms filled out by hand will not be accepted.
- E. For each item, provide a column for listing each of the following:
  1. Item Number.
  2. Description of work.
  3. Scheduled Values.
  4. Previous Applications.
  5. Work in Place and Stored Materials under this Application.
  6. Authorized Change Orders.
  7. Total Completed and Stored to Date of Application.
  8. Percentage of Completion.
  9. Balance to Finish.
  10. Retainage.
- F. Execute certification by signature of authorized officer.
- G. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.
- H. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.
- I. Submit one pencil/draft copy of each Application for Payment to the Architect/Engineer at least 7 days prior to the due date for the submission of the Application.
- J. Contractor or Architect/Engineer may schedule a Pay Request Meeting to review the pencil/draft copy of the Application for agreement with the progress of the Work.

- K. Submit one electronic and three hard-copies of each Application for Payment.
- L. Include the following with the application:
  - 1. Transmittal letter as specified for submittals in Section 01 30 00.
  - 2. Construction progress schedule, revised and current as specified in Section 01 30 00.
  - 3. Contractor's partial waiver of lien in the amount of the Application for Payment as well as trailing partial waivers of lien for subcontractors and suppliers who were included in the previous Application for Payment, to the extent of that payment.
    - a. When an Application shows completion of a subcontractor or supplier item, submit a final or full waiver for that item.
    - b. Waivers of lien shall be submitted on forms and executed in a manner acceptable to the Owner.
  - 4. Email confirmations and copies of certified transcripts of payroll records accompanying those confirmations from the Illinois Department of Labor for the Contractor and for all Subcontractors and Sub-subcontractors employed on the Project who performed work on the Project during the Payment Period.
    - a. Contractor shall assemble his and all subcontractor and sub-subcontractor records prior to submitting each Application for Payment.
    - b. Applications for Payment submitted without IDOL confirmation emails and transcripts or with missing IDOL confirmation emails or transcripts will result in payment being delayed until the Contractor complies fully with the requirements set forth in the preceding paragraphs.
  - 5. Affidavits attesting to products or equipment suitably stored off-site in a bonded warehouse. Payments for materials stored off-site shall be conditioned upon submission of bills of sale, applicable insurance, and any other documentation or procedures satisfactory to the Owner to establish the Owner's title to such materials, or otherwise protect the Owner's interest.
- M. When Architect/Engineer requires substantiating information, submit data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

#### **1.05 MODIFICATION PROCEDURES**

- A. Submit name of the individual authorized to receive change documents and who will be responsible for informing others in Contractor's employ or subcontractors of changes to the Contract Documents.
- B. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect/Engineer will issue instructions directly to Contractor.
- C. For other required changes, Architect/Engineer will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
  - 1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
  - 2. Promptly execute the change.
- D. For changes for which advance pricing is desired, Architect/Engineer will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any

overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within ten (10) days.

- E. Contractor may propose a change by submitting a request for change to Architect/Engineer, describing the proposed change and its full effect on the Work, with 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 Section 01 60 00.
- F. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
  - 1. For change requested by Architect/Engineer for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
  - 2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect/Engineer.
  - 3. For pre-determined unit prices and quantities, the amount will be based on the fixed unit prices.
  - 4. For change ordered by Architect/Engineer without a quotation from Contractor, the amount will be determined by Architect/Engineer based on the Contractor's substantiation of costs as specified for Time and Material work.
- G. Substantiation of Costs: Provide full information required for evaluation.
  - 1. On request, provide the following data:
    - a. Quantities of products, labor, and equipment.
    - b. Taxes, insurance, and bonds.
    - c. Overhead and profit.
    - d. Justification for any change in Contract Time.
    - e. Credit for deletions from Contract, similarly documented.
  - 2. Support each claim for additional costs with additional information:
    - a. Origin and date of claim.
    - b. Dates and times work was performed, and by whom.
    - c. Time records and wage rates paid.
    - d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.
  - 3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- H. Execution of Change Orders: Architect/Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.
- I. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.
- J. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- K. Promptly enter changes in Project Record Documents.

## **1.06 APPLICATION FOR FINAL PAYMENT**

- A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
- B. Application for Final Payment will not be considered until the following have been accomplished:
  - 1. All closeout procedures specified in Section 01 70 00.
- C. The submittal of Final Waiver of Lien and the acceptance of the final payment by the Contractor shall be held to be a waiver of any and all claims against the Owner arising from, out of, or in any connection with the Contract.

### **PART 2 PRODUCTS - NOT USED**

### **PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 22 00  
UNIT PRICES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. List of unit prices, for use in preparing Bids.
- B. Measurement and payment criteria applicable to Work performed under a unit price payment method.
- C. Defect assessment and non-payment for rejected work.

**1.02 RELATED REQUIREMENTS**

- A. Document 00 43 22 - Bid Form Supplement - List of Unit Prices: List of Unit Prices as supplement to Bid Form
- B. Section 01 20 00 - Price and Payment Procedures: Additional payment and modification procedures.

**1.03 COSTS INCLUDED**

- A. Unit Prices included on the Bid Form shall include full compensation for all required labor, products, tools, equipment, plant, transportation, services and incidentals; erection, application or installation of an item of the Work; overhead and profit.

**1.04 UNIT QUANTITIES SPECIFIED**

- A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Quantities and measurements of actual Work will determine the payment amount.

**1.05 PAYMENT**

- A. Payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities of Work that is incorporated in or made necessary by the Work and accepted by the Architect/Engineer, multiplied by the unit price.
- B. Payment will not be made for any of the following:
  - 1. Products wasted or disposed of in a manner that is not acceptable.
  - 2. Products determined as unacceptable before or after placement.
  - 3. Products not completely unloaded from the transporting vehicle.
  - 4. Products placed beyond the lines and levels of the required Work.
  - 5. Products remaining on hand after completion of the Work.
  - 6. Loading, hauling, and disposing of rejected Products.

**1.06 DEFECT ASSESSMENT**

- A. Replace Work, or portions of the Work, not complying with specified requirements.
- B. If, in the opinion of Owner, it is not practical to remove and replace the Work, Owner will direct one of the following remedies:
  - 1. The defective Work may remain, but the unit price will be adjusted to a new unit price at the discretion of Owner.

2. The defective Work will be partially repaired to the instructions of the Owner, and the unit price will be adjusted to a new unit price at the discretion of Owner.
- C. The individual specification sections may modify these options or may identify a specific formula or percentage price reduction.
- D. The authority of Owner to assess the defect and identify payment adjustment is final.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 23 00  
ALTERNATES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Description of Alternates.
- B. Procedures for pricing Alternates.
- C. Documentation of changes to Contract Sum and Contract Time.

**1.02 RELATED REQUIREMENTS**

- A. Document 00 43 23 - Bid Form Supplement - List of Alternates: List of Alternates as supplement to Bid Form.
- B. Document 00 52 00 - Agreement Form: Incorporating monetary value of accepted Alternates.

**1.03 ACCEPTANCE OF ALTERNATES**

- A. 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.
- B. Coordinate related work and modify surrounding work to integrate the Work of each Alternate.

**1.04 SCHEDULE OF ALTERNATES**

- A. Alternate No. 01 - Pedestrian lighting on Des Plaines Campus north side of lake. See site plan.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**



**SECTION 01 30 00**  
**ADMINISTRATIVE REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General administrative requirements.
- B. Preconstruction meeting.
- C. Site mobilization meeting.
- D. Progress meetings.
- E. Construction progress schedule.
- F. Architect/Engineer-provided CAD files.
- G. Requests for Information (RFI) procedures.
- H. Submittals for review, information, and project closeout.
- I. Number of copies of submittals.
- J. Submittal procedures.

**1.02 RELATED REQUIREMENTS**

- A. Section 00 72 00 - General Conditions: Dates for applications for payment.
- B. Section 01 60 00 - Product Requirements: General product requirements.
- C. Section 01 70 00 - Execution and Closeout Requirements: Additional coordination requirements.
- D. Section 01 78 00 - Closeout Submittals: Project record documents; operation and maintenance data; warranties and bonds.

**1.03 GENERAL ADMINISTRATIVE REQUIREMENTS**

- A. Comply with requirements of Section 01 70 00 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
- B. Make the following types of submittals to Architect/Engineer:
  - 1. Requests for Information (RFI).
  - 2. Requests for substitution.
  - 3. Shop drawings, product data, and samples.
  - 4. Test and inspection reports.
  - 5. Design data.
  - 6. Manufacturer's instructions and field reports.
  - 7. Applications for payment and change order requests.
  - 8. Progress schedules.
  - 9. Coordination drawings.
  - 10. Correction Punch List and Final Correction Punch List for Substantial Completion.
  - 11. Closeout submittals.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.01 PRECONSTRUCTION MEETING**

- A. Owner will schedule a meeting after Notice of Award.
- B. Attendance required:
  - 1. Owner.
  - 2. Architect/Engineer.
  - 3. Contractor.
- C. Agenda:
  - 1. Execution of Owner-Contractor Agreement.
  - 2. Submission of executed bonds and insurance certificates.
  - 3. Distribution of Contract Documents.
  - 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
  - 5. Designation of personnel representing the parties to Contract and Architect/Engineer.
  - 6. Procedures and processing of field decisions, Submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
  - 7. Scheduling.
  - 8. Scheduling activities of a Geotechnical Engineer.
- D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

### **3.02 SITE MOBILIZATION MEETING**

- A. Architect/Engineer will schedule a meeting at the Project site prior to Contractor occupancy. May be combined with Preconstruction Meeting.
- B. Attendance required:
  - 1. Contractor.
  - 2. Owner.
  - 3. Architect/Engineer.
  - 4. Major subcontractors.
- C. Agenda:
  - 1. Use of premises by Owner and Contractor.
  - 2. Owner's requirements.
  - 3. Construction facilities and controls provided by Owner.
  - 4. Temporary utilities provided by Owner.
  - 5. Survey and building layout.
  - 6. Security and housekeeping procedures.
  - 7. Schedules.
  - 8. Application for payment procedures.
  - 9. Procedures for testing.
  - 10. Procedures for maintaining record documents.
  - 11. Requirements for start-up of equipment.

12. Inspection and acceptance of equipment put into service during construction period.

D. Record minutes and distribute copies within 2 days after meeting to participants, with copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

### **3.03 PROGRESS MEETINGS**

A. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

B. Attendance Required:

1. Contractor.
2. Owner.
3. Architect/Engineer.
4. Contractor's superintendent.
5. Major subcontractors.

C. Agenda:

1. Review minutes of previous meetings.
2. Review of work progress.
3. Field observations, problems, and decisions.
4. Identification of problems that impede, or will impede, planned progress.
5. Review of Submittals schedule and status of Submittals.
6. Maintenance of progress schedule.
7. Corrective measures to regain projected schedules.
8. Planned progress during succeeding work period.
9. Maintenance of quality and work standards.
10. Effect of proposed changes on progress schedule and coordination.
11. Other business relating to work.

D. Record minutes and distribute copies within 2 days after meeting to participants, with copies to Architect/Engineer, Owner, participants, and those affected by decisions made.

### **3.04 CONSTRUCTION PROGRESS SCHEDULE**

A. If preliminary schedule requires revision after review, submit revised schedule within 7 days.

B. Submit updated schedule with each Application for Payment.

### **3.05 ARCHITECT/ENGINEER-PROVIDED CAD FILES**

A. After the execution of the Contract, Architect/Engineer will provide, free of charge, upon receipt of a properly completed and signed request utilizing "Electronic Data Transfer Consent Form" at the end of this Specification Section, CAD files depicting graphic information for the project as follows:

1. Architectural Floor Plans: Column grid, walls, floors, stairs, doors, windows, room numbers, ceiling grid, mechanical diffusers, plumbing fixtures, sprinkler heads (if depicted in Bid Documents) and lights.

B. Contractor acknowledges and accepts that the Architectural Floor Plans do not contain structural, mechanical, electrical, plumbing, fire protection and other building systems information depicted in the Bidding Documents. Examples of information not contained in these files include, but are not limited to, title blocks, keynotes, schedules, mechanical ductwork and equipment, electrical device

symbols, circuit numbers and home runs, plumbing equipment, piping runs and riser diagrams, and architectural/engineering text or details. No other CAD files, data or information will be provided.

- C. Only requests from Prime Contractors will be honored. Subcontractors must obtain the files from their respective Prime Contractors.
- D. In submitting a request, Contractor acknowledges that:
  - 1. Architect/Engineer bears no responsibility for the data or its transmission,
  - 2. Use of the data by the Contractor or his Subcontractors in no way relieves the Contractor of his obligations under the Contract,
  - 3. Contractor is solely liable for any and all claims arising from any and all products generated by the Contractor or its Subcontractors employing the data,
  - 4. Contractor and its Subcontractors have a limited, non-exclusive license to use the data solely in connection with the Work of the Project, and that
  - 5. Architect/Engineer retains all rights, including copyright, to the data.

### **3.06 REQUESTS FOR INFORMATION (RFI)**

- A. Definition: A request seeking one of the following:
  - 1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
  - 2. A resolution to an issue which has arisen due to field conditions and affects design intent.
- B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
  - 1. Prepare a separate RFI for each specific item.
    - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
    - b. Do not forward requests which solely require internal coordination between subcontractors.
  - 2. Prepare in a format and with content acceptable to Owner.
    - a. Use AIA G716 - Request for Information .
  - 3. Combine RFI and its attachments into a single electronic file. PDF format is preferred.
- D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
  - 1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
  - 2. Unacceptable Uses for RFIs: Do not use RFIs to request the following:
    - a. Approval of submittals (use procedures specified elsewhere in this section).
    - b. Approval of substitutions (see Section - 01 60 00 - Product Requirements)
    - c. Changes that entail change in Contract Time and Contract Sum (comply with provisions of the Conditions of the Contract).

- d. Different methods of performing work than those indicated in the Contract Drawings and Specifications (comply with provisions of the Conditions of the Contract).
3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
  - a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect/Engineer, and any of its consultants, due to processing of such RFIs.
- E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
  1. Official Project name and number, and any additional required identifiers established in Contract Documents.
  2. Owner's, Architect/Engineer's, and Contractor's names.
  3. Discrete and consecutive RFI number, and descriptive subject/title.
  4. Issue date, and requested reply date.
  5. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
  6. Annotations: Field dimensions and/or description of conditions which have engendered the request.
  7. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
- F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
  1. Indicate current status of every RFI. Update log promptly and on a regular basis.
  2. Note dates of when each request is made, and when a response is received.
  3. Highlight items requiring priority or expedited response.
  4. Highlight items for which a timely response has not been received to date.
  5. Identify and include improper or frivolous RFIs.
- H. Review Time: Architect/Engineer will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 3:00 PM will be considered as having been received on the following regular working day.
  1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
- I. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up

with an appropriate Change Order request to Owner.

1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
4. Notify Architect/Engineer within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.

### **3.07 SUBMITTAL SCHEDULE**

- A. Submit to Architect/Engineer for review a schedule for submittals in tabular format.
  1. Submit at the same time as the preliminary schedule.
  2. Coordinate with Contractor's construction schedule and schedule of values.
  3. Format schedule to allow tracking of status of submittals throughout duration of construction.
  4. Arrange information to include scheduled date for initial submittal, specification number and title, submittal category (for review or for information), description of item of work covered, and role and name of subcontractor.
  5. Account for time required for preparation, review, manufacturing, fabrication and delivery when establishing submittal delivery and review deadline dates.
    - a. For assemblies, equipment, systems comprised of multiple components and/or requiring detailed coordination with other work, allow for additional time to make corrections or revisions to initial submittals, and time for their review.

### **3.08 SUBMITTALS FOR REVIEW**

- A. When the following are specified in individual sections, submit them for review:
  1. Product data.
  2. Shop drawings.
  3. Samples for selection.
  4. Samples for verification.
- B. Submit to Architect/Engineer for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
- C. Samples will be reviewed for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with Submittal PROCEDURES article below and for record documents purposes described in Section 01 78 00 - Closeout Submittals.

### **3.09 SUBMITTALS FOR INFORMATION**

- A. When the following are specified in individual sections, submit them for information:
  1. Design data.
  2. Certificates.
  3. Test reports.
  4. Inspection reports.
  5. Manufacturer's instructions.
  6. Manufacturer's field reports.

7. Other types indicated.

B. Submit for Architect/Engineer's knowledge as contract administrator or for Owner.

### 3.10 SUBMITTALS FOR PROJECT CLOSEOUT

A. Submit Correction Punch List for Substantial Completion.

B. Submit Final Correction Punch List for Substantial Completion.

C. When the following are specified in individual sections, submit them at project closeout in compliance with requirements of Section 01 78 00 - Closeout Submittals:

1. Project record documents.
2. Operation and maintenance data.
3. Warranties.
4. Bonds.
5. Other types as indicated.

D. Submit for Owner's benefit during and after Project completion.

### 3.11 NUMBER OF COPIES OF SUBMITTALS

A. Documents for Review:

1. Submit via email in Adobe PDF electronic file format at native sheet size and right-side up. Architect/Engineer will return via email a reviewed copy in Adobe PDF electronic file format. Files not properly sized and rotated will be rejected. Illegible files will be rejected.

B. Documents for Information: Submit via email in Adobe PDF electronic file format. Submitted documents are for Architect/Engineer's information and reference only, and will not be reviewed or returned.

C. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect/Engineer.

1. Submit original, physical samples. With each physical sample, submit Adobe PDF electronic copies of scanned physical original samples. Architect/Engineer will return via email a reviewed scanned copy in Adobe PDF electronic file format.
2. Retained samples will not be returned to Contractor unless specifically so stated.

### 3.12 SUBMITTAL PROCEDURES

A. General Requirements:

1. Use a single transmittal for related items.
2. Submit separate packages of submittals for review and submittals for information, when included in the same specification section.
3. Transmit using approved form.
4. Number each submittal. Prefix the submittal number with the Specification Section number to which the submittal pertains. For revised submittals use original number and a sequential alphanumeric suffix. **Items submitted without a Specification Section number, or with an incorrect Specification Section number will delay the review process.**
5. Identify: Project; Contractor; subcontractor or supplier; pertinent drawing and detail number; and specification section number, article and paragraph, as appropriate on each copy.

6. Correlate submitted items with specified products; clearly indicate the specified product that corresponds to each submitted item. **Submitted items not clearly correlated with specified items will delay the review process.**
7. When options or optional features available for a Product are indicated in a Submittal, and selections for those options/features are indicated in the Contract Documents, identify on the Submittal the selection indicated in the Contract Documents. **Submittals that fail to identify specified options or optional features may be returned marked "Rejected" or "Revise and Resubmit".**
8. Apply Contractor's stamp, signed or initialed certifying that review, approval, 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.
  - a. Submittals from sources other than the Contractor, or without Contractor's transmittal will not be acknowledged, reviewed, or returned.
9. Deliver each submittal on date noted in submittal schedule, unless an earlier date has been agreed to by all affected parties, and is of the benefit to the project.
  - a. Deliver submittals to Architect/Engineer at business address.
10. Schedule submittals to expedite the Project, and coordinate submission of related items.
  - a. For each submittal for review, allow 15 days excluding delivery time to and from the Contractor.
  - b. For sequential reviews involving Architect/Engineer's consultants, Owner, or another affected party, allow an additional 7 days.
11. Clearly identify variations from the Contract Documents. Regardless of the type of variation, Contractor is solely responsible for errors in the field or performance issues that arise from Submittal variations from the requirements of the Contract Documents if those variations were not expressly noted to specifically identify for and describe to the reviewer the nature of the variation from the Contract Documents.
12. Provide space for Contractor's review stamp and a 4 inch x 3 inch clear space for Architect/Engineer's review stamp.
13. Promptly return submittals marked "Rejected" or "Revise and Resubmit" to originating subcontractor supplier, and faithfully ensure the prompt resubmittal of the correct or revised information.
14. When revised for resubmission, identify all changes made since previous submission. Use clouds, highlights or other means acceptable to Architect/Engineer. **Resubmittals that do not clearly identify all changes may be delayed and/or returned to the Contractor unreviewed.**
15. Contractor is entitled to one (1) resubmittal of each Submittal For Review or Submittal For Project Closeout rejected by Architect/Engineer or returned by Architect/Engineer for further action. Thereafter, Contractor shall pay the cost of all further Architect/Engineer reviews of any Submittal For Review or Submittal for Project Closeout, at a rate of \$200.00/hour. Cost of such further reviews will be deducted from the Contract Sum by Change Order.
16. Promptly distribute and coordinate the requirements of reviewed submittals with affected parties. Instruct parties to promptly report inability to comply with requirements.
17. Where indicated on the Drawings or in respective product specification Sections, submit reviewed submittals to Authority Having Jurisdiction (AHJ).
18. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
19. Submittals not requested will be returned "Not Reviewed".



- B. Product Data Procedures:
1. Submit only information required by individual specification sections.
  2. Collect required information into a single submittal.
  3. Submit concurrently with related shop drawing submittal.
  4. Do not submit (Material) Safety Data Sheets for materials or products.
- C. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
  2. Use of reproductions of the Contract Documents in digital data form to create shop drawings is only permitted as defined above under Architect/Engineer-Provided CAD Files.
  3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
- D. Samples Procedures:
1. Transmit related items together as single package.
  2. When relevant, identify each item to allow review for applicability in relation to shop drawings showing installation locations.
- E. Submittal reviews may be delayed and/or Submittals may be returned marked "Rejected" or "Revise and Resubmit" for any of the following reasons:
1. Submittals submitted outside the scheduled dates of the Submittal Schedule.
  2. Submittals are incomplete or are missing information.
  3. Submittals are not submitted in accordance with procedures outlined in this Section, including, but not limited to:
    - a. Specification Section number not indicated on submittal or transmittal.
    - b. Contractor's review stamp missing.
    - c. Submitted items not correlated with specified products.
    - d. Re-submitted items not clearly identifying changes.

### **3.13 SUBMITTAL REVIEW**

- A. Submittals for Review: Architect/Engineer will review each submittal, and approve, or take other appropriate action.
- B. Submittals for Information: Architect/Engineer will not acknowledge receipt, and take no other action.
- C. Architect/Engineer's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
- D. Architect/Engineer's and consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
    - a. "No Exception Taken", or language with same legal meaning.
      - 1) Resubmission is not required or requested.
      - 2) Resubmitted items will not be acknowledged.
    - b. "Make Corrections Noted", or language with same legal meaning.
      - 1) Resubmission is not required or requested.

- 2) Resubmitted items may be returned marked "Not Requested, Not Reviewed".
2. Not Authorizing fabrication, delivery, and installation:
  - a. "Revise and Resubmit".
    - 1) Resubmit revised item, with review notations acknowledged and incorporated.
    - 2) Clearly identify all revisions.
    - 3) Non-responsive resubmittals may be rejected.
  - b. "Rejected".
    - 1) Submit item complying with requirements of Contract Documents.
  - c. "Submit Specified Item".
    - 1) Submit item complying with requirements of Contract Documents.

**END OF SECTION**

**SECTION 01 40 00  
QUALITY REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Submittals.
- B. Quality assurance.
- C. Sequencing and scheduling of the work with testing and inspections.
- D. Control of installation.
- E. Manufacturers' field services.
- F. Defect Assessment.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 41 00 - Regulatory Requirements.
- B. Section 01 42 00 - References.
- C. Section 01 60 00 - Product Requirements: Requirements for material and product quality.

**1.03 REFERENCE STANDARDS**

- A. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2010b.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Design Data: Submit for Architect/Engineer's knowledge as contract administrator for the limited purpose of assessing compliance with information given and the design concept expressed in the Contract Documents, or for Owner's information.
- C. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect/Engineer, in quantities specified for Product Data.
  - 1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
  - 2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect/Engineer.
- D. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

**1.05 REGULATORY REQUIREMENTS - SEE SECTION 01 41 00**

**1.06 REFERENCES AND STANDARDS - SEE SECTION 01 42 00**

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION**

**3.01 CONTROL OF INSTALLATION**

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
- B. Comply 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 minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Have work performed by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

**3.02 DEFECT ASSESSMENT**

- A. Replace Work or portions of the Work not complying with specified requirements.
- B. If, in the opinion of Owner, it is not practical to remove and replace the work, Owner will direct an appropriate remedy or adjust payment.

**END OF SECTION**

**SECTION 01 41 00  
REGULATORY REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General.
- B. Definitions.
- C. Quality Assurance.
- D. Regulatory Requirements.

**1.02 RELATED SECTIONS**

- A. Section 01 10 00 - Summary.
- B. Section 01 42 00 - References.

**1.03 GENERAL**

- A. Comply with all applicable laws, rules, regulations, codes and ordinances.
- B. If the Contractor observes that the Contract Documents may be at variance with specified codes, notify the Architect/Engineer immediately. Architect/Engineer shall issue all changes in accordance with the General Conditions.
- C. It shall not be the Contractor's primary responsibility to make certain that the Contract Documents are in accordance with all applicable laws, rules and regulations, however, when the Contractor performs work knowing or having reason to know that the work in question is contrary to applicable laws, rules, and regulations, and fails to notify the Architect/Engineer, the Contractor shall pay all costs arising therefrom.

**1.04 DEFINITIONS**

- A. Definitions:
  - 1. Codes: Codes are statutory requirements, rules or regulations of governmental entities.
  - 2. Standards: Standards are requirements that have been established as accepted criteria, set general consent.

**1.05 QUALITY ASSURANCE**

- A. The Architect/Engineer has designed the project to applicable code requirements and has copies of said codes available for the Contractor's inspection.
- B. The Contractor shall:
  - 1. Ensure that copies of codes and standards referenced herein or specified in individual specifications sections are available to Contractor's personnel, agents, and Sub-Contractors.
  - 2. Ensure that Contractor's personnel, agents, and Sub-Contractors are familiar with the workmanship and requirements of applicable codes and standards.

## 1.06 REGULATORY REQUIREMENTS

- A. Source and Requirements: Verify amendments with local code officials.
1. Illinois College Board
    - a. ICC International Building Code, 2018
    - b. National Electrical Code, 2002
    - c. Life Safety Code, 2018
  2. Local code requirements Village of Skokie:
    - a. ICC International Building Code, 2021 Edition.
    - b. ICC International Fire Code, 2021 Edition.
    - c. National Electrical Code, 2020 Edition.
    - d. Local Amendments to the Above Codes
  3. Local code requirements City of Des Plaines:
    - a. ICC International Building Code, 2015 Edition.
    - b. ICC International Fire Code, 2015 Edition.
    - c. National Electrical Code, 2014 Edition.
    - d. Local Amendments to the Above Codes
  4. State code requirements:
    - a. Capital Development Board (CDB):
      - 1) Illinois Accessibility Code, 2018 Edition.
      - 2) Illinois Energy Conservation Code (ICC International Energy Conservation Code, 2021 Edition, with State of Illinois modifications).
    - b. Illinois Environmental Protection Agency (IEPA):
      - 1) Air-Pollution Standards.
      - 2) Noise Pollution Standards.
      - 3) Water Pollution Standards.
      - 4) Public Water Supplies
      - 5) Solid Waste Standards.

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 42 00  
REFERENCES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Drawing symbols, abbreviations and acronyms.
- B. Definitions of terms used throughout the Contract Documents.
- C. Explanation of specification format and content.
- D. Requirements relating to referenced standards.
- E. Applicability of referenced standards.
- F. List of industry organizations and certain of their respective documents.

**1.02 DRAWING SYMBOLS AND CONVENTIONS**

- A. Abbreviations and graphic symbols are defined on the General Notes, Symbols & Abbreviations sheet of the drawings.
- B. Generally, symbols used on the mechanical and electrical drawings conform to those recommended by ASHRAE, though, where appropriate, these symbols are supplemented by more specific symbols as recommended by ASME, ASPE, or the IEEE.

**1.03 DEFINITIONS**

- A. Where the terms "indicated", "noted", "scheduled", "shown", or "specified" are used it is to help locate the reference; no limitation on location is intended except as specifically noted.
- B. Where the terms "directed", "requested", "authorized", "approved", are used as in "directed by the Architect/Engineer", no implied meaning shall be construed to extend the Architect/Engineer's responsibilities into the Contractor's purview of construction supervision.
- C. Where the term "approved" is used in conjunction with the Architect/Engineer's action on submittals, requests or applications it is limited to the duties of the Architect/Engineer as described in the Agreement, and the General and Supplemental Conditions of the Contract. Such use of the term "approval" shall not limit or release the Contractor from his responsibility to fulfill Contract requirements.
- D. Where the term "regulations" is used it means all applicable statutes, laws, ordinances, and orders issued by authorities having jurisdiction, as well as construction industry standards, rules, or conventions that address performance of the Work.
- E. The "Project Site" is the space available to the Contractor for performance of construction activities. The Project Site may be for the exclusive use of the Contractor and his activities or may be used in conjunction with others performing other construction or related activities on the Project. Unless the extent of the Project Site is indicated on the Drawings, means the limits of the area within the property line of the parcel on which the Project is located, subject to the limitations and restrictions of local ordinance and the discretion of the Owner.

- F. Where the term "furnish" is used it means supply, deliver to, and unload and store at the Project Site until the Work is ready for the item to be assembled and incorporated into the Work.
- G. Where the term "install" is used it is meant to describe operations at the Project Site to include uncrating, assembling, placing, anchoring, connecting to utilities, finishing, protecting, cleaning and all other similar operations required to fully incorporate an item into the Work.
- H. Where the term "provide" is used it means "furnish and install" as defined above.
- I. Where the term "refurbish" is used it means refinish, repair and otherwise restore to like-new condition.
- J. Where the terms "remove" or "demolish" are used they mean safely disconnect from existing utilities, permanently extract from the Work and the Project Site, and legally dispose of off-site.
- K. Where the terms "temporarily remove" or "salvage" are used they mean safely disconnect from existing utilities and carefully extract from the Work so as to prevent damage to the item and the Work.
  - 1. If the item is to be reinstalled or relocated as part of the Work, these terms also mean clean, adjust, lubricate and otherwise restore to best possible condition without repair or refinishing.
  - 2. Otherwise, these terms also mean clean item surfaces and turn over to the Owner for storage and possible future use.
- L. Where the term "reinstall" is used it means the same as "install", with respect to a temporarily removed, salvaged or relocated item.
- M. Where the term "relocate" is used it means temporarily remove and reinstall in a new location.
- N. Where the phrase "salvage in place" is used it means protect in place so as to prevent damage while adjacent elements are demolished, restore to best possible condition without repair or refinishing, and modify as necessary to properly incorporate and integrate with the Work.

#### **1.04 SPECIFICATION FORMAT AND CONTENT**

- A. These Specifications are based on the Construction Specification Institute's 49 Division format and numbering system.
- B. Language used in the Specifications and other Contract Documents is an abbreviated type. Implied words and meanings will appropriately interpreted.
- C. Requirements expressed in imperative and streamlined language are to be performed by the Contractor. At certain locations in the text, subjective language may be used to describe responsibilities that must be fulfilled indirectly by the Contractor or others.
  - 1. Whenever a colon (:) is used within a sentence or phrase, it shall be construed to mean the words "shall be".
- D. Use of certain terms such as "carpentry" is not intended to imply that certain activities must be performed by accredited or unionized individuals of a corresponding generic name. The Specifications do, however, require that certain construction activities shall be performed by specialists who are recognized experts in the operations to be performed. Specialists shall be used for said activities, however the final responsibility for fulfilling the requirements of the Contract remains the Contractor's.



## **1.05 QUALITY ASSURANCE**

- A. For products or workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference 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 of date of issue specified in this section, except where a specific date is established by applicable code.
- C. Obtain copies of standards when required by the Contract Documents.
- D. Maintain copy at project 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 the Architect/Engineer before proceeding.
- F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect/Engineer shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

## **1.06 APPLICABILITY OF INDUSTRY STANDARDS**

- A. Construction industry standards shall have the same force and effect as if bound or copied directly in the Contract Documents, except where more stringent requirements are specified. All such applicable standards are made a part of the Contract Documents by reference.
  - 1. Where compliance with two or more standards are referenced and conflicting requirements for quality or quantities occur, comply with the more stringent requirements. Refer questions regarding apparently conflicting standards to the Architect/Engineer for a decision before proceeding.
  - 2. The standard of quality or quantity levels specified, shown, or referenced shall be the minimum to be provided or performed. Refer questions regarding standards of minimum quality or quantity to the Architect/Engineer before proceeding.

## **1.07 CONSTRUCTION INDUSTRY ORGANIZATIONS AND DOCUMENTS**

AAMA -- AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION

AASHTO -- AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

ACI -- AMERICAN CONCRETE INSTITUTE INTERNATIONAL

ANSI -- AMERICAN NATIONAL STANDARDS INSTITUTE

ASTM -- AMERICAN SOCIETY FOR TESTING AND MATERIALS

CPSC -- CONSUMER PRODUCTS SAFETY COMMISSION

ICC -- INTERNATIONAL CODE COUNCIL, INC.

IEEE -- INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS

ISO -- INTERNATIONAL STANDARDS ORGANIZATION

NEMA -- NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

NFPA -- NATIONAL FIRE PROTECTION ASSOCIATION

UL -- UNDERWRITERS LABORATORIES INC.

**1.08 UNITED STATES GOVERNMENT AND RELATED AGENCIES/DOCUMENTS**

CFR -- CODE OF FEDERAL REGULATIONS

CPSC -- CONSUMER PRODUCTS SAFETY COMMISSION

EPA -- ENVIRONMENTAL PROTECTION AGENCY

FS -- FEDERAL SPECIFICATIONS AND STANDARDS (General Services Administration)

GSA -- U.S. GENERAL SERVICES ADMINISTRATION

USGS -- UNITED STATES GEOLOGICAL SURVEY

**1.09 STATE GOVERNMENT AND RELATED AGENCIES/DOCUMENTS**

CDB -- ILLINOIS CAPITAL DEVELOPMENT BOARD

IDOL -- ILLINOIS DEPARTMENT OF LABOR

IDPH -- ILLINOIS DEPARTMENT OF PUBLIC HEALTH

IEPA -- ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

OSFM -- OFFICE OF THE ILLINOIS STATE FIRE MARSHAL

**PART 2 PRODUCTS - NOT USED**

**PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 50 00  
TEMPORARY FACILITIES AND CONTROLS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Temporary telecommunications services.
- B. Temporary sanitary facilities.
- C. Temporary controls: Barriers and fencing.
- D. Security requirements.
- E. Vehicular access and parking.
- F. Waste removal facilities and services.

**1.02 TELECOMMUNICATIONS SERVICES**

- A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
- B. Telecommunications services shall include:
  - 1. One (1) mobile cellular telephone for each of Contractor's and any Subcontractor's field personnel.

**1.03 TEMPORARY SANITARY FACILITIES**

- A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
- B. Maintain daily in clean and sanitary condition.

**1.04 BARRIERS**

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

**1.05 FENCING**

- A. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.

**1.06 EXTERIOR ENCLOSURES**

- A. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of

unauthorized persons. Provide access doors with self-closing hardware and locks.

#### **1.07 SECURITY**

- A. Provide security and facilities to protect Work, and Owner's operations from unauthorized entry, vandalism, or theft.
- B. All on-site personnel of Contractor, Subcontractors and Suppliers must pass a background check, performed by the Owner or by an outside agency of the Owner's choosing.
  - 1. At least 7 days prior to a Contractor, Subcontractor or Supplier employee being present on the jobsite, provide Owner with employee's full name and date of birth, to allow the Owner to conduct a background check on the individual.

#### **1.08 VEHICULAR ACCESS AND PARKING**

- A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
- B. Coordinate access and haul routes with governing authorities and Owner.
- C. Provide and maintain access to fire hydrants, free of obstructions.

#### **1.09 WASTE REMOVAL**

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site periodically.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.

#### **PART 2 PRODUCTS - NOT USED**

#### **PART 3 EXECUTION - NOT USED**

**END OF SECTION**

**SECTION 01 60 00  
PRODUCT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. General product requirements.
- B. Transportation, handling, storage and protection.
- C. Product option requirements.
- D. Substitution limitations.
- E. Maintenance materials, including extra materials, spare parts, tools, and software.

**1.02 SUBMITTALS**

- A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
  - 1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

**PART 2 PRODUCTS**

**2.01 NEW PRODUCTS**

- A. Provide new products unless specifically required or permitted by Contract Documents.
- B. Designed, manufactured, and tested in accordance with industry standards.

**2.02 PRODUCT OPTIONS**

- A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Use a product of one of the 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.

**2.03 MAINTENANCE MATERIALS**

- A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.

- B. Deliver to Project site and place in location directed by Owner's representative; obtain Owner's signature on receipt for delivery prior to final payment. Submit signed receipts with Closeout Submittals.

## **PART 3 EXECUTION**

### **3.01 SUBSTITUTION LIMITATIONS**

- A. Substitutions Prior To Bid Opening: Architect/Engineer will consider a written request for substitution provided that such request is received at least seven (7) days prior to the Bid opening date. Requests received after that time will not be considered.
  - 1. Only Substitution Requests from Bidders will be considered.
  - 2. If a request is approved, the Architect/Engineer will issue an appropriate addendum not less than three (3) days prior to the Bid opening date.
- B. Substitutions After Notice of Award: Architect/Engineer will consider a request for substitution only from the Contractor and only under one or more of the following conditions:
  - 1. Substitution is required for compliance with final interpretation of code requirements or insurance regulations.
  - 2. Specified product is not available through no fault of the Contractor.
  - 3. Specified product is not compatible with other specified materials/equipment.
  - 4. Manufacturer will not certify or warranty specified product as required.
- C. Document each request utilizing Substitution Request Form following this section with complete data substantiating compliance of proposed substitution with Contract Documents. Incomplete requests will not be considered. Submit a separate Substitution Request Form and accompanying documentation for each proposed substitution.
- D. Provide the following minimum documentation with each Substitution Request Form:
  - 1. Product identification, manufacturer, product data including dimensions and weight, performance and installation instructions.
  - 2. Side-by-side itemized comparison of proposed substitution with specified product.
  - 3. Coordination information including other modifications required as a result of proposed substitution.
  - 4. Cost information including the effect of the proposed substitution on the Contract Sum.
- E. Sign and date the Substitution Request Form.
- F. A request for substitution constitutes a representation that the submitter:
  - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
  - 2. Agrees to provide the same warranty for the substitution as for the specified product.
  - 3. Agrees to coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to Owner.
  - 4. Waives claims for additional costs or time extension that may subsequently become apparent.
  - 5. Agrees to reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities having jurisdiction over the Project.
- G. Architect/Engineer will notify submitter in writing of decision to accept or reject request.

- H. Substitutions of products or product characteristics/components/options/accessories will not be considered when they are indicated or implied on Contractor's submittals, without separate written request, or when acceptance will require revision to the Contract Documents, whether rejection of said substitutions is expressly identified by Architect/Engineer on Contractor's submittals or not.

### **3.02 TRANSPORTATION AND HANDLING**

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

### **3.03 STORAGE AND PROTECTION**

- A. Provide protection of stored materials and products against theft, casualty, or deterioration.
- B. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- C. Store and protect products in accordance with manufacturers' instructions.
- D. Store with seals and labels intact and legible.
- E. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
- F. For exterior storage of fabricated products, place on sloped supports above ground.
- G. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- H. Comply with manufacturer's warranty conditions, if any.
- I. Do not store products directly on the ground.
- J. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

- K. Prevent contact with material that may cause corrosion, discoloration, or staining.
- L. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- M. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

**END OF SECTION**



**SECTION 01 70 00  
EXECUTION AND CLOSEOUT REQUIREMENTS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Examination, preparation, and general installation procedures.
- B. Requirements for alterations work, including selective demolition.
- C. Cutting and patching.
- D. Cleaning and protection.
- E. Demonstration and instruction of Owner personnel.
- F. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
- G. General requirements for maintenance service.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 30 00 - Administrative Requirements: Submittals procedures, Electronic document submittal service.
- B. Section 01 40 00 - Quality Requirements: Testing and inspection procedures.
- C. Section 01 50 00 - Temporary Facilities and Controls: Temporary exterior enclosures.
- D. Section 01 77 00 - Closeout Procedures: Additional requirements for Project Closeout.
- E. Section 01 78 00 - Closeout Submittals: Project record documents, operation and maintenance data, warranties, and bonds.

**1.03 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Project Record Documents: Accurately record actual locations of capped and active utilities.

**1.04 PROJECT CONDITIONS**

- A. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

**1.05 COORDINATION**

- A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
- B. Notify affected utility companies and comply with their requirements.
- C. Verify that utility requirements and characteristics of new 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.

- D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- F. Coordinate completion and clean-up of work of separate sections.
- G. 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.

## **PART 2 PRODUCTS**

### **2.01 PATCHING MATERIALS**

- A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
- B. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00 - Product Requirements.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

### **3.02 PREPARATION**

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

### 3.03 GENERAL INSTALLATION REQUIREMENTS

- A. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- E. Make neat transitions between different surfaces, maintaining texture and appearance.

### 3.04 ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
  - 1. Verify that construction and utility arrangements are as indicated.
  - 2. Report discrepancies to Architect/Engineer before disturbing existing installation.
  - 3. Beginning of alterations work constitutes acceptance of existing conditions.
- B. Remove existing work as indicated and as required to accomplish new work.
  - 1. Remove items indicated on Drawings.
  - 2. Where new surface finishes are to be applied to existing work, perform removals, patch, and prepare existing surfaces as required to receive new finish; remove existing finish if necessary for successful application of new finish.
  - 3. Where new surface finishes are not specified or indicated, patch holes and damaged surfaces to match adjacent finished surfaces as closely as possible.
- C. Services (Including but not limited to Fire Protection, Electrical, and Telecommunications):  
Remove, relocate, and extend existing systems to accommodate new construction.
  - 1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components; if necessary, modify installation to allow access or provide access panel.
  - 2. Where existing systems or equipment are not active and Contract Documents require reactivation, put back into operational condition; repair supply, distribution, and equipment as required.
  - 3. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
    - a. Disable existing systems only to make switchovers and connections; minimize duration of outages.
    - b. Provide temporary connections as required to maintain existing systems in service.
  - 4. Verify that abandoned services serve only abandoned facilities.
  - 5. Remove abandoned pipe, ducts, conduits, and equipment ; remove back to source of supply where possible, otherwise cap stub and tag with identification; patch holes left by removal using materials specified for new construction.
- D. Protect existing work to remain.

1. Repair adjacent construction and finishes damaged during removal work.
- E. Adapt existing work to fit new work: Make as neat and smooth transition as possible.
- F. Patching: Where the existing surface is not indicated to be refinished, patch to match the surface finish that existed prior to cutting. Where the surface is indicated to be refinished, patch so that the substrate is ready for the new finish.
- G. Refinish existing surfaces as indicated:
  1. Where rooms or spaces are indicated to be refinished, refinish all visible existing surfaces to remain to the specified condition for each material, with a neat transition to adjacent finishes.
  2. If mechanical or electrical work is exposed accidentally during the work, re-cover and refinish to match.
- H. Clean existing systems and equipment.
- I. Remove demolition debris and abandoned items from alterations areas and dispose of off-site; do not burn or bury.
- J. Do not begin new construction in alterations areas before demolition is complete.
- K. Comply with all other applicable requirements of this section.

### **3.05 PROGRESS CLEANING**

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
- C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
- D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.

### **3.06 PROTECTION OF INSTALLED WORK**

- A. Protect installed work from damage by construction operations.
- B. Provide special protection where specified in individual specification sections.
- C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

### **3.07 ADJUSTING**

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

### **3.08 FINAL CLEANING**

- A. Execute final cleaning prior to final project assessment.
  1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.

- B. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
- C. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
- D. Clean debris from area drains and drainage systems.
- E. Clean site; sweep paved areas, rake clean landscaped surfaces.
- F. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

### **3.09 CLOSEOUT PROCEDURES**

- A. See Section 01 77 00 for additional requirements.
- B. Make submittals that are required by governing or other authorities.
  - 1. Provide copies to Architect/Engineer.
- C. Notify Architect/Engineer when work is considered ready for Architect/Engineer's Substantial Completion inspection.
- D. Submit written certification containing Contractor's Correction Punch List, 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 Substantial Completion inspection.
- E. Conduct Substantial Completion inspection and create Final Correction Punch List containing Architect/Engineer's and Contractor's comprehensive list of items identified to be completed or corrected and submit to Architect/Engineer.
- F. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
- G. Notify Architect/Engineer when work is considered finally complete and ready for Architect/Engineer's Substantial Completion final inspection.
- H. Complete items of work determined by Architect/Engineer listed in executed Certificate of Substantial Completion.

### **3.10 MAINTENANCE**

- A. Provide service and maintenance of components indicated in specification sections.
- B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
- C. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
- D. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

E. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

**END OF SECTION**

**SECTION 01 77 00  
CLOSEOUT PROCEDURES**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES:**

- A. Substantial Completion Procedures.
- B. Final Completion Procedures.

**1.02 RELATED REQUIREMENTS:**

- A. Section 01 10 00 - Summary.
- B. Section 01 78 00 - Closeout Submittals.

**1.03 SUBSTANTIAL COMPLETION PROCEDURES**

- A. Pre-Substantial Completion Conference:
  - 1. Schedule a Pre-substantial Completion Conference 15 days prior to the date of Substantial Completion. Prepare an agenda with copies for the participants and preside over the meeting.
  - 2. Attendance Required: Contractor, Architect/Engineer and Owner.
  - 3. Minimum Agenda:
    - a. Schedule dates of Substantial Completion and Owner occupancy.
    - b. Schedule dates for Initial Punch Lists of respective Subcontractors to be produced.
    - c. Schedule date for written request for Substantial Completion.
    - d. Schedule target date for completion of Initial Punch List items.
    - e. Schedule delivery times for Owner-furnished items to be installed by Contractor, Owner's own forces or others under separate Contracts.
    - f. Schedule dates for Demonstration and Training of equipment and systems specified.
    - g. Schedule completion dates of testing and balancing reports for engineered Systems.
    - h. Scheduling and Sequencing of Construction operations around areas partially occupied.
    - i. Review job site security during transition of Owner occupancy.
    - j. Schedule dates for final inspections from authorities having jurisdiction for Occupancy Permits.
    - k. Review protocol for claims from potential move-in damage.
    - l. Review procedures for final cleaning.
    - m. Review potential concerns regarding environmental conditions.
  - 4. Record minutes and distribute copies within three days after meeting to participants and those affected by decisions made.
- B. Substantial Completion Procedures will be in accordance with the General Conditions of the Contract for Construction, Article 9.8 and include the following:
  - 1. When the Work or a portion of the Work is considered to be substantially complete, the Contractor inspects the project and prepares a comprehensive list of outstanding items to be completed or corrected, Initial Punch List.
  - 2. Contractor submits notice of Substantial Completion.
  - 3. Contractor completes items on the Initial Punch List.
  - 4. Architect/Engineer inspects the project to verify substantial completion and prepares a Final Punch List.

5. Architect/Engineer prepares Certificate of Substantial Completion, acceptance is required by Owner and Contractor.

#### **1.04 FINAL COMPLETION PROCEDURES**

- A. Final Completion Procedures will be in accordance with the General Conditions of the Contract for Construction, Article 9.10, and include the following:
  1. When items on Initial and Final Punch Lists are complete, submit notice of final completion and final application for payment.
  2. Submit Final Closeout Submittals as specified in Section 01 78 00.
  3. Architect will inspect project and verifies the Work is acceptable and conforms with the Contract Documents.
  4. Architect will process final application for payment and closeout submittals.

#### **1.05 CORRECTION PERIOD**

- A. Correction Period commences on the date of Substantial Completion and expires two years from that date.
- B. Owner: Document non-conforming or defective work over course of Correction Period. Notify Contractor in writing of nonconforming or defective work. Copy Architect/Engineer.
  1. Life safety issues requiring immediate corrective work: Contact Contractor for action.
- C. Post Construction Walk Through:
  1. Time: Eleven months after the date of Substantial Completion convene a meeting on site.
  2. Attendees: Architect/Engineer, Owner's Representative, End User and Maintenance Staff.
  3. Minimum Agenda:
    - a. Review Owner's list of non-conforming or defective work.
    - b. Conduct a walk through of the building and grounds
    - c. Prepare a list of additional non-conforming or defective work items.
  4. Architect/Engineer:
    - a. Prepare written report of findings within two weeks of meeting.
    - b. Notify Contractor of impending corrective work requiring action.
    - c. Monitor execution of corrective Work.

**PART 2 PRODUCTS - NOT USED.**

**PART 3 EXECUTION - NOT USED.**

**END OF SECTION**



**SECTION 01 78 00  
CLOSEOUT SUBMITTALS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Warranties and bonds.
- B. Project record documents.
- C. Operation and maintenance data.
- D. Format, arrangement and organization of Operation and Maintenance Manual electronic file.

**1.02 RELATED REQUIREMENTS**

- A. Section 00 72 00 - General Conditions: Performance bond and labor and material payment bonds, warranty, and correction of work.
- B. Section 01 30 00 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
- C. Section 01 70 00 - Execution and Closeout Requirements: Contract closeout procedures.
- D. Individual Product Sections: Specific requirements for operation and maintenance data.
- E. Individual Product Sections: Warranties required for specific products or Work.

**1.03 SUBMITTALS**

- A. Submit preliminary draft of proposed formats and outlines of contents of electronic Operation and Maintenance Manual, including warranties and bonds, record document Bookmarked Adobe PDF form before start of Work. Architect/Engineer will review draft and return with comments.
- B. Warranties and Bonds:
  - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within 10 days after acceptance.
  - 2. Make other submittals within 10 days after Date of Substantial Completion, prior to final Application for Payment.
  - 3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of the warranty period.
- C. Project Record Documents: Submit documents to Architect/Engineer with claim for final Application for Payment.
- D. Operation and Maintenance Data:
  - 1. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit completed documents within ten days after acceptance.
  - 2. Submit completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect/Engineer comments. Revise content as required prior to final submission.

- E. Submit revised final Operation and Maintenance Manual, incorporating warranties and bonds, record documents and operation and maintenance data, in final form in Adobe PDF electronic file format on USB flash drive form within 10 days after final inspection.

## **PART 2 PRODUCTS - NOT USED**

## **PART 3 EXECUTION**

### **3.01 WARRANTIES AND BONDS**

- A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within 10 days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties and bonds until time specified for submittal.
- E. Include originals of each in operation and maintenance manuals, indexed separately on Table of Contents.
- F. Include color, 300 dpi resolution scans of each in Operation and Maintenance Manual PDF file, Bookmarked and indexed separately in Table of Contents.

### **3.02 PROJECT RECORD DOCUMENTS**

- A. Maintain on site one set of the following record documents; record actual revisions to the Work:
  - 1. Drawings.
  - 2. Specifications.
  - 3. Addenda.
  - 4. Change Orders and other modifications to the Contract.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. 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.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
  - 1. Measured depths of foundations in relation to finish first floor datum.
  - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
4. Field changes of dimension and detail.
5. Details not on original Contract drawings.

### **3.03 OPERATION AND MAINTENANCE DATA**

- A. Source Data: For each product or system, list names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.
- B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
- C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
- D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

### **3.04 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES**

- A. For Each Product, Applied Material, and Finish:
  1. Product data, with catalog number, size, composition, and color and texture designations.
  2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.

### **3.05 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS**

- A. For Each Item of Equipment and Each System:
  1. Description of unit or system, and component parts.
  2. Identify function, normal operating characteristics, and limiting conditions.
  3. Include performance curves, with engineering data and tests.
  4. Complete nomenclature and model number of replaceable parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specific products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

- D. Include color coded wiring diagrams as installed.
- E. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- F. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- G. Include manufacturer's printed operation and maintenance instructions.
- H. Include sequence of operation by controls manufacturer.
- I. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- J. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- K. Additional Requirements: As specified in individual product specification sections.

### **3.06 ASSEMBLY OF OPERATION AND MAINTENANCE MANUALS**

- A. Assemble operation and maintenance data into a single electronic "manual" file in Adobe PDF file format for Owner's personnel use, with data arranged in the same sequence as, and bookmarked by, the specification sections.
  - 1. Media: USB flash drive of capacity sufficient to store entire PDF file, fragmented.
  - 2. Attach a tag or label flash drive with Project name, date, and the title "O&M Manual".
- B. Organization and Arrangement of Contents: Arrange the contents of the "manual" file in using the following hierarchical system and create a corresponding hierarchy of Bookmarks in the file:
  - 1. Project Title Page.
  - 2. Project Directory.
  - 3. Table of Contents.
  - 4. Project Warranties.
    - a. Division 01 - General
      - 1) General Contractor's Warranty.
    - b. Division 02
      - 1) [One Bookmark for each Specification section number and name where a warranty is required.]
      - 2) [Continue for each applicable Specification section.]
  - 5. Thermal Envelope Certificate.
  - 6. Record Documents.
    - a. Record Drawings (marked-up version of A/E Drawings).
    - b. Record Specifications (marked up version of A/E Specifications).
  - 7. Operation and Maintenance Data.
    - a. Division 06
      - 1) [One Bookmark for each Specification section number and name where O&M data is required.]
      - 2) [Continue for each applicable Specification section.]

- b. [Continue for for each applicable Division.]
- C. Where systems involve more than one Specification Section, provide separate Bookmark and content for each Specification Section.
- D. Prepare instructions and data by personnel experienced in maintenance and operation of described products.
- E. Prepare data in the form of an instructional manual.
- F. Cover Page: Populate the first page of the PDF file with: printed title "OPERATION AND MAINTENANCE MANUAL"; identify title of Project; identify subject matter of contents.
- G. Project Directory: Beginning on the second page of the PDF file, provide Title and address of Project. Provide, for Architect/Engineer, Consultants, Contractor, subcontractors and major suppliers: the business name, address, telephone number(s), email address(es), contact name(s) of responsible individual(s) knowledgeable about the Project, and a brief description of the responsibility or contribution of the business to the Project.
- H. Table of Contents: List every item using the same identification as in the title of the Bookmark, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item
- I. Bookmarks: Hierarchically under each Specification Section, further Bookmark each separate product and system; identify the contents in the title of the Bookmark; on the Bookmarked page provide a description of product and major component parts of equipment.
- J. Content: Manufacturer's printed data, legibly scanned, in color where applicable, at 300 dpi (minimum) resolution.
- K. Drawings: Legibly scanned, in color where applicable, at 300 dpi (minimum) resolution; PDF file page size to match native sheet size of original drawing.

**END OF SECTION**

**SECTION 03 30 00  
CAST-IN-PLACE CONCRETE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Concrete formwork.
- B. Concrete
  - 1. Concrete reinforcement.
- C. Miscellaneous concrete elements, including light pole bases.
- D. Concrete curing.

**1.02 REFERENCE STANDARDS**

- A. ACI CODE-318 - Building Code Requirements for Structural Concrete and Commentary; 2019 (Reapproved 2022).
- B. ACI PRC-211.1 - Selecting Proportions for Normal-Density and High Density-Concrete - Guide; 2022.
- C. ACI PRC-304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000 (Reapproved 2009).
- D. ACI PRC-305 - Guide to Hot Weather Concreting; 2020.
- E. ACI PRC-306 - Guide to Cold Weather Concreting; 2016.
- F. ACI PRC-308 - Guide to External Curing of Concrete; 2016.
- G. ACI PRC-347 - Guide to Formwork for Concrete; 2014 (Reapproved 2021).
- H. ACI SPEC-117 - Specification for Tolerances for Concrete Construction and Materials; 2010 (Reapproved 2015).
- I. ACI SPEC-301 - Specifications for Concrete Construction; 2020.
- J. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2022.
- K. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2023.
- L. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete; 2024.
- M. ASTM C150/C150M - Standard Specification for Portland Cement; 2022.
- N. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2020.
- O. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a (Reapproved 2016).
- P. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2019.

- Q. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete; 2019, with Editorial Revision (2022).
- R. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2023, with Editorial Revision.
- S. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete; 2022.
- T. ASTM E154/E154M - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover; 2008a (Reapproved 2019).
- U. NSF 61 - Drinking Water System Components - Health Effects; 2024.
- V. NSF 372 - Drinking Water System Components - Lead Content; 2024.

### **1.03 SUBMITTALS**

- A. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
  - 1. Anchoring epoxy and expansion anchors.
- B. Mix Designs: Submit 15 days prior to start of work.
  - 1. Submit for each type of concrete specified.
  - 2. Include back-up test data.
  - 3. Indicate proposed mix design complies with requirements of ACI SPEC-301, Section 4 - Concrete Mixtures.
  - 4. Indicate proposed mix design complies with requirements of ACI CODE-318, Chapter 5 - Concrete Quality, Mixing and Placing.
- C. Test Reports: Submit report for each test or series of tests specified.

### **1.04 QUALITY ASSURANCE**

- A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.
- B. Follow recommendations of ACI PRC-305 when concreting during hot weather.
- C. Follow recommendations of ACI PRC-306 when concreting during cold weather.

## **PART 2 PRODUCTS**

### **2.01 FORMWORK**

- A. Formwork Design and Construction: Comply with guidelines of ACI PRC-347 to provide formwork that will produce concrete complying with tolerances of ACI SPEC-117.
- B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
  - 1. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
  - 2. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.

## 2.02 REINFORCEMENT MATERIALS

- A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
  - 1. Type: Deformed billet-steel bars.
  - 2. Finish: Unfinished, unless otherwise indicated.
- B. Reinforcement Accessories:
  - 1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
  - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.
  - 3. Provide stainless steel, galvanized, plastic, or plastic coated steel components for placement within 1-1/2 inches of weathering surfaces.

## 2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
  - 1. Acquire cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.
  - 1. Acquire aggregates for entire project from same source.
- C. Fly Ash: ASTM C618, Class C.
- D. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

## 2.04 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260/C260M.
- C. High Range Water Reducing and Retarding Admixture: ASTM C494/C494M Type G.
- D. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
- E. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
- F. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
- G. Accelerating Admixture: ASTM C494/C494M Type C.
- H. Retarding Admixture: ASTM C494/C494M Type B.
- I. Water Reducing Admixture: ASTM C494/C494M Type A.

## 2.05 ACCESSORY MATERIALS

- A. Anchoring Epoxy: Refer to drawings. Acceptable manufacturer's include...
  - 1. Hilti: HIT-RE500-SD injection anchoring system.
  - 2. Simpson Strong-Tie: SET-XP injection anchoring adhesive system.
  - 3. Powers Fasteners: PE 1000+ injection adhesive anchoring system.
- B. Expansion Anchors: Refer to drawings. Acceptable manufacturer's include...
  - 1. Hilti: Kwik Bolt 3 expansion anchor.



2. Simpson Strong-Tie: Strong-Bolt 2 wedge anchor.

## **2.06 CURING MATERIALS**

- A. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.
- B. Water: Potable, not detrimental to concrete.

## **2.07 CONCRETE MIX DESIGN**

- A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI SPEC-301.
  1. For trial mixtures method, employ independent testing agency acceptable to Architect/Engineer for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended by manufacturer. Submit to Architect for review and approval.
- D. Normal Weight Concrete: Type "A".
  1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: 3,000 pounds per square inch.
  2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
  3. Water-Cement Ratio: Maximum 48 percent by weight.
  4. Total Air Content: 2 percent, determined in accordance with ASTM C 173/C 173M.
  5. Maximum Slump: 4 inches.
  6. Maximum Aggregate Size: 3/4 inch.

## **2.08 MIXING**

- A. Transit Mixers: Comply with ASTM C94/C94M.
- B. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

### **3.02 PREPARATION**

- A. Formwork: Comply with requirements of ACI SPEC-301. Design and fabricate forms to support all applied loads until concrete is cured and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.

### **3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS**

- A. Comply with requirements of ACI SPEC-301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.

### **3.04 PLACING CONCRETE**

- A. Place concrete in accordance with ACI PRC-304.
- B. Notify Architect/Engineer not less than 24 hours prior to commencement of placement operations.
- C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- D. Ensure reinforcement and embedded parts will not be disturbed during concrete placement.
- E. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

### **3.05 SLAB JOINTING**

- A. Locate joint in center of long direction of the slab/pad.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Load Transfer Construction and Contraction Joints: Install load transfer devices as indicated; saw cut joint at surface as indicated for contraction joints.
- D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.
- E. Repair underslab vapor retarder damaged during placement of concrete reinforcing. Repair with vapor retarder material; lap over damaged areas minimum 6 inches and seal watertight.
- F. Install joint devices in accordance with manufacturer's instructions.
- G. Place concrete continuously between predetermined expansion, control, and construction joints.
- H. Do not interrupt successive placement; do not permit cold joints to occur.

### **3.06 CONCRETE FINISHING**

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
  - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.

**3.07 CURING AND PROTECTION**

- A. Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

**3.08 FIELD QUALITY CONTROL**

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 40 00 - Quality Requirements.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.

**3.09 DEFECTIVE CONCRETE**

- A. Defective Concrete: Concrete not complying with required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect/Engineer. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

**3.10 SCHEDULE - CONCRETE TYPES AND FINISHES**

<b>LOCATION</b>	<b>MIX TYPE</b>	<b>CONCRETE FINISH</b>
Light pole bases	A	Smooth Form, Troweled

**END OF SECTION**

**SECTION 26 05 00**  
**BASIC ELECTRICAL REQUIREMENTS**

**PART 1 GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.02 SECTION INCLUDES**

- A. Basic Electrical Requirements and materials specifically applicable to Division 26 Sections, in addition to Division 1 - General Requirements. Section includes:
  - 1. Electrical Identification.
  - 2. Minor Demolition.
  - 3. Conductors and Devices.
  - 4. Raceways and Boxes.
  - 5. Supporting Devices.

**1.03 REGULATORY REQUIREMENTS**

- A. Conform to the requirements of the Illinois Community College Board System of Rules.
  - 1. NFPA 70 - National Electrical Code, 2020 edition.
  - 2. International Building Code, 2018 Edition.
  - 3. Illinois Accessibility Code (77 Ill Adm. Code 400).
  - 4. Illinois Energy Conservation as adopted by the State of Illinois.
  - 5. Local building code as adopted by the City of Des Plaines, Illinois. Where conflicts occur, the most restrictive provision shall govern.
  - 6. City of Des Plaines Illinois local building code.
    - a. International Building Code 2015 with amendments.
    - b. NFPA 70 - National Electrical Code 2014 with amendments
  - 7. Village of Skoike Illinois local building code.
    - a. International Building Code 2021 with amendments.
    - b. NFPA 70 - National Electrical Code 2020 Edition with amendments.
- B. Install electrical Work in accordance with the NECA Standard of Installation.

**1.04 DELIVERY, STORAGE AND HANDLING**

- A. Store and protect all materials as specified under the provisions of Section 01 60 00 and as specified herein.
- B. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.
- C. Ship products to the job site in their original packaging. Receive and store products in a suitable manner to prevent damage or deterioration. Keep equipment upright at all times.
- D. Investigate the spaces through which equipment must pass to reach its final destination. Coordinate with the manufacturer to arrange delivery at the proper stage of construction and to provide shipping splits where necessary.

## **1.05 PROJECT/SITE CONDITIONS**

- A. Install work in locations shown on Drawings, unless prevented by Project conditions. Drawings have omitted certain branch circuitry in areas for ease of reading. All branch circuitry is to be provided by Contractor.
- B. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission from Architect/Engineer before proceeding as specified under modification procedures.

## **1.06 QUALITY ASSURANCE**

- A. Provide Work as required for a complete and operational electrical installation.
- B. All products shall be designed, manufactured, and tested in accordance with industry standards. Standards, organizations, and their abbreviations as used hereafter, include the following:
  - 1. American National Standards Institute, Inc (ANSI).
  - 2. American Society for Testing and Materials (ASTM).
  - 3. National Electrical Manufacturers Association (NEMA).
  - 4. Underwriters Laboratories, Inc. (UL).
- C. Install all Work in accordance with the NECA Standard of Installation.

## **1.07 SUBMITTALS**

- A. Submit all requested items in Division 26 Sections under provisions of Section 01 30 00.

## **1.08 SUBSTITUTIONS**

- A. Substitutions will be considered only as allowed within the provisions of Section 01 60 00.

## **1.09 PROJECT RECORD DOCUMENTS**

- A. Cooperate and assist in the preparation of project record documents under the provisions of Section 01 78 00.

## **1.10 TRENCHING, FILL AND COMPACTION**

- A. Provide trenching, fill and compaction for all work indicated on Drawings and specified in Division 26 sections.
- B. Delegated Engineering Responsibility (Methods and Means): The Contractor shall employ experienced horizontal directional drilling personnel familiar with local conditions and regulatory requirements. Contractor shall be responsible for selection of drilling equipment, drilling fluids, drilling operations, location and tacking instrumentation, ream and pull back procedures.

## **1.11 PROJECT MANAGEMENT AND COORDINATION**

- A. Proper project management and coordination is critical for a successful project. Manage and coordinate the Work with all other trades in accordance with Section 01 30 00 requirements. Reliance on the Drawings and Specifications only for exact project requirements is insufficient for proper coordination.

## **PART 2 PRODUCTS**

### **2.01 WIRING METHODS**

- A. All locations: Building wire in raceway.
- B. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 14 AWG for control wiring.
  - 1. Use 10 AWG conductor for 20 ampere, 120 volt branch circuit home runs longer than 100 feet.  
Use minimum #10 AWG conductor wire in all the following locations:
    - a. All programmable panel branch circuits (larger where indicated).
    - b. All emergency lighting and exit branch circuits.

### **2.02 WIRE AND CABLE**

- A. Manufacturers:
  - 1. Okonite.
  - 2. Southwire.
  - 3. Collyer.
- B. Building Wire:
  - 1. Feeders and Branch Circuits Larger Than 6 AWG: Copper, stranded conductor, 600 volt insulation.
  - 2. Feeders and Branch Circuits 6 AWG and Smaller: Copper conductor, 600 volt insulation. 6 and 8 AWG, stranded conductor; smaller than 8 AWG, stranded conductor (solid for device terminations).
  - 3. Control Circuits: Copper, stranded conductor, 600 volt insulation.
  - 4. Use 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
  - 5. Use 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet.
  - 6. Use conductor not smaller than 12 AWG for power and lighting circuits.
  - 7. Use conductor not smaller than 16 AWG for control circuits.
- C. Locations:
  - 1. Concealed Dry Interior Locations: Use only building wire with Type THHN insulation in raceway.
  - 2. Exposed Dry Interior Locations: Use only building wire with Type THHN insulation in raceway.
  - 3. Above Accessible Ceilings: Use only building wire with Type THHN insulation in raceway.
  - 4. Wet or Damp Interior Locations: Use only building wire with Type THWN insulation in raceway.
  - 5. Exterior Locations: Use only building wire with Type XHHW insulation in raceway.
  - 6. Underground Installations: Use only building wire with Type XHHW insulation in raceway.

### **2.03 WIRING DEVICES AND WALL PLATES**

- A. Single Pole Switch: Specification grade.
  - 1. Hubbell Model 1121.
  - 2. P & S Model 521.
  - 3. Leviton Model 1121.
  - 4. Color: Ivory.
- B. Three-way Key Switch: Specification grade.
  - 1. P & S Model 523-L.

2. Leviton Model 1123-L.
- C. Momentary Contact (Keyed) Switch
1. Hubbell.
  2. P & S.
  3. Leviton Model 1257-L.
  4. Color: Ivory.
- D. Momentary Contact Switch
1. Hubbell.
  2. P & S.
  3. Leviton Model 1257.
  4. Color: Ivory.
- E. Duplex Convenience Receptacle: Nema 5-20R, duplex, specification grade.
1. Hubbell.
  2. Bryant.
  3. Leviton.
  4. Color: Ivory.
- F. Isolated Ground Duplex Receptacle: Nema 5-20R, duplex, isolated ground, specification grade.
1. Hubbell Model IG-5362.
  2. P & S Model IG6300.
  3. Leviton Model 5262-IG.
  4. Color: Orange with delta icon.
- G. GFCI Receptacle: Nema 5-20R, duplex, GFCI, specification grade.
1. Hubbell Model GF-5362.
  2. Slater Model SIR-20-F.
  3. Eagle Model 647.
  4. Color: Ivory.
- H. Decorative Cover Plate:
1. Hubbell.
  2. Bryant.
  3. Leviton.
  4. Description: Ivory, metal.
- I. Weatherproof die cast cover.
1. Intermatic Model WP1030MC (Two-Gang).
  2. Approved Equal.
- J. Special Purpose Receptacles:
1. Hubbell.
  2. P & S.
  3. Leviton.
  4. Description: Nema configuration as shown on Drawings unless noted otherwise.

## 2.04 RACEWAY REQUIREMENTS

- A. Use only specified raceway in the following locations:

1. Branch Circuits and Feeders:
  - a. Concealed Dry Interior Locations: Electrical metallic tubing.
  - b. Exposed Dry Interior Finished Locations: Electrical metallic tubing.
  - c. Exposed Dry Interior Unfinished Locations: Electrical metallic tubing.
  - d. Site Lighting (completely below grade): Sch 40 PVC, concrete encased under road ways and parking lots. Transition below grade to GRC to above grade conduit installations.
  - e. All other locations: Galvanized Rigid Metallic Conduit.
- B. Size raceways for conductor type installed.
  1. Minimum Size Conduit Homerun to Panelboard: 3/4-inch.

## **2.05 METALLIC CONDUIT AND FITTINGS**

- A. Conduit:
  1. Rigid Steel Conduit: ANSI C80.1.
  2. Electrical metallic tubing: ANSI C80.3.
  3. Flexible Conduit: UL 1, zinc-coated steel.
    - a. Liquidtight Flexible Conduit: UL360. Fittings shall be specifically approved for use with this raceway.
- B. Conduit Fittings:
  1. Metal Fittings and Conduit Bodies: NEMA FB 1.
    - a. EMT fittings: Use set-screw indentor-type fittings.

## **2.06 NONMETALLIC TUBING**

- A. Manufacturers:
  1. Carlon Co.
  2. LCP National Plastics, Inc.
  3. Pacific Western Extruded Plastics Co.
- B. Description: UL651A "Type EB and A PVC Conduit and HDPE Conduit."
  1. Conduit: Schedule 40. Suitable for exposure to sunlight and direct burial.

## **2.07 CONDUIT HANGERS**

- A. Manufacturers:
  1. Minerrallac Electric Company.
  2. Substitutions: Or Approved Equal.
- B. Description:
  1. Standard conduit hanger, zinc-plated steel with bolts.
  2. Threaded rod and hardware: Plated finish, size and length as required for loading and conditions.

## **2.08 BEAM CLAMPS**

- A. Manufacturers:
  1. Appleton.
  2. Midwest.
  3. Raco.
- B. Description: Malleable beam clamp, zinc plated steel.



## **2.09 ELECTRICAL BOXES**

- A. Manufacturers:
  - 1. Raco.
  - 2. Steel City.
  - 3. Appleton.
  - 4. Substitutions: Or Approved Equal.
- B. Sheet Metal Outlet Boxes: ANSI/NEMA OS 1, galvanized steel, suitable for installation in masonry:
- C. Equipment Support Boxes: Rated for weight of equipment supported; include 2 inch male fixture studs where required.
- D. Wet Location Outlet Boxes: Cast aluminum: Cast alloy, deep type, gasket cover, threaded hubs.

## **2.10 PENETRATION SEALANTS**

- A. Fire-rated assemblies: Provide firestopping of all penetrations made by Work under this Contract.
- B. Thermal and Moisture Protection: Provide thermal and moisture protection made by Work under this Contract of all exterior wall, floor and roof penetrations.

## **2.11 HAND HOLES**

- A. Manufacturers:
  - 1. Quazite.
  - 2. Approved Equal
- B. Description: Precast polymer concrete or precast concrete, Non-conductive, non-flammable with open bottom. Flanged, non-conductive, gasketed cover enclosure with stainless-steel cover screws.
  - 1. Load Rating: UL listed Tier 22 as suitable for driveway, parking lot and off-roadway applications subject to occasional non-deliberate heavy vehicular traffic.
  - 2. Cover inscribed with "LIGHTING" or "ELECTRIC" or other suitable description.

## **2.12 WIREWAY**

- A. Manufacturers:
  - 1. Hoffman.
  - 2. Cooper Industries.
  - 3. Approved Equal.
- B. Description:
  - 1. NEMA Type 1 Lay-In Galvanized Wireway, UL 870. Flat cover design. Size as shown on drawings.
  - 2. Provide hinged covers where noted on drawings.
  - 3. Provide all elbows, tee's, covers and fittings as required
- C. Finish:
  - 1. To be selected by Architect/Engineer.

## **2.13 NAMEPLATES AND LABELS**

- A. Nameplates: Engraved three-layer laminated plastic, black letters on white background.

- B. Locations:
  - 1. Each electrical distribution and control equipment enclosure.
- C. Letter Size:
  - 1. Use 1/8 inch letters for identifying individual equipment and loads.
  - 2. Use 1/4 inch letters for identifying grouped equipment and loads.
- D. Labels: Embossed adhesive tape, with 3/16 inch white letters on a black background. Use only for identification of individual wall switches and receptacles and control device stations.

## **2.14 WIRE AND CABLE MARKERS**

- A. Manufacturers:
  - 1. Brady Model PCPS.
  - 2. Panduit Model PCM.
  - 3. T & B Model WM.
- B. Description: Cloth type wire markers.
- C. Locations: Each conductor at panelboard gutters, pull boxes, and each load connection.
- D. Legend:
  - 1. Power and Lighting Circuits: Branch circuit or feeder number indicated on drawings.

## **2.15 CONDUIT MARKERS**

- A. Location: Furnish markers for each conduit longer than 6 feet.
- B. Spacing: 20 feet on center.
- C. Color:
  - 1. 480 Volt System: Orange
  - 2. 208 Volt System: Black
  - 3. Fire Alarm System: Red.

## **2.16 UNDERGROUND WARNING TAPE**

- A. Description: 4 inch wide plastic tape, detectable type, colored red with suitable warning legend describing buried electrical lines.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION AND PREPARATION**

- A. Demolition Drawings are based on casual field observation and are intended to identify the limits of the construction site. Remove all electrical systems in their entirety in proper sequence with the Work.
- B. Disconnect electrical systems in walls, floors, and ceilings for removal.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.

- D. Existing Electrical Service and Emergency Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Obtain permission from Owner and Architect at least 24 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.
- E. Beginning of demolition means installer accepts existing conditions.
- F. Verify that supporting surfaces are ready to receive work.
- G. Electrical boxes are shown on Drawings, in approximate locations, unless dimensioned.
  - 1. Obtain verification from Architect/Engineer for locations of outlets throughout prior to rough-in.
- H. Degrease and clean surfaces to receive wire markers.
- I. Verify that interior of building is physically protected from weather.
- J. Verify that mechanical work which is likely to injure conductors has been completed.
- K. Completely and thoroughly swab raceway system before installing conductors.

### **3.02 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK**

- A. Remove all existing electrical installations to accommodate new construction.
- B. Remove abandoned wiring to source of supply.
- C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- D. Relocate existing fire alarm devices affected by wall, ceiling and floor demolition.
- E. Repair adjacent construction and finishes damaged during demolition and extension work.
- F. Properly dispose of all ballast to approved ballast recycler. Do not land fill ballasts.

### **3.03 APPLICATION**

- A. Install nameplate and label parallel to equipment lines.
- B. Secure nameplate to equipment front using screws.
- C. Secure nameplates to inside surface of door on panelboard that is recessed in finished locations.
- D. Identify underground conduits using underground warning tape. Install one tape per trench at 3 inches below finished grade.
- E. Neatly train and secure wiring inside boxes, equipment, and panelboards.
- F. Use wire pulling lubricant for pulling 4 AWG and larger wires.
- G. Route wire and cable as required to meet project conditions.
  - 1. Wire and cable routing indicated is approximate unless dimensioned.
  - 2. Where wire and cable destination is indicated and routing is not shown, determine exact routing and lengths required.
- H. Pull all conductors into raceway at same time.

- I. Protect exposed cable from damage.
- J. Neatly train and lace wiring inside boxes, equipment and panelboards.
- K. Support cables above accessible ceilings to keep them from resting on ceiling tiles.
- L. Make splices, taps, and terminations to carry full ampacity of conductors without perceptible temperature rise.
- M. Use split bolt connectors for copper conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connector with electrical tape to 150 percent of insulation rating of conductor.
- N. Provide anchors, fasteners, and supports in accordance with NECA "Standard of Installation".
- O. Do not fasten supports to pipes, ducts, mechanical equipment, and conduit.
- P. Do not use powder-actuated anchors.
- Q. Do not drill or cut structural members.
- R. Fabricate supports from structural steel or steel channel. Rigidly weld members or use hexagon head bolts to present neat appearance with adequate strength and rigidity. Use spring lock washers under all nuts.
- S. Install surface-mounted cabinets and panelboards with minimum of four anchors.
- T. In wet and damp locations use steel channel supports to stand cabinets and panelboards one inch off wall.
- U. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.
- V. Terminate spare conductors with electrical tape.
- W. Do not share neutral conductor on load side of dimmers.
- X. Install wiring devices in accordance with manufacturer's instructions.
  - 1. Install wall switches at height shown on drawings, OFF position down.
  - 2. Install convenience receptacles at height shown on drawings grounding pole on bottom.
  - 3. Install specific purpose receptacles at heights shown on Drawings.
- Y. Install wall plates flush and level.
  - 1. Install decorative plates on switch, receptacle, and blank outlets in finished areas.
  - 2. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface-mounted outlets.

## END OF SECTION

**SECTION 26 05 05  
SELECTIVE DEMOLITION FOR ELECTRICAL**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Electrical demolition.
- B. Demolition of pedestrian and parking lot lighting foundations, luminaries, poles and branch circuitry in their entirety. Abandon conduits below grade with minimum 18" of cover.

**1.02 RELATED REQUIREMENTS**

- A. Section 01 70 00 - Execution and Closeout Requirements: Additional requirements for alterations work.

**1.03 SUMMARY**

- A. Section Includes:
  - 1. Electrical demolition: Remove electrical systems shown on drawings.

**PART 2 PRODUCTS**

**2.01 MATERIALS AND EQUIPMENT**

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

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Beginning of demolition means installer accepts existing conditions.
- C. Demolition Drawings are based on casual field observation and are intended to identify the limits of the construction site. Remove all electrical systems in their entirety in proper sequence with the Work.

**3.02 PREPARATION**

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Coordinate utility service outages with utility company.
- C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
- E. Existing Electrical Service and Emergency Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Obtain permission from Owner and Architect at least 24 hours before partially or

completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.

### **3.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK**

- A. Remove, relocate, and extend existing installations to accommodate new construction.
- B. Remove abandoned wiring to source of supply.
- C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
- D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
- E. Repair adjacent construction and finishes damaged during demolition and extension work.
- F. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.
- G. Properly dispose of all ballast to approved ballast recycler. Do not land fill ballasts.

**END OF SECTION**

**SECTION 26 09 43  
NETWORK LIGHTING CONTROLS**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Wireless, distributed, secure peer to peer mesh network of fixture control modules, motion sensors, daylight sensors and switch stations for outdoor lighting applications.

**1.02 RELATED REQUIREMENTS**

- A. Section 26 05 00 - Basic Electrical Requirements
  - 1. Identification
  - 2. Regulatory Requirements
- B. Section 26 50 00 - Exterior Lighting
  - 1. Luminaires and Drivers

**1.03 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate the placement of sensors and wall controls with millwork, furniture, equipment, etc. installed under other sections or by others.
  - 2. Coordinate the placement of wall controls with actual installed door swings.
  - 3. Coordinate the work to provide luminaires and lamps compatible with the lighting controls to be installed.
  - 4. Notify Architect/Engineer of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.
- B. Pre-Wire Meeting: Conduct on-site meeting with lighting control system manufacturer prior to commencing work as part of manufacturer's standard startup services. Manufacturer to review with installer:
  - 1. Low voltage wiring requirements.
  - 2. Separation of power and low voltage/data wiring.
  - 3. Wire labeling.
  - 4. Lighting management equipment locations and installation.
  - 5. Control locations.
  - 6. Computer jack locations.
  - 7. Load circuit wiring.
  - 8. Network wiring requirements.
  - 9. Connections to other equipment and other Lutron equipment.
  - 10. Installer responsibilities.
  - 11. Power panel locations.
- C. Sequencing:
  - 1. Do not install sensors and wall controls until final surface finishes and painting are complete.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

- B. Product Data: Include ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.
  - 1. Occupancy/Vacancy Sensors: Include detailed basic motion detection coverage range diagrams.
- C. Shop Drawings:
  - 1. Provide schematic system riser diagram indicating component interconnections. Include requirements for interface with other systems.
  - 2. Provide detailed sequence of operations describing system functions.
  - 3. Delegated Manufacturer's Design Responsibility (manufacturer total system): Provide design services for successful manufacturers complete and operational system requirements. These specifications are performance-based site specific requirements that require manufacturer's lay out and installation instructions. Do not construct this lighting control system based upon this performance.
- D. Manufacturer's Installation Instructions: Include application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- E. Project Record Documents: Record actual installed locations and settings for lighting control system components.
- F. Operation and Maintenance Data: Include detailed information on lighting control system operation, equipment programming and setup, replacement parts, and recommended maintenance procedures and intervals.
- G. Warranty: Submit sample of manufacturer's Warranty or Enhanced Warranty as specified in Part 1 under "WARRANTY". Submit documentation of final execution completed in Owner's name and registered with manufacturer.
- H. Software: One copy of software provided under this section.

## **1.05 QUALITY ASSURANCE**

- A. Conform to requirements of NFPA 70.
- B. Maintain at the project site a copy of each referenced document that prescribes execution requirements.
- C. Manufacturer Qualifications:
  - 1. Company with not less than ten years of experience manufacturing lighting control systems of similar complexity to specified system.
  - 2. Registered to ISO 9001, including in-house engineering for product design activities.
  - 3. Qualified to supply specified products and to honor claims against product presented in accordance with warranty.

## **1.06 FIELD CONDITIONS**

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.
  - 1. System Requirements, Unless Otherwise Indicated:
    - a. Ambient Temperature:



- 1) Lighting Control System Components, Except Those Listed Below: Between 0 and 104 degrees F.
  - 2) Lighting Management System Computer: Between 50 and 90 degrees F.
  - 3) Fluorescent Electronic Dimming Ballasts: Between 50 and 140 degrees F.
- b. Relative Humidity: Less than 90 percent, non-condensing.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Manufacturers:
1. Acuity nLight Air.
  2. Current LightGRID.
  3. Signify Interact City.
- B. Source Limitations: Furnish products produced by a single manufacturer and obtained from a single supplier.

### **2.02 NETWORK LIGHTING CONTROL SYSTEM - GENERAL REQUIREMENTS**

- A. System shall consist of wireless, distributed and intelligent lighting control devices with ON/OFF, and 0-10 VDC full range dimming capabilities. System input devices include motion sensors, daylight sensors and manual switch stations.
- B. Control modules shall measure and monitor the loads they control and report alarms for out of range values.
- C. System architecture shall include a self-organizing and self-healing mesh network infrastructure.
1. Firmware and radio firmware shall be upgradeable over the air via the gateway without physical on-site requirements. The system shall continue to operate in the event of a gateway failure.
  2. System nodes shall be user configurable fail safe and faulty recovery mechanisms that will execute commands in case of lost communications.
  3. Geographic coordinates shall be stored in nonvolatile memory.
  4. Data transmission between each wireless device will be by radio frequency (RF) over 2.4Ghz or 900MHx ISM radio frequency. Supported and unobstructed RF range of 1000 feet between each radio module.
  5. System shall be capable of up to 32 hops (levels) of propagation in any direction and from any transmitter.
  6. All messages shall use a strong and secure AES-128 or AES-256 security cipher to encrypt and decrypt messages.
- D. System shall be capable of being accessed from a local network or the Internet using manufacturers' open platform enterprise software. No Owner restrictions will be accepted.
- E. System shall have an intuitive and easy to use graphical user interface to configure, control, monitor and schedule individual devices or groups of devices.
- F. System reports shall include, but are not limited to:
1. List of devices.
  2. List of scenarios or scenes for a given group.
  3. List of alarms within an owner selectable time frame.

4. Energy log in report and graphical form with KWH, KVAH, Burn time data.
  5. Reports shall be generated in pdf, xls and xlsx file formats.
- G. System shall provide client-based or web-based applications for accessing the lighting control network.
- H. System shall allow for map and graphical images to view devices overlaid on either type of view.
- I. Provide products listed, classified, and labeled by Underwriter's Laboratories Inc. (UL) as suitable for the purpose indicated.
- J. Unless specifically indicated to be excluded, provide all required equipment, conduit, boxes, wiring, connectors, hardware, supports, accessories, software, system programming, etc. as necessary for a complete operating system that provides the control intent indicated.
- K. Design lighting control equipment for 10 year operational life while operating continually at any temperature in an ambient temperature range of 0 degrees F to 104 degrees F and 90 percent non-condensing relative humidity.
- L. Electrostatic Discharge Tolerance: Design and test equipment to withstand electrostatic discharges without impairment when tested according to IEC 61000-4-2.

### **2.03 WIRELESS RELAY MODULES**

- A. Voltage: Universal voltage support from 100 Volt to 480 Volt.
- B. Relay Module: Standardizes ANSI C136.41-2013, 7 and 5 pin receptacles. Suitable for LED drivers. Conform to UL-733 and CAN/CSA C22.2 No. 182-2 requirements. FCC and IC Certified.
- C. Description: Fully programmable and capable of storing and autonomously executing demands and scenarios (scenes). Programming functions shall reside within each relay even in case of power outage.
- D. Standard features:
1. On/off switching and flexible dimming adjustability from minimum to maximum levels with 1% increment steps.
  2. Real-time operating system capable of running multiple simultaneous tasks with minimal latency.
  3. Tilt sensor measuring the earth's gravity angle changes.
  4. Daylight harvesting in accordance with IES -RP-8 optimal roadway lighting design recommended practices.
  5. Programmable delay and dimming level when power is restored following a power outage for demand control.
  6. Demand response capabilities.
  7. Lumen depreciation compensation over time.
  8. Compatible with occupancy and lux sensors, external photocells and switches.
  9. Monitoring, metering and reporting functionality for system reports and control.

### **2.04 WIRELESS GATEWAYS**

- A. Voltage: 120VAC, 60Hz.

- B. Description: Fan-less, 1 GHz or faster processor, Ethernet connectors, autoboot on power up, 1 GB RAM and 500M storage.
- C. Standard Features:
  - 1. Power loss memory and clock holdup time for a minimum of 6 months. Automatic recovery in the event of a power outage.
  - 2. Digital clock with time, day of week and date.
    - a. Automatic leap year compensation.
    - b. Programmable daylight savings time and standard time adjustment.
  - 3. Remote communications: Minimum of two communication ports: USP for PLC and/or RF (802.15.4) and an Ethernet port. remote communications shall allow for simultaneous operation of multiple communications access points.
    - a. Relay changes of state and programmable switch actions shall be communicated over both the local USB/XB network and the Ethernet to support interactive graphics and online status monitoring.
    - b. Modem for cellular communications.
  - 4. Remotely configurable and upgradeable without on site personnel.
  - 5. Operating System: Linux Debian or equivalent.
  - 6. Building Management System: 3rd party integration into Owner's building management system via BACnet IP Interface.
    - a. Owner's Existing BAS System: Automated Logic, Chicago IL

## 2.05 SOFTWARE

- A. Operating System: Windows 10 or more recent. Graphic User Interface shall be entered through a simple interface with geographical mapping of devices.
- B. Standard Features:
  - 1. Capable of creating device groups, scenarios and schedules as well as system parameters.
  - 2. Capable of configuring device parameters.
  - 3. Capable of clone/copy device settings and able to control individual devices and group of devices.
  - 4. Schedules: Unlimited number of schedules may be assigned to individual relays or group of relays. Unlimited number of events per day or cloning of schedules.
    - a. Applicable period for individual schedules shall be user-defined and include holidays and Specialty inclusion/exclusion periods.
    - b. Individual schedules to supersede holidays or special periods.
    - c. Spring ahead and fall back dates for daylight savings time shall be automatic.
    - d. Conditional scheduling: Conditional scheduling and execution rules based on time of day, occupancy statuses, override keypads to trigger scenarios.
      - 1) User defined flexible rules for blink warning, delay overrides, preemptive overrides, master control, cleaning scenarios.
  - 5. Unlimited number of different user/passwords, user roles and user rules.
  - 6. 3rd party BAS control via BACnet IP interface:
    - a. Binary and analog object types.
    - b. Full graphic user interface, monitor and control capabilities.
    - c. Luminare ON/Off control.
    - d. Metering, voltage, current, power, power factor, consumption reports.

- e. Alarm notifications.
- f. Run scenarios.
- g. Luminaire lighting setpoint levels.
- h. Run times.

## **2.06 LOW VOLTAGE DEVICES**

- A. Switch Stations: Manual ON/OFF switching of lighting loads within the site. Low voltage, momentary switches with programmable 1-3 button configurations. Color: white.
- B. Motion Sensors: Automatic switching of lighting loads within an area/zone based on the presence of human activity without manual adjustment. Passive infrared technology with PIR background levels and automatic adjustments.
  - 1. Dual element Pyrometer and 144-element cylindrical Fresnel lens or equivalent.
- C. External Photocell: ON/OFF lighting circuit control with 0-10V full range dimming based on detected light level.
  - 1. Pre-programmed for direct operation without field programming.
  - 2. Bi-directional wireless RF mesh communications.
  - 3. Military grade AES 128-bit or 256 bit encryption when communicating wirelessly.
  - 4. Digital input for motion or switch control.
  - 5. Multi-level grouping and multiple scenario support. Utility grade meter.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that ratings and configurations of system components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive system components.
- D. Verify that conditions are satisfactory for installation prior to starting work.

### **3.02 INSTALLATION**

- A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, except for mounting heights specified in those standards.
- B. Install products in accordance with manufacturer's instructions.
- C. Define each dimmer/relay load type, assign each load to a zone, and set control functions.
- D. Sensor Locations:
  - 1. Lighting Control Manufacturer Sensor Layout and Tuning service. CONTROL SYSTEM - GENERAL REQUIREMENTS", locate sensors in accordance with layout provided by Lighting Control Manufacturer. Lighting Control Manufacturer may direct Contractor regarding sensor relocation should conditions require a deviation from locations indicated. Where Lighting Control Manufacturer Sensor Layout and Tuning service is not specified, locate sensors in accordance with Drawings.
    - a. Locate sensors in accordance with layout provided by Lighting Control Manufacturer. Lighting Control Manufacturer may direct Contractor regarding sensor relocation should

- conditions require a deviation from locations indicated.
2. Sensor locations indicated are diagrammatic. Within the design intent, reasonably minor adjustments to locations may be made in order to optimize coverage and avoid conflicts or problems affecting coverage, in accordance with manufacturer's recommendations.
- E. Mount exterior daylight sensors to point due north with constant view of daylight.
  - F. Ensure that daylight sensor placement minimizes sensor view of electric light sources. Locate ceiling-mounted and luminaire-mounted daylight sensors to avoid direct view of luminaires.
  - G. Lamp Burn-In: Operate lamps at full output for prescribed period per manufacturer's recommendations prior to use with any dimming controls. Replace lamps that fail prematurely due to improper lamp burn-in.
  - H. Identify system components in accordance with Section 26 05 00..

### **3.03 FIELD QUALITY CONTROL**

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Manufacturer's Startup Services:
  1. Manufacturer's authorized Service Representative to conduct minimum of two site visits to ensure proper system installation and operation.
  2. Conduct Pre-Installation visit to review requirements with installer as specified in Part 1 under "Administrative Requirements".
  3. Conduct second site visit upon completion of lighting control system to perform system startup and verify proper operation:
    - a. Verify connection of power wiring and load circuits.
    - b. Verify connection and location of controls.
    - c. Energize lighting management hubs and download system data program.
    - d. Address devices.
    - e. Verify proper connection of panel links (low voltage/data) and address panel.
    - f. Download system panel data to dimming/switching panels.
    - g. Check dimming panel load types and currents and supervise removal of bypass jumpers.
    - h. Verify system operation control by control.
    - i. Verify proper operation of manufacturer's interfacing equipment.
    - j. Verify proper operation of manufacturer's supplied PC and installed programs.
    - k. Configure initial groupings of ballast for wall controls, daylight sensors and occupancy sensors.
    - l. Train Owner's representative on system capabilities, operation, and maintenance, as specified in Part 3 under "Closeout Activities".
    - m. Obtain sign-off on system functions.
    - n. After Hours Startup: Include as part of the base bid additional costs to perform manufacturer's startup procedures outside normal working hours (Monday through Friday, 7am to 5pm).
  4. Correct defective work, adjust for proper operation, and retest until entire system complies with contract documents.

### **3.04 ADJUSTING**

- A. On-Site Scene and Level Tuning: Include as part of the base bid additional costs for Lighting Control Manufacturer to visit site to conduct meeting with Owner's representative to make required lighting adjustments to the system for conformance with original design intent.

### **3.05 CLEANING**

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

### **3.06 CLOSEOUT ACTIVITIES**

- A. Demonstration:
  - 1. On-Site Performance-Verification Walkthrough: Include as part of the base bid additional costs for lighting control manufacturer to provide on-site demonstration of system functionality to facility representative.
- B. Training:
  - 1. Include services of manufacturer's authorized Service Representative to perform on-site training of Owner's personnel on operation, adjustment, and maintenance of lighting control system as part of standard system start-up services.
    - a. Include training on software to be provided:
      - 1) Configuration software used to make system programming and configuration changes.
      - 2) Control and monitor.
      - 3) Energy savings display software.
      - 4) Personal web-based control software.

### **3.07 PROTECTION**

- A. Protect installed products from subsequent construction operations.

**END OF SECTION**

**SECTION 26 24 10  
ELECTRICAL DISTRIBUTION**

**PART 1 GENERAL**

**1.01 SUMMARY**

- A. Section Includes:
1. Enclosed Switches.
  2. Grounding Materials.
  3. Fuses.
  4. Circuit Breakers.
  5. Single Pole Fused Switches.
  6. Single Pole Motor Rated Switches.
  7. Nema Boxes
  8. Transient Voltage Surge Suppression - "SPD".

**1.02 SYSTEM DESCRIPTION**

- A. Electric Service System (Existing to Remain): Single point (one) service entrance location. Underground service with secondary metering.
- B. Grounding Electrode System (Existing)
1. Metal underground water pipe.
  2. Rod electrode.
  3. Metal frame of building.

**1.03 SUBMITTALS**

- A. Submit Under Provisions of Division 01 - Submittals:
1. Shop Drawings: Indicate relevant information on panelboards and transformers.
  2. Motor Control Center Shop Drawings: Submit shop drawings in accordance with NEMA classification as noted above and additional information as noted in the following paragraphs.
    - a. Elementary Diagrams: Provide elementary diagram for each typical starter unit. Indicate numbered terminal points and interconnections to the first level of remote devices.
    - b. Reference Data: Provide tabulation of heater sizes or elements verses motor current rating.
  3. Product Data: Provide data on enclosed switches and circuit breakers, fuses and panelboard circuit breakers.
    - a. For circuit breakers feeding transformers, provide circuit breaker time-current curves overlaid with transformer inrush, FLA and primary/secondary thermal limit curves.
- B. Submit Under Provisions of Section 01 78 00 - Contract Closeout:
1. Project Record Documents:
    - a. Accurately record actual locations of grounding electrodes.
    - b. Record actual locations of Panelboards, indicate actual branch circuit arrangement.

**1.04 REFERENCES**

- A. NECA (National Electrical Contractors Association) "Standard of Installation."
- B. NEMA PB 1 - Panelboards.
- C. NEMA KS 1 - Enclosed Switches.

- D. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.

## **PART 2 PRODUCTS**

### **2.01 ENCLOSED SWITCHES**

- A. Manufacturers:
1. Square D.
  2. General Electric.
  3. Siemens.
  4. Substitutions: Or Approved Equal.
- B. Fusible Switch Assemblies: NEMA KS 1, Type HS or GS, horsepower rated, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in OFF position. Fuse clips: Designed to accommodate Class R fuses when used.
- C. Nonfusible Switch Assemblies: NEMA KS 1, Type HS or GS, horsepower rated, load interrupter enclosed knife switch with externally operable handle interlocked to prevent opening front cover with switch in ON position. Handle lockable in the OFF position.
- D. Enclosures:
1. Interior Dry Locations: Type 1.
  2. Exterior Locations: Type 3R.

### **2.02 GROUNDING MATERIALS**

- A. Manufacturers:
1. ITT Blackburn.
  2. Burndy Corp.
  3. Steel City.
- B. Ground Rods: Copper-encased steel, 1/2 inch diameter, minimum length 10 feet.
- C. Wire: Stranded copper.
- D. Clamps: Bronze.
- E. Grounding Electrode Conductor: Size to meet NFPA 70 requirements.

### **2.03 FUSES**

- A. Manufacturers:
1. Bussman.
  2. Gould/Shawmut.
  3. Littell-Fuse.
- B. Type:
1. Motor overcurrent protection: Class RK5, Time Delay.
  2. Feeder circuit: Class J, Fast Acting.
  3. Circuit Breaker Back-up: Class J, Fast Acting.
  4. Service Entrance: Class L, 4 second delay.



## **2.04 LIGHTING AND APPLIANCE PANELBOARDS**

- A. Manufacturers:
  - 1. Square D.
  - 2. General Electric.
  - 3. Siemens.
  - 4. Substitutions : Or Approved Equal.
- B. Lighting and Appliance Panelboards: NEMA PB 1; lighting and appliance circuit breaker type panelboard:
  - 1. Description: As scheduled on Drawings.
  - 2. Provide terminals rated and U.L. listed for use with 75 degrees C temperature rated conductors.
  - 3. Bussing: Shall be copper (all phases, neutral and ground)
  - 4. Breakers: As scheduled on Drawings and specified hereafter.
    - a. Lighting: SWD and HID.
    - b. Heating, Ventilating and Air Conditioning: HACR rated.
  - 5. Breaker Accessories: As scheduled on Drawings

## **2.05 GROUNDING AND BONDING**

- A. Existing Work: Where existing grounding and bonding system components are indicated to be reused, they may be reused only where they are free from corrosion, integrity and continuity are verified, and where acceptable to the authority having jurisdiction.
- B. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- C. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- D. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

## **2.06 CIRCUIT BREAKERS**

- A. Underwriter Laboratories listed for intended branch circuit:
  - 1. Lighting: SWD.
  - 2. Heating, Ventilating and Air Conditioning: HACR rated.
- B. Provide accessories as scheduled.
- C. Shunt Trip Device: 120 volts, AC.
- D. Auxiliary Switch: 120 volts, AC.
- E. Handle Lock: Include provisions for sealing.
- F. Provide mechanical trip device.
- G. Provide insulated grounding lug in each enclosure.
- H. Provide products suitable for use as service entrance equipment where so applied.

## **2.07 SINGLE-POLE FUSED SWITCHES**

- A. Manufacturers:
  - 1. Fusetron SSW.
  - 2. Substitutions: Or Equal.
- B. Description: Combination switch and fuse holder. Provide fuse.
- C. Enclosure: NEMA 1, suitable for use in return air plenum where applicable.

## **2.08 SINGLE-POLE MOTOR RATED SWITCHES**

- A. Manufacturers:
  - 1. Square D.
  - 2. General Electric.
  - 3. Siemens.
  - 4. Substitutions: Or Approved Equal.
- B. NEMA ICS 2; AC general purpose Class A manually operated, full-voltage controller for fractional horsepower induction motors, with thermal overload unit, toggle operator.
  - 1. Voltage: 120 Volt.
- C. Enclosure: NEMA 1, suitable for use in return air plenum where applicable.

## **2.09 TRANSIENT VOLTAGE SURGE SUPPRESSION - "SPD"**

- A. Manufacturers:
  - 1. Current Technology.
  - 2. LEA International.
  - 3. Liebert.
  - 4. Substitutions: Or Approved Equal.
- B. Description: Non-fused, externally-mounted, Category C3, medium exposure main service switchboard transient voltage surge suppression. Modular construction with renewable parts.
- C. Ratings and testing to conform to the following standards for medium exposure Category B protection:
  - 1. ANSI/IEEE C62.41-1991 and C62.45-1992;
  - 2. ANSI/IEEE C62.1 and C62.11;
  - 3. National Electrical Manufacturers Association (NEMA LS1-1992 Guidelines);
  - 4. National Fire Protection Association (NFPA 70 [NEC], 75, and 78);
  - 5. Underwriters Laboratories (UL 1449 and 1283);
- D. Ratings and performance to be certified and tested by an independent accredited laboratory.
- E. Ratings:
  - 1. Operating Voltage: 277/480 volt, 3 phase, 4 wire plus ground, solidly grounded wye.
  - 2. Maximum Continuous Operating Voltage (MCOV): Greater than 115% of nominal voltage.
  - 3. Protection Modes: Line-to-Neutral, Line-to-Ground, Line-to-Line and Neutral-to-Ground protection.
  - 4. Repetitive Surge Current Capacity: >4000 impluses per mode
  - 5. Single Pulse Surge Current Capacity: 100kA (L-L,L-N) 100kA (L-G,N-G).

6. UL 1449 Suppression Rating: 800V (L-N,L-G,N-G)
7. High Frequency Extended Range Filter per UL1283.
8. High Performance Suppression System: 1080 square inches of solid-state suppression area.
9. Enclosure: NEMA Type 1.

## **2.10 NEMA BOXES**

- A. Manufacturer: APX Pedestal Enclosure or equal.
- B. Description: UL508A, Nema 3R rated enclosure with EIA 19" fixed rack for camera system switch and patch panels nominally 12RU rack space. 14 gauge stainless steel. Suitable for pole mount or free-standing pedestal.
  1. Single Door with lockable latch, louvered with disposable filter.
  2. Duplex receptacle.
  3. Rack Frame: EIA 19".
  4. Dimensions: Nominally 39"x24"x20.25"
- C. Mounting
  1. Pole Mount: Pole manufacturer accessory hardware.
  2. Free-standing: Pedestal with cast-in-place foundation.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION AND PREPARATION**

- A. Verify that equipment is ready for electrical connection, wiring, and energization.

### **3.02 INSTALLATION**

- A. Install equipment in accordance with manufacturer's instructions.
- B. Install proper fuses in each fused switch.
- C. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.
- D. Provide grounding and bonding to NFPA 70. Provide maintenance grounding conductor jumper at water service.
  1. Supplementary Grounding Electrode: Use driven ground rod @ each switchboard.
- E. Provide typed or neatly handwritten circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes required to balance phase loads.
- F. Provide engraved plastic nameplates.
- G. Field mark electrical equipment to warn qualified persons on the danger of electric arc flash. The field-marking must be clearly visible to qualified persons before they inspect or work on the equipment.
- H. Provide receptacle outlet to accommodate connection with attachment plug.
- I. Provide cord and cap where field-supplied attachment plug is required.
- J. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

- K. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- L. Install terminal block jumpers to complete equipment wiring requirements.
- M. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.
- N. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.

### **3.03 FIELD QUALITY CONTROL**

- A. Inspect grounding and bonding system conductors and connections for tightness and proper installation.
- B. Measure ground resistance from system neutral connection at service entrance to convenient ground reference point by passing minimum current of 10 amperes DC and measuring voltage drop. Maximum resistance: 5 ohms.
- C. Measure primary and secondary transformer voltages and make appropriate tap adjustments.

### **3.04 CLEANING**

- A. Clean equipment finishes to remove paint and concrete splatters.

**END OF SECTION**

**SECTION 26 56 00  
EXTERIOR LIGHTING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Exterior luminaires.
- B. Ballasts.
- C. Lamps.
- D. Poles and accessories.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete: Materials and installation requirements for concrete bases for poles.

**1.03 REFERENCE STANDARDS**

- A. ANSI C82.4 - American National Standard for Lamp Ballasts - Ballasts for High-Intensity-Discharge and Low-Pressure Sodium Lamps; 2017, with Editorial Revision (2022).
- B. IEEE C2 - National Electrical Safety Code(R) (NEC(R)); 2023.
- C. IESNA LM-5 - Photometric Measurements of Area and Sports Lighting Installations; 2004 (Reaffirmed 2007).
- D. IESNA LM-64 - Photometric Measurements of Parking Areas; 2001 (Reaffirmed 2007).
- E. IES RP-8 - Recommended Practice: Lighting Roadway and Parking Facilities; 2022.
- F. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
- G. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems; 2000 (Reaffirmed 2006).
- H. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility; 2023.
- I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. UL 1598 - Luminaires; Current Edition, Including All Revisions.
- K. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

**1.04 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  - 1. Coordinate placement of poles and associated foundations with utilities, curbs, sidewalks, trees, walls, fences, striping, etc. installed under other sections or by others. Coordinate elevation to obtain specified foundation height.
  - 2. Notify Architect/Engineer of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.

## **1.05 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
  - 1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
  - 2. Provide photometric calculations where luminaires are proposed for substitution upon request.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.
  - 1. Lamps: Include rated life and initial and mean lumen output.
  - 2. Poles: Include information on maximum supported effective projected area (EPA) and weight for the design wind speed.
- D. Certificates for Poles and Accessories: Manufacturer's documentation that products are suitable for the luminaires to be installed and comply with designated structural design criteria.
- E. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- F. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- G. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
  - 1. See Section 01 60 00 - Product Requirements, for additional provisions.

## **1.06 QUALITY ASSURANCE**

- A. Comply with requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

## **1.07 DELIVERY, STORAGE, AND HANDLING**

- A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.
- C. Receive, handle, and store wood poles in accordance with ANSI O5.1.

## **PART 2 PRODUCTS**

### **2.01 LUMINAIRE TYPES**

- A. Furnish products as indicated in luminaire schedule included on the drawings.

## 2.02 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Provide products complying with Federal Energy Management Program (FEMP) requirements.
- E. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
- G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- H. Recessed Luminaires:
  - 1. Ceiling Compatibility: Comply with NEMA LE 4.
  - 2. Luminaires Recessed in Insulated Ceilings: Listed and labeled as IC-rated, suitable for direct contact with insulation and combustible materials.
  - 3. Luminaires Recessed in Sloped Ceilings: Provide suitable sloped ceiling adapters.

## 2.03 BALLASTS AND DRIVERS

- A. Manufacturers:
  - 1. General Electric Company/GE Lighting: [www.gelighting.com/#sle](http://www.gelighting.com/#sle).
  - 2. OSRAM Sylvania, Inc: [www.osram.us/ds/#sle](http://www.osram.us/ds/#sle).
  - 3. Universal; [www.unvlt.com](http://www.unvlt.com)
  - 4. Substitutions: See Section 01 60 00 - Product Requirements.
  - 5. Manufacturer Limitations: Where possible, for each type of luminaire provide ballasts produced by a single manufacturer.
  - 6. Where a specific manufacturer or model is indicated elsewhere in the luminaire schedule or on the drawings, substitutions are not permitted unless explicitly indicated.
- B. Ballasts/Drivers - General Requirements:
  - 1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
  - 2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.

## 2.04 POLES

- A. Manufacturers:
- B. All Poles:
  - 1. Provide poles and associated support components suitable for the luminaire(s) and associated supports and accessories to be installed.
  - 2. Structural Design Criteria:

- a. Comply with AASHTO LTS.
  - b. Wind Load: Include effective projected area (EPA) of luminaire(s) and associated supports and accessories to be installed.
    - 1) Design Wind Speed: 107 miles per hour, with gust factor of 1.3.
  - c. Dead Load: Include weight of proposed luminaire(s) and associated supports and accessories and incident recording system pull box and cameras.
- 3. Material: Aluminum, unless otherwise indicated.
  - 4. Shape: Square straight, unless otherwise indicated.
  - 5. Finish: Match luminaire finish, unless otherwise indicated.
- C. Metal Poles: Provide ground lug, accessible from handhole or transformer base.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that field measurements are as indicated.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

### **3.02 PREPARATION**

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

### **3.03 INSTALLATION**

- A. Coordinate locations of outlet boxes provided under Section 26 05 33.16 as required for installation of luminaires provided under this section.
- B. Install products in accordance with manufacturer's instructions.
- C. Install luminaires in accordance with NECA/IESNA 501.
- D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- E. Recessed Luminaires:
  - 1. Install trims tight to mounting surface with no visible light leakage.
  - 2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
  - 3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.
- F. Suspended Luminaires:
  - 1. Unless otherwise indicated, specified mounting heights are to bottom of luminaire.



2. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
  3. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet in length, with no more than 4 feet between supports.
- G. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.
- H. Pole-Mounted Luminaires:
1. Foundation-Mounted Poles:
    - a. Provide cast-in-place concrete foundations for poles as indicated, in accordance with Section 03 30 00.
      - 1) Install anchor bolts plumb per template furnished by pole manufacturer.
      - 2) Position conduits to enter pole shaft.
    - b. Install foundations plumb.
    - c. Install poles plumb, using leveling nuts or shims as required to adjust to plumb.
    - d. Tighten anchor bolt nuts to manufacturer's recommended torque.
  2. Grounding:
    - a. Bond luminaires, metal accessories, metal poles, and foundation reinforcement to branch circuit equipment grounding conductor.
  3. Install separate service conductors, 12 AWG copper, from each luminaire down to handhole for connection to branch circuit conductors.
  4. Electrical Contractor shall provide conduits, fuse holder and fuses for each phase.
- I. Install accessories furnished with each luminaire.
- J. Bond products and metal accessories to branch circuit equipment grounding conductor.
- K. Install lamps in each luminaire.

### **3.04 FIELD QUALITY CONTROL**

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.
- D. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect/Engineer.

### **3.05 ADJUSTING**

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect/Engineer. Secure locking fittings in place.

### **3.06 CLEANING**

- A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

### **3.07 CLOSEOUT ACTIVITIES**

- A. See Section 01 78 00 - Closeout Submittals, for closeout submittals.

B. Just prior to Substantial Completion, replace all lamps that have failed.

### **3.08 PROTECTION**

A. Protect installed luminaires from subsequent construction operations.

**END OF SECTION**

**SECTION 27 10 00  
STRUCTURED CABLING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Communications system design requirements to support incident recording system (camera).  
Incident recording system furnished by Owner. Coordination of exact requirements with Owner's vendor is critical.
- B. Copper cable and terminations.
- C. Fiber optic cable and interconnecting devices.
- D. Communications identification.

**1.02 REFERENCE STANDARDS**

- A. ASTM D1002 - Standard Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal); 2010 (Reapproved 2019).
- B. ASTM D1598 - Standard Test Methods for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure; 2021.
- C. ASTM D1599 - Standard Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings; 2018.
- D. BICSI N1 - Installation Practices for Telecommunications and ICT Cabling and Related Cabling Infrastructure, 1st Edition; 2019.
- E. EIA/ECA-310 - Cabinets, Racks, Panels, and Associated Equipment; 2005e.
- F. FM (AG) - FM Approval Guide; Current Edition.
- G. ICEA S-83-596 - Indoor Optical Fiber Cable; 2021.
- H. ICEA S-90-661 - Category 3 and 5E Individually Unshielded Twisted Pairs, Indoor Cables (With or Without an Overall Shield) for Use in General Purpose and LAN Communication Wiring Systems; 2021.
- I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. TIA-455-21 - FOTP-21 - Mating Durability of Fiber Optic Interconnecting Devices; 1988a (Reaffirmed 2012).
- K. TIA-492CAAA - Detail Specification for Class IVa Dispersion-Unshifted Single-Mode Optical Fibers; 1998 (Reaffirmed 2002).
- L. TIA-492CAAB - Detail Specification for Class IVa Dispersion-Unshifted Single-Mode Optical Fibers with Low Water Peak; 2000 (Reaffirmed 2005).
- M. TIA-568 (SET) - Commercial Building Telecommunications Cabling Standard Set; 2023.
- N. TIA-568.2 - Balanced Twisted-Pair Telecommunications Cabling and Components Standards; 2018d, with Addenda (2020).

- O. TIA-568.3 - Optical Fiber Cabling and Components Standard; 2022e.
- P. TIA-569 - Telecommunications Pathways and Spaces; 2019e, with Addendum (2022).
- Q. TIA-568-C.2 - Balanced Twisted-Pair Telecommunications Cabling and Components Standards; 2009, with Addendum (2016).
- R. TIA-568-C.3 - Optical Fiber Cabling Components Standard; 2016.
- S. TIA-569-D - Telecommunications Pathways and Spaces; 2015d, with Addendum (2016).
- T. TIA-606 - Administration Standard for Telecommunications Infrastructure; 2021d.
- U. TIA-607 - Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises; 2019d, with Addendum (2021).
- V. TIA-607-C - Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises; 2015c, with Addendum (2017).
- W. UL 444 - Communications Cables; Current Edition, Including All Revisions.
- X. UL 1651 - Fiber Optic Cable; Current Edition, Including All Revisions.
- Y. UL 1863 - Communications-Circuit Accessories; Current Edition, Including All Revisions.

### **1.03 ADMINISTRATIVE REQUIREMENTS**

- A. Coordination:
  1. Coordinate requirements for service entrance and entrance facilities with Communications Service Provider.
  2. Coordinate the work with other trades and Owner's vendor to avoid placement of other utilities or obstructions within the spaces dedicated for communications equipment.
  3. Coordinate arrangement of communications equipment with the dimensions and clearance requirements of the actual equipment to be installed.
  4. Notify Architect/Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.
- B. Preinstallation Meeting: Convene one week prior to commencing work of this section to review service requirements and details with Owners' vendor representative.

### **1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.
- C. Shop Drawings: Show compliance with requirements on isometric schematic diagram of network layout, showing cable routings, telecommunication closets, rack and enclosure layouts and locations, service entrance, and grounding, prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
- D. Evidence of qualifications for installer.
- E. Field Test Reports.

- F. Project Record Documents: Prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
  - 1. Record actual locations of outlet boxes and distribution frames.
  - 2. Show as-installed color coding, pair assignment, polarization, and cross-connect layout.
  - 3. Identify distribution frames and equipment rooms by room number on drawings.

## **1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: A company having at least 3 years experience in the installation and testing of the type of system specified, and:
  - 1. Employing a BICSI Registered Communications Distribution Designer (RCDD).
  - 2. Supervisors and installers factory certified by manufacturers of products to be installed.
- B. Products: Listed, classified, and labeled as suitable for the purpose intended.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep stored products clean and dry.

## **1.07 WARRANTY**

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a 2 year period after Date of Substantial Completion.

## **PART 2 PRODUCTS**

### **2.01 SYSTEM DESIGN**

- A. Provide a complete permanent system of cabling and pathways for voice and data communications, including cables, conduits and wireways, pull wires, support structures, enclosures and cabinets, and outlets.
  - 1. Comply with TIA-568 (SET) (cabling) and TIA-569 (pathways) (commercial standards).
  - 2. Provide fixed cables and pathways that comply with NFPA 70 and TIA-607 and are UL listed or third party independent testing laboratory certified.
  - 3. Provide connection devices that are rated for operation under conditions of 32 to 140 degrees F at relative humidity of 0 to 95 percent, noncondensing.
  - 4. In this project, the term plenum is defined as return air spaces above ceilings, inside ducts, under raised floors, and other air-handling spaces.
- B. Main Distribution Frame (MDF): Centrally located support structure for terminating horizontal cables that extend to telecommunications outlets, functioning as point of presence to external service provider.
  - 1. Locate main distribution frame as indicated on the drawings.
- C. Cabling to Outlets: Specified horizontal cabling, wired in star topology to distribution frame located at center hub of star; also referred to as "links".

## 2.02 COPPER CABLE AND TERMINATIONS

- A. Manufacturers:
- B. Copper Horizontal Cable (within luminaire pole and other voltage classifications).
  - 1. Description: 600 V, suitable for outdoor sue, IP camera and POE applications. Cat 6, 23AWG solid bare copper.
  - 2. Temperature rating: -40degC tp 90degC
  - 3. Shielding: aluminum and polyester, mfr standard.
  - 4. Insulation: PVC inner and outer jackets.
- C. Copper Horizontal Cable:
  - 1. Description: 100 ohm, balanced twisted pair cable complying with TIA-568.2 and listed and labeled as complying with UL 444.
  - 2. Cable Type - Data: TIA-568.2 Category 6 UTP (unshielded twisted pair); 23 AWG TIA-568.2 Category 6 UTP (unshielded twisted pair); 23 AWG.
  - 3. Cable Capacity: 4-pair.
  - 4. Cable Applications: Use listed NFPA 70 Type CMP outdoor use unless otherwise indicated.
- D. Copper Cable Terminations: Insulation displacement connection (IDC) type using appropriate tool; use screw connections only where specifically indicated.
- E. Jacks and Connectors: Modular RJ-45, non-keyed, terminated with 110-style insulation displacement connectors (IDC); high impact thermoplastic housing; suitable for and complying with same standard as specified horizontal cable; UL 1863 listed.
  - 1. Performance: 500 mating cycles.
  - 2. Voice and Data Jacks: 8-position modular jack, color-coded for both T568A and T568B wiring configurations.

## 2.03 FIBER OPTIC CABLE AND INTERCONNECTING DEVICES

- A. Manufacturers:
- B. Fiber Optic Horizontal Cable:
  - 1. Description: Tight buffered, non-conductive fiber optic cable complying with TIA-568.3, ICEA S-83-596 and listed as complying with UL 444 and UL 1651.
  - 2. Cable Type: Single Mode, 125 micrometer diameter, OS2 for outdoor use..
  - 3. Cable Capacity: 2-fiber.
- C. Fiber Optic Interconnecting Devices:
  - 1. Connector Type: Type LC.
  - 2. Connector Performance: 500 mating cycles, when tested in accordance with TIA-455-21.
  - 3. Maximum Attenuation/Insertion Loss: 0.3 dB.

## 2.04 IDENTIFICATION PRODUCTS

- A. Comply with TIA-606.

## **PART 3 EXECUTION**

### **3.01 INSTALLATION - GENERAL**

- A. Comply with latest editions and addenda of TIA-568 (SET) (cabling), TIA-569 (pathways), TIA-607 (grounding and bonding), BICSI N1, NFPA 70, and SYSTEM DESIGN as specified in PART 2.
- B. Comply with Communication Service Provider requirements.
- C. Grounding and Bonding: Perform in accordance with TIA-607 and NFPA 70.

### **3.02 INSTALLATION OF EQUIPMENT AND CABLING**

- A. Cabling:
  - 1. Do not bend cable at radius less than manufacturer's recommended bend radius; for unshielded twisted pair use bend radius of not less than 4 times cable diameter.
  - 2. Do not over-cinch or crush cables.
  - 3. Do not exceed manufacturer's recommended cable pull tension.
  - 4. When installing in conduit, use only lubricants approved by cable manufacturer and do not chafe or damage outer jacket.
- B. Service Loops (Slack or Excess Length): Provide the following minimum extra length of cable, looped neatly:
  - 1. At Distribution Frames: 120 inches.
  - 2. At Outlets - Copper: 12 inches.
  - 3. At Outlets - Optical Fiber: 39 inches.
- C. Copper Cabling:
  - 1. Category 5e and Above: Maintain cable geometry; do not untwist more than 1/2 inch from point of termination.
  - 2. For 4-pair cables in conduit, do not exceed 25 pounds pull tension.
  - 3. Use T568B wiring configuration.
- D. Fiber Optic Cabling:
  - 1. Prepare for pulling by cutting outer jacket for 10 inches from end, leaving strength members exposed. Twist strength members together and attach to pulling eye.
  - 2. Support vertical cable at intervals as recommended by manufacturer.
- E. Identification:
  - 1. Use wire and cable markers to identify cables at each end.

### **3.03 FIELD QUALITY CONTROL**

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Comply with inspection and testing requirements of specified installation standards.
- C. Visual Inspection:
  - 1. Inspect cable jackets for certification markings.
  - 2. Inspect cable terminations for color coded labels of proper type.
  - 3. Inspect outlet plates and patch panels for complete labels.
- D. Testing - Copper Cabling and Associated Equipment:

E. Testing - Fiber Optic Cabling:

F. Final Testing: After all work is complete, including installation of telecommunications outlets, and telephone dial tone service is active, test each voice jack for dial tone.

**END OF SECTION**



**SECTION 31 23 16.13  
TRENCHING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Trenching, backfilling and compacting for utilities outside the building for electrical and data infrastructure.
- B. Nondestructive location and marking of underground private utilities.

**1.02 RELATED REQUIREMENTS**

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 32 91 19 - Landscape Grading: Topsoil placement and finish grading.

**1.03 DEFINITIONS**

- A. Finish Grade Elevations: Match existing grade.
- B. Finish Grade Materials: Match existing materials removed for trenching.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

**1.05 SEQUENCING AND SCHEDULING**

- A. Schedule, sequence and coordinate the work of this section, and prior and subsequent portions of the work, in accordance with the requirements of Section 01 40 00 - Quality Requirements.

**1.06 EXISTING CONDITIONS**

- A. The Owner does not warrant the drawings and specifications related to subsurface utility infrastructure. The drawings and specifications do not indicate the locations of public or private utilities.
- B. Contractor shall use their best efforts to locate all underground utilities prior to trenching activities.
- C. Contractor shall carefully hand dig in areas where recommended by the subsurface exploration work.

**PART 2 PRODUCTS**

**2.01 FILL MATERIALS**

- A. General Fill: See Section 31 23 23 - Fill.
- B. Granular Fill: Conforming to SSRBC Article 1004.04; CA-7 or CA-11, except crushed concrete or blast furnace slag is not permitted.
- C. Fine Granular Fill: Conforming to SSRBC Article 1003.04.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that survey bench marks and intended elevations for the work are as indicated.

### **3.02 SUBSURFACE NONDESTRUCTIVE UTILITY LOCATION**

#### A. Pre-Investigative Steps:

1. Job Hazard Nallusis, form review or equal site safety review documentation.
2. Site walk and project scope meeting, review scan locations. Note: look for visible clues such as electrical rooms, service access ports like manholes and other utility boxes, visible conduits, etc.
3. Site contact interview, review known utilities, discuss possible unknowns and anticipated critical targets. Review site post scan scope of work.
4. Type of Markings (paint, flag, other).
5. Client deliverable requirements, report format/documentation. GPS mapping of site findings.

#### B. Scanning Procedures:

1. Quality of scan data
  - a. Calibrate the GPR system to the site conditions.
  - b. Perform several test scans through the scan area to determine approximate maximum depth penetration and to gauge the probability of success in finding the desired targets.
  - c. Review the clarity of the scan data. Adjust the gain, depth range, filters and other settings as necessary.

#### C. Investigation procedures.

1. Confirm information from the pre-investigation data.
2. Scan and mark with electromagnetic locator.
  - a. Trace all utilities. Building, water, electric, gas, sanitary sewer, communication lines and other found utilities and structures.
  - b. Use EM locator at visible features
  - c. Use direct connection method when possible.
  - d. Use induction clamp if direct connection is not possible or recommended.
  - e. Use induction method if induction clamp is not possible.
  - f. After connecting or inducing with the transmitter, use the receiver to complete a full 360 degree sweep around the connection point.
  - g. Mark and trace all potential fields that are detected.
  - h. During this sweep, measure mA levels on the receiver in order to assist in identifying target lines.
  - i. Identify the target line by tracing it to the connection point and at least to the next feature.
  - j. After tracing and marking any utility, sweep parallel to the utility on both sides in order to check for laterals/T's.
  - k. Use EM receiver to attempt to locate any unidentified, known utilities from features using passive modes (Power/Radio)
  - l. Sweep using passive modes parallel to the utility on both sides in order to check for laterals/T's.
3. Scan with GPR standard utility antenna, typical frequency 400 MHz or 350 Hyper stacking antenna.

- a. Calibrate GPR settings to current site conditions.
  - b. Use GRPR to attempt to locate any unidentified , known utilities.
  - c. Collect scans with GPR parallel to any marked utility in order to check for laterals/T's.
  - d. Document any known utilities that could not be located.
  - e. Perform passive sweeps with electromagnetic locator to locate unknown utilities.
  - f. Sweep all areas in a grid with spacing determined by site conditions.
  - g. Sweep separately with Power mode and Radio mode (and Cathodic Protection mode when applicable).
  - h. Collect GPR scans to locate unknown utilities.
  - i. Scan all areas in a grid with spacing determined by site conditions.
  - j. Collect GPR scans across all previously located utilities to confirm locations and approximate depths.
  - k. Document findings with photos and additional reports/mapping if required.
4. Post investigation hand off.
- a. Recap and review findings with Contractor.
  - b. Explain scan findings, where did the technologies work and make recommendations for hand digging in areas of concern.
  - c. Explain markings and depths estimates.

### **3.03 PREPARATION**

- A. Identify required lines, levels, contours, and datum locations.
- B. Grade top perimeter of trenching area to prevent surface water from draining into trench. Provide temporary means and methods, as required, to maintain surface water diversion until no longer needed, or as directed by the Architect/Engineer.

### **3.04 TRENCHING**

- A. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume work.
- B. Slope banks of excavations deeper than 4 feet to angle of repose or less until shored.
- C. Do not interfere with 45 degree bearing splay of foundations.
- D. Cut trenches wide enough to allow inspection of installed utilities.
- E. Hand trim excavations. Remove loose matter.
- F. Remove large stones and other hard matter that could damage piping or impede consistent backfilling or compaction.
- G. Remove excavated material that is unsuitable for re-use from site.
- H. Remove excess excavated material from site.
- I. Provide temporary means and methods, as required, to remove all water from trenching until directed by the Architect/Engineer. Remove and replace soils deemed unsuitable by classification and which are excessively moist due to lack of dewatering or surface water control.
- J. Determine the prevailing groundwater level prior to trenching. If the proposed trench extends less than 1 foot into the prevailing groundwater, control groundwater intrusion with perimeter drains

routed to sump pumps, or as directed by the Architect/Engineer.

- K. Pump out accumulated water in excavated trenches.
- L. Obtain, erect, maintain and remove signs, covers, barricades, flagmen and other control devices necessary for the purpose of diverting, regulating, warning or guiding pedestrian and vehicular traffic at open excavations.
  - 1. Placement and Maintenance of Traffic Control Devices: In accordance with SSRBC Article 107.14 and with applicable parts of SSRBC Division 700.

### **3.05 PREPARATION FOR UTILITY PLACEMENT**

- A. Cut out soft areas of subgrade not capable of compaction in place. Backfill with general fill.
- B. Compact subgrade to density equal to or greater than requirements for subsequent fill material.
- C. Until ready to backfill, maintain excavations and prevent loose soil from falling into excavation.

### **3.06 BACKFILLING**

- A. Backfill to contours and elevations indicated using unfrozen materials.
- B. Employ a placement method that does not disturb or damage other work.
- C. Systematically fill to allow maximum time for natural settlement. Do not fill over porous, wet, frozen or spongy subgrade surfaces.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Granular Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- F. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- G. Slope grade away from building minimum 2 inches in 10 feet, unless noted otherwise. Make gradual grade changes. Blend slope into level areas.
- H. Correct areas that are over-excavated.
  - 1. Thrust bearing surfaces: Fill with concrete.
  - 2. Other areas: Use general fill, flush to required elevation, compacted to minimum 97 percent of maximum dry density.
- I. Compaction Density Unless Otherwise Specified or Indicated:
  - 1. Under paving and similar construction: 98 percent of maximum dry density.
  - 2. At other locations: 95 percent of maximum dry density.
- J. Reshape and re-compact fills subjected to vehicular traffic.

### **3.07 BEDDING AND FILL AT SPECIFIC LOCATIONS**

- A. Use general fill unless otherwise specified or indicated.
- B. Conduits:
  - 1. Bedding: Use fine granular fill.
  - 2. Cover with general fill for lawn or planted areas.

3. Cover with granular fill for paved areas.
4. Fill up to subgrade elevation.
5. Compact in maximum 8 inch lifts to 95 percent of maximum dry density under lawn or planted areas.
6. Compact in maximum 6 inch lifts to 98 percent of maximum dry density under paved areas.

### **3.08 ASPHALT PATCHING**

- A. In areas where trenching is performed through existing parking lots, contractor is required to infill trench with gravel underlayment and asphalt paving to the same thickness of removed asphalt.
- B. Provide stripping where trenching and patching cause removal of existing parking stripping.

### **3.09 TOLERANCES**

- A. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.
- B. Top Surface of Backfilling Under Paved Areas: Plus or minus 1 inch from required elevations.

### **3.10 CLEANING**

- A. Leave unused materials in a neat, compact stockpile.
- B. Remove unused stockpiled materials, leave area in a clean and neat condition. Grade stockpile area to prevent standing surface water.
- C. Leave borrow areas in a clean and neat condition. Grade to prevent standing surface water.

**END OF SECTION**

**SECTION 32 91 19  
LANDSCAPE GRADING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Topsoil and seed placement.
- B. Finish grading.

**1.02 SUBMITTALS**

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

**PART 2 PRODUCTS**

**2.01 MATERIALS**

- A. Topsoil and seed blanket. Topsoil excavated on-site. Seed blanket trenched and foundation demolition areas.
  - 1. Free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds and foreign matter.
  - 2. Comply with ASTM D2487 Group Symbol OH.

**PART 3 EXECUTION**

**3.01 EXAMINATION**

- A. Verify grading and intended elevations are as indicated on drawings.
- B. Verify absence of standing or ponding water.

**3.02 PREPARATION**

- A. Protect site features to remain, including survey control points, existing structures, fences, sidewalks, paving, and curbs.
- B. Protect trees, plants, lawns, rock outcroppings, and other features to remain.
- C. Remove debris, roots, branches, stones, in excess of 1/2 inch in size.
- D. Scarify surface to depth of 3 inches.

**3.03 TOPSOIL PLACEMENT**

- A. Uniformly distribute and spread topsoil.

**3.04 FINISH GRADING**

- A. Maintain profiles and contour of subgrade.
- B. Remove roots, weeds, rocks, and foreign material while spreading.
- C. Maintain uniform topsoil thickness.
- D. Lightly compact placed topsoil.

E. Maintain stability of topsoil during inclement weather. Replace eroded topsoil.

**END OF SECTION**