

Summary

McHenry County College requests proposals from companies to provide Parking Lot Reconstruction and Addition.

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| Date Issued: | November 6, 2018 |
| Service Requested: | Parking Lot E Reconstruction & Parking Lot F Addition |
| IFB Closing Date/Time: | January 9, 2019 – 1:00 P.M. |
| IFB Contact: | Jennifer Jones, Director for Business Services JJONES@MCHENRY.EDU |

Proposals must be sealed and delivered to the attention of Jennifer Jones, Director for Business Services, McHenry County College, 8900 US Highway 14, Crystal Lake, IL 60012 on or before January 9, 2019, 1:00 P.M. CST.

All bidders shall attend a mandatory pre-bid meeting site walk through.

All late proposals will be rejected.

All proposals must be signed by a duly authorized representative of the firm.

All unsigned proposals will be automatically rejected.

SPECIAL NOTE: This Invitation for Bid (IFB) does not obligate McHenry County College (MCC) or its Board of Trustees to award a contract or complete the proposed project, and each reserves the right to cancel this IFB if it is considered to be in its best interest. Proposals must be clear and concise. Proposals that are difficult to follow or that do not conform to the IFB format or binding specifications may be rejected. Responding vendors must include the required information called for in this IFB. MCC reserves the right to reject a proposal if required information is not provided or is not organized as directed. MCC also reserves the right to change the evaluation criteria or any other provision in this IFB by posting notice of the change(s) on MCC's IFB website, www.mchenry.edu/bid. For this IFB, posting on the captioned website above constitutes written notification to each vendor. Vendors should check the site daily and are expected to review information on the site carefully before submitting a final proposal.

McHenry County College administration will evaluate all proposals. A recommendation to enter into an agreement with the successful bidder will be presented to the Board of Trustees at the January 2019 board meeting.

We appreciate your interest in McHenry County College and look forward to your response.



INVITATION FOR BID

Parking Lot E Reconstruction & Parking Lot F Addition

IFB #011019

Issue Date: November 6, 2018

IFB Response Deadline: January 9, 2019

McHenry County College
8900 US Highway 14
Crystal Lake, Illinois 60012-2761
Telephone: (815) 455-3700

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1.0 GENERAL REQUIREMENTS

1.1 Introduction: McHenry County College (hereinafter "MCC") is inviting responsible Vendors (hereinafter "Bidder" or "Contractor") to submit bids for a Parking Lot E Reconstruction and Parking Lot F Addition Project. A more complete description of the supplies and/or services sought is provided in the Bid Specifications of the IFB. If you are interested and able to meet these requirements, we would appreciate and welcome a bid. This IFB will set forth any evaluation criteria to be used in determining product or service acceptability. It may require the submission of bid samples, descriptive literature, technical data, references, licenses, or other information or material.

1.2 Background: McHenry County College (MCC) is a community college offering prebaccalaureate programs for students planning to transfer to a four-year university, occupational education leading directly to employment, adult education and literacy programs, work force and workplace development services, and support services to help students succeed. McHenry County College serves one of the fastest growing counties in Illinois. MCC is located forty-five miles northwest of downtown Chicago, the college is committed to providing high quality, need-based educational and training opportunities to adult residents of Community College District 528. Nearly 250,000 residents live within the MCC district boundaries. The college has one campus. The campus is located at 8900 U.S. Highway 14, Crystal Lake, IL 60012, with an additional corporate training facility at the Shah Center in McHenry, IL.

1.3 Contact Information/Bid Submission: The contact, identified below, is the sole point of contact regarding the IFB from the date of issuance until selection of the successful vendor.

Ms. Jennifer Jones
Director of Business Services
McHenry County College
8900 US Highway 14
Building A, Room 246
Crystal Lake, IL 60012
Email: jjones@mchenry.edu

1.4 Term of Contract: Contract begins upon issuance of the notice of award.

1.5 Minimum Bidder Qualifications: The following minimum qualifications must be met by each bidder: The Bidder shall have previous experience in construction of parking lots and possess manpower and equipment, financial resources, and an organization as herein specified to perform the type, magnitude, and quality of work specified. The MCC reserves the right to disqualify the low bidder if their work experience is deemed inadequate.

- 1.6 Key Event Dates:** The following dates are set forth for information and planning purposes; however, MCC reserves the right to change the dates.

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| MCC Issues IFB | November 6, 2018 |
| Last day to send question/clarifications to jjones@mchenry.edu | December 17, 2018 |
| Addendum posted to www.mchenry.edu/bid | December 19, 2018 |
| Bids End Date/Location to Submit Bids | January 9, 2019, 1:00pm Jennifer Jones McHenry County College 8900 US Highway 14 Bldg A, Room 246 Crystal Lake, IL 60012 |
| Bid Opening Date/Location | January 10, 2019, 8:00 am McHenry County College 8900 US Highway 14 Bldg A, Board Room #217 Crystal Lake, IL 60012 |
| Recommendation to Board of Trustees | January 24, 2019 |
| Notification of Award | February 1, 2019 (tentative) |
| Pre-Construction Meeting | May 6, 2019 (tentative) |
| Substantial Completion | July 19, 2019 (tentative) |
| Final Payment | September 27, 2019 (tentative) |
| Project Manager | Todd Wheeland, 815-455-8564 |

2.0 BID SUBMISSION

- 2.1 Examination of Solicitation Documents and Explanation to Bidders:** Bidders are responsible for examining the solicitation documents and any addenda issued, to become informed as to all conditions that might in any way affect the cost or performance of any work. Failure to do so will be at the sole risk of the bidder. Should the bidder find discrepancies in or omissions from the solicitation documents, or should their intent or meaning appear unclear or ambiguous, or should any other question arise relative to the solicitation documents, the bidder shall promptly notify the project contact via email. The bidder making such request will be solely responsible for its timely receipt by the project contact. Replies to such notice may be made in the form of an addendum to the solicitation.
- 2.2 Submission:** The submission of a response shall be *prima facie* evidence that the vendor has full knowledge of the scope and nature of the project requirements. Faxed and Email Bids ARE NOT acceptable. All Attachments in Section 6.0 must be returned with the bid. All pricing should be included on the Bid Submission Form in Section 6.0.

- 2.3 Interpretation or Representations:** MCC assumes no responsibility for any interpretation or representations made by any of its officers or agents unless interpretations or representations are incorporated into a formal written addendum to the solicitation.
- 2.4 Addenda:** The only method by which any requirement of this solicitation may be modified is by written addendum. All addenda to the bid document will be emailed to the prospective bidders. MCC is not responsible if a vendor does not receive the proposal revision in time to include the information with the proposal submission. Addenda shall be acknowledged by signature and included with the bid submission.
- 2.5 Bid Preparation Costs:** The costs for developing and delivering responses to this IFB are entirely the responsibility of the bidder. The University is not liable for any expense incurred by the bidder in the preparation and presentation of their bid or any other costs incurred by the bidder prior to execution of a Purchase Order or Contract.
- 2.6 Cancellation of IFB:** If the Director of Business Services determines that it is in MCC's best interest, he/she reserves the right to do any of the following:
- Cancel this IFB
 - Modify this IFB in writing as needed
 - Reject any or all proposals received in bid to this IFB
- 2.8 Evaluation:** MCC intends to award this bid to the lowest, responsive, responsible bidder. In determining the responsibility of the bidder, MCC will include, but not be limited to, the following considerations:
1. The quality and range of services the firm proposes to provide.
 2. Prior, equivalent work experience within higher education.
 3. The ability to provide service in an expedient and efficient manner.
 4. The firm's overall experience, reputation, expertise, stability and financial responsibility.
 5. The extent to which the goods or services meet MCC needs.
 6. The experience and qualifications of the staff that will be assigned to service MCC's account.
 7. The provider's ability to assist MCC in meeting the overall goals of IFB.
 8. The firm/vendor's past relationship with MCC, if any.
 9. Any other relevant factor that a business entity would consider in selecting a firm/vendor.
- 2.9 Award of Contract:** The successful bidder will be notified within three business days by email or telephone of their award of contract following the Board of Trustees meeting. The vendor may not assign, sell, or otherwise transfer its interest in the contract award or any part thereof without express written permission from MCC. This bid will be awarded in its entirety to one vendor.

- 3.0 INSTRUCTION TO BIDDERS:** Read the following instructions carefully before submitting any bid. Failure to follow these instructions and the rules may result in the rejection of your bid. MCC reserves the right to reject any and all bids, to waive minor immaterial irregularities, informalities or technicalities, to advertise for new bids, or to request confirmation or clarification from any bidder regarding a bid.
- 3.1 Bid Format and Content:** In order for MCC to evaluate bids fairly and completely, bidders must follow the format set forth herein and must provide all of the information requested. All items identified in the following list must be addressed as concisely as possible in order for a bid to be considered complete. Failure to conform to the stated requirements may necessitate rejection of the bid.
- 3.2 Cover Letter.** The cover letter must confirm that the **bidder understands all the terms and conditions contained in this IFB and will comply with all the provisions of this IFB** and should the contract be awarded to your company, you would be prepared to begin services upon contract approval from MCC. The cover letter must include the full contact information of the person(s) MCC shall contact regarding the bid. A bidder representative authorized to make contractual obligations must sign the cover letter. The letter must also state whether or not subcontractors will be used.
- 3.3. Experience & Operational Plan.** Bidders must describe their capabilities to provide the services requested in this IFB by providing the following:
- A description of Bidder's experience as required in this bid.
 - Relevant samples/portfolio of related work, preferably in higher education.
 - Staffing and operational plan for this contract.
 - Staging of the project and a description of equipment to be used.
 - The name, address, work and credentials of any subcontractors who will be performing work.
- 3.4 Biographies of the Account Team.** Bidders must include the biographies of the account team who will be assigned to the project.
- 3.5 Pricing.** All pricing should be inclusive of all related fees, costs, etc. The college is not responsible for, nor will the College pay, for any costs associated with the bid that are not included in the bid submission.
- 3.6 Packaging of Response:** Please submit one (1) copy of the bid. Additionally, please submit the bid electronically on a flash drive. The bid documents, must be submitted by mail, hand delivery, overnight carrier or certified mail in a package sealed and labeled showing the following information on the outside:
- Bidder's complete name and address
 - Solicitation Number
 - Bid Due Date and time
 - Sealed Bid

- 3.7 Late Bids:** *Regardless of cause, late bids will not be accepted and will automatically be disqualified from further consideration.* It shall be the bidder's sole risk to assure delivery at the designated office by the designated time. Late bids will not be opened and may be returned to the bidder at the expense of the bidder or destroyed if requested.
- 3.8 Bidder's Signature:** The bid submission form must be signed in ink by an individual authorized to legally bind the business submitting the bid. The bidder's signature on a bid in response to this IFB guarantees that the offer has been established without collusion and without effort to preclude MCC from obtaining the best possible supply or service.
- 3.9 Bid Opening:** MCC will publicly open all bids that are submitted immediately after the official Bid closing time and will record the names and other information specified by law and rule. All bids become the property of MCC and will not be returned except in the case of a late submission.
- 3.10 Responders' Costs:** The cost of developing a bid for this IFB belongs solely to the bidder and may not be charged to MCC.
- 3.11 Specifications:** General specifications are attached hereto and the bidders are expected to meet these specifications. Competition is invited on this bid; however, bidders are advised that McHenry County College reserves the right to reject any or all bids.
- 3.12 Bid Price:** Bid prices shall include all labor (including any additional charges for overtime or off-hour work). Said work will be above and beyond the scope of this bid. Bid prices shall also include all material. No sales tax shall be included because McHenry County College is tax exempt and McHenry County College will present the winning bidder with the tax exempt certification after awarding the bid. McHenry County College requires the breakdown of the various costs enumerated in the bid form be made a part of this bid package. Any bidder that does not fully provide all required information may be deemed to be a non-responsive bid at the sole discretion of McHenry County College.
- 3.13 Withdrawal of Offer:** Bidders shall quote firm prices with prices not to be withdrawn for a period of 60 days from the date that the bids are due.
- 3.14 Rejection of Offers:** McHenry County College reserves the right to reject any or all bids and to waive minor irregularities.
- 3.15 Insurance:** Prior to commencing the project, the Contractor shall provide McHenry County College with a Certificate of Insurance, naming McHenry County College as additional insured, which shall evidence the coverage as required by the Project Manual.

- 3.16 Bid, Performance and Payment Bond:** Contractor shall submit with its bid a Bid Bond in the amount of ten (10%) of the contract price. Upon award, Contractor shall procure and submit a performance bond and payment bond for the full amount of the contract price. Prior to commencement of any work on the Project, Contractor shall submit insurance and bonds. Any provisions contained within the bonds creating a condition precedent for Owner, or abrogating Owner's rights or remedies otherwise available in contract or law, are void. Bond forms attached in Section 6.
- 3.17 Lien Waivers:** Upon completion of the work, Contractor shall provide McHenry County College with appropriate Lien Waivers to cover the total cost of the construction of the parking lot including all costs for work performed by any Sub-Contractors. A Verified Schedule of subcontractors and materialmen identifying the name, address, the amount due and to become due in accordance with the Illinois Mechanics Lien Act is required.
- 3.18 Labor:** Contractor must be the primary contractor for the work performed and shall provide owner a list of Ten (10) references of similar projects in the Illinois area that they have performed.
- 3.19 Liquidated Damages:** Provisions for liquidated damages, if any, are set forth in the Agreement.

4.0 GENERAL TERMS AND CONDITIONS

- 4.1 Applicability:** These general terms and conditions will be observed in preparing the proposal to be submitted.
- 4.2 Purchase:** After notice of the award, purchase will be put into effect by means of purchase orders or suitable contract documents executed by the Director of Business Services.
- 4.3 Recycled Materials:** McHenry County College is required to purchase products incorporating recycled materials whenever technically and economically feasible. Contractors are encouraged to offer products with recycled content which meet specifications conforming to Illinois State Statue 20/30.1 pertaining to public community colleges.
- 4.4 Right to Cancel:** MCC may cancel contracts resulting from this IFB at any time for a breach of any contractual obligation by providing the contractor with thirty-calendar day's written notice of such cancellation. Should MCC exercise its right to cancel, such cancellation shall become effective on the date as specified in the notice to cancel.
- 4.5 Taxes:** MCC is exempt from all federal excise, state and local taxes unless otherwise stated in this document. In the event taxes are imposed on the services

purchased, MCC will not be responsible for payment of the taxes. The vendor shall absorb the taxes entirely. Upon request, MCC's Tax Exemption Certificate will be furnished.

- 4.6 Proprietary Information:** Bidder should be aware that the contents of all submitted bids are subject to public review and will be subject to the Illinois Freedom of Information Act ["FOIA"]. All information submitted with your bid will be considered public information unless bidder identifies all proprietary information in the proposal by clearly marking on the top of each page so considered, "Proprietary Information" or "Confidential." Should a FOIA request be received by MCC for "Proprietary Information" or "Confidential" information submitted in your bid proposal, MCC will promptly notify you. You shall then indicate in writing to MCC your intent to assume the defense, cost, expense of the defense including attorney fees as well as any penalty awarded arising out of any demand for "Proprietary Information" or "Confidential" information and provide adequate security to protect the financial interest of MCC for that undertaking as well as indemnify MCC should an adverse judgment be awarded. In the absence of such agreement, bidder waives any and all claims of "Proprietary Information" or "Confidential" information with the understanding that MCC will supply the requested information in accordance with the FOIA request.
- 4.7 Retention of Documentation:** All bid materials and supporting documentation that is submitted in response to this proposal becomes the permanent property of MCC.
- 4.8 Indemnification:** The Contractor shall protect, indemnify and hold MCC harmless against any liability claims and costs for injury to or death of any person or persons and for loss or damage to any property occurring in connection with or in any incident to or arising out of occupancy, use, service, operations or performance of work in connection with the contract, resulting in whole or in part from the negligent acts or omissions of the Contractor.
- 4.9 Successors and Assigns:** Contractor shall not assign any rights under or interest in the contract award without the prior written consent of the Owner. This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors and assigns.
- 4.10 Substitutes to Specifications:** Consideration will be given to alternatives if they are a standard manufactured item as evidenced by literature and specifications enclosed with this bid document. A demonstration may be requested. Submit complete specifications for any substitute offered. A complete disqualification could result without these reference materials attached. Indicate warranty specifications that apply to the items included in your bid.
- 4.11 Disclosure:** Contractors shall note any and all relationships that might be a conflict of interest and include such information with the bid.

- 4.12 Terms of Payment:** MCC operates under terms of payment for work completed and product delivered within Net 30 days from date of invoice. All payments of invoices need to be approved on a monthly basis. In no case will MCC agree to late fees prior to 60 days before payment is received, this is based on State Statutes for State funded entities.
- 4.13** Contractor represents that it does not discriminate in its hiring practices based upon race, color, religion, sex, marital status, national origin or ancestry, age, physical or mental handicap unrelated to ability, or an unfavorable discharge from military service. Contractor shall assure the Owner that Subcontractors shall not discriminate as set forth in this paragraph. 775 ILCS 5/2-1053; 44 Ill. Admin. Code Section 750 et seq. Contractor shall (1) refrain from unlawful discrimination and discrimination based on citizenship status in employment and undertake affirmative action to assure equality of employment opportunity and eliminate the effects of past discrimination; (2) Comply with the procedures and requirements of the Department's regulations concerning equal employment opportunities and affirmative action; (3) Provide such information, with respect to its employees and applicants for employment, and assistance as the Department may reasonably request.
- 4.14** Contractor represents that it has in place a Sexual Harassment Policy in accordance with the Illinois Human Rights Act and shall assure the Owner that Subcontractors shall have in place a Sexual Harassment Policy prior to commencement of work on the Project. 775 ILCS 5/1-105. The written sexual harassment policies shall include, at a minimum, the following information: (i) the illegality of sexual harassment; (ii) the definition of sexual harassment under State law; (iii) a description of sexual harassment, utilizing examples; (iv) the vendor's internal complaint process including penalties; (v) the legal recourse, investigative and complaint process available through the Department and the Commission; (vi) directions on how to contact the Department and Commission; and (vii) protection against retaliation as provided by Section 6-101 of this Act. A copy of the policies shall be provided to the Owner or Department of Human Rights upon request.
- 4.15** Contractor represents that it is in conformance with the Drug Free Workplace Act. 30 ILCS 580/1 et seq.
- 4.16** Contractor by execution of this Agreement certifies it is not barred from contracting as a result of bid rigging or bid rotation. 720 ILCS 5/33 E-11.
- 4.17** Contractor by execution of this Agreement agrees to provide Owner the name of each employee who may have directly daily contact with students, and such additional information as is necessary and authorizes Owner's to submit such information to the State Police and other state agencies. Such information will be submitted for a criminal history records check and a check of the Statewide Sex

Offender Database. Such investigation shall be performed at the Owner expense. 105 ILCS 5/10-21.9(f).

- 4.18** Contractor agrees by the execution of this agreement to give preference in employment and appointment to persons who have been members of the armed forces of the United States or who, while citizens of the United States, were members of the armed forces of allies of the United States in time of hostilities with a foreign country in accordance with the Veterans Preference Act. 330 ILCS 55.
- 4.19 Prevailing Wage Law:** Contractor acknowledges that this is a public works project governed by the Illinois Prevailing Wage Act. Contractor shall pay its laborers if any and assure the Owner that Subcontractors shall pay its laborers not less than the established prevailing rate of wages. 820 ILCS 130/1 et seq. Contractor shall comply with all reporting requirements of the Illinois Prevailing Wage Act. Similarly, the Contractor shall assure owner that all Subcontractors and sub-tier subcontractors comply with the reporting requirements of the Illinois Prevailing Wage Act. Contractor and each sub-tier shall with each pay application submit certified payroll records as required by 820 ILCS 130/5.
- 4.20 Testing of Materials:** Refer to complete specification requirements contained in Section 5.0, Division 01-1400 Quality Requirements. The Owner will employ and pay for services of an independent testing agency to perform specified testing and inspection of geotechnical/soils related activities.
- 4.21 Construction Staking:** Refer to complete specification requirements contained in Section 5.0, Division 01-1710. The contractor should include with their bid construction staking services. Contractor may use HR Green or any other competent licensed land surveyor to complete this task.

5.0 SPECIFICATIONS

DIVISION 1

GENERAL REQUIREMENTS

SECTION 01100
SUMMARY

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Work covered by the Contract Documents.
 - 2. Type of Contracts.
 - 3. Work under other contracts.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification:
MCC Parking Lot E Reconstruction & Parking Lot F Addition
- B. Project Location: 8900 U.S. Route 14, Crystal Lake, IL 60012
- C. Owner: (OWNER)
 - 1. McHenry County College
8900 U.S. Route 14
Crystal Lake, IL 60012-2761
Ph: (815) 455-8564
- D. Engineer: (ENGINEER)
 - 1. HR Green, Inc.
420 Front Street, Suite 100
McHenry, Illinois, 60050
Phone (815) 759-8363
Engineer's Representative: Joe Vavrina – Project Manager
- E. The project includes the reconstruction of an approximate +/- 276 parking stall parking lot which includes a 30 stall parking lot addition for McHenry County College. General construction for the parking lot reconstruction/addition project includes, but not limited to, installation of storm sewers, new parking lot lighting system, and complete removal and replacement of the parking lot, along with the other work associated with the project as outlined in the plans and specifications.

1.03 TYPE OF CONTRACT

- A. Project will be constructed under a Unit Price Contract with OWNER.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01100

SECTION 01140
WORK RESTRICTIONS

PART 1 – GENERAL

1.01 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated. Do not disturb portions of site beyond areas in which the Work is indicated. Conduct operations to ensure least inconvenience to Owner and Students.
- B. Storage Space: Use of existing College owned land for storage of equipment and materials. The College will allow the Contractor to use the open space as identified in the plans. Obtain and pay for use of additional storage or Work areas needed for operations at no additional cost to Owner.
- C. Construction Hours: Limit construction operations to the following hours unless otherwise approved by the City of Crystal Lake: 7:00 a.m. to 7:00 p.m. on weekdays. Keep noise at a minimum during the early morning hours.
- D. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to owner, owner's employees, students, school buses, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Coordinate with college ahead of time when driveways/parking areas are to be temporarily out of service.
- E. Protection of Pavement: The traveled surfaces and structures on or adjacent to the work shall be protected, in a manner satisfactory to the Engineer, from damage by lugs or cleats on treads or wheels of equipments.
- G. Easements: Easements for the existing and proposed utilities, both public and private, and utilities within public rights-of-way are shown on the plan according to available records.

1.02 ILLINOIS DEPARTMENT OF TRANSPORTATION - Omitted

1.03 UTILITIES

- A. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
- B. The Contractor shall be responsible for notifying all utilities prior to construction and determining the exact location in the field of these utility lines and their protection from damage due to construction operations. If during construction the Contractor damages any existing utility lines, the Contractor shall be responsible for the expeditious repair of damages.
- C. ComEd, AT&T, Nicor Gas, Comcast, and others have underground and/or overhead service facilities in the vicinity of the proposed work. The Contractor shall call J.U.L.I.E. at (800) 892 – 0123 for utility locations.
- D. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
- E. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

- F. If existing utility lines of any nature are encountered which conflict in location with new construction, the Contractor shall notify the Engineer so that the conflict may be resolved. If the conflict requires a change to the Plans, construction shall not be undertaken until such changes are approved by the Engineer in writing.
- G. If drain tiles are encountered in the field, the Contractor shall notify the Engineer and Owner of the finding. The drain tiles shall be repaired such that it continues to drain as originally intended.
- H. The Contractor is responsible for stabilizing utility poles during construction without any interruption to service. All stabilization performed by the Contractor shall be considered incidental to the cost per linear foot of installing sanitary sewer.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01140

SECTION 01250
CONTRACT MODIFICATION PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

1.02 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Engineer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
1. Proposal Requests issued by Engineer are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
 2. Within 10 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
 - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change.
1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
 2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

1.03 CONSTRUCTION CHANGE DIRECTIVE

- A. Work Change Directive: Engineer may issue a Work Change Directive on EJCDC Document 1910-8-F, which will be provided by Engineer separately. Work Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Documentation: Maintain detailed records on a time and material basis of work required by the Work Change Directive.
 - 1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01250

SECTION 01290
PAYMENT PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.02 UNIT PRICES

- A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of work required by the Contract Documents increase or decrease.
- B. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- C. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- D. The quantities given in the Engineer's bid proposal are intended as a guide for the Contractor in determining the scope of the completed project. It is the Contractor's responsibility to determine all material quantities and apprise himself of all site conditions.

1.03 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by Engineer and paid for by Owner.
 - 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.
- C. Payment Application Forms: Use EJCDC Document C-620 as form for Applications for Payment. A copy of this is located in the appendix.
- D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Engineer will return incomplete applications without action.
 - 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 - 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

- E. Transmittal: Submit signed and notarized original copies of each Application for Payment to Engineer by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.
 - 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's liens from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
 - 1. Submit partial waivers on each item for amount requested, before deduction for retainage, on each item.
 - 2. When an application shows completion of an item, submit final or full waivers.
 - 3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 - 4. Waiver Delays: Submit each Application for Payment with Contractor's waiver of mechanic's lien for construction period covered by the application.
 - a. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
 - 5. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
 - 1. List of subcontractors.
 - 2. Contractor's Construction Schedule (preliminary if not final).
 - 3. Products list.
 - 4. Submittals Schedule (preliminary if not final).
 - 5. List of Contractor's staff assignments.
 - 6. List of Contractor's principal consultants.
 - 7. Initial progress report.
 - 8. Report of preconstruction conference.
- H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100% completion for portion of the Work claimed as substantially complete.
 - 1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.

2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 1. Evidence of completion of Project closeout requirements.
 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 3. Updated final statement, accounting for final changes to the Contract Sum.
 4. Evidence that claims have been settled.
 5. Final, liquidated damages settlement statement.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01290

SECTION 01320
CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 –GENERAL

1.01 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Preliminary Construction Schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Submittals Schedule.
 - 4. Field condition reports.
 - 5. Special reports.

1.02 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
 - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
 - 2. Predecessor Activity: An activity that precedes another activity in the network.
 - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Milestone: A key or critical point in time for reference or measurement.

1.03 SUBMITTALS

- A. Submittals Schedule: Submit three (3) copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Specification Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Engineer's final release or approval.

- B. Preliminary Construction Schedule: Submit two (2) printed copies; one (1) single sheet of reproducible media, and one (1) print.
- C. Contractor's Construction Schedule: Submit two (2) printed copies of initial schedule, one (1) reproducible print and one (1) blue- or black-line print, large enough to show entire schedule for entire construction period.
 - 1. Submit an electronic copy (CDROM) of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.
- D. Field Condition Reports: Submit two (2) copies at time of discovery of differing conditions.
- E. Special Reports: Submit two (2) copies at time of unusual event.

1.04 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from parties involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 – PRODUCTS

2.01 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, resubmittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
 - 1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
 - a. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
 - 2. At Contractor's option, show submittals on the Preliminary Construction Schedule, instead of tabulating them separately.
 - 3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.02 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures contained in AGC's "Construction Planning & Scheduling."
- B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Final Completion.
 - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.
- C. Activities: Treat each story or separate area as a separate numbered activity for each principal element of the Work. Comply with the following:
 - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Engineer.
 - 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 45 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 - 3. Submittal Review Time: Include review and resubmittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 - 4. Startup and Testing Time: Include not less than five days for startup and testing.
 - 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Engineer's administrative procedures necessary for certification of Substantial Completion.
- D. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.
 - 1. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Submittals.
 - b. Deliveries.
 - c. Tests and inspections.
 - d. Adjusting.
 - e. Startup and placement into final use and operation.
 - 2. Other Constraints: Schedule work so that all asphalt pavement patching is complete on or before November 15, of the year that construction is started.
- E. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion.
- F. Cost Correlation: At the head of schedule, provide a cost correlation line, indicating planned and actual costs. On the line, show dollar volume of the Work performed as of dates used for preparation of payment requests.
 - 1. Refer to Division 1 Section "Payment Procedures" for cost reporting and payment procedures.

- G. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragnets to demonstrate the effect of the proposed change on the overall project schedule.

2.03 PRELIMINARY CONSTRUCTION SCHEDULE - Omitted

2.04 CONTRACTOR'S CONSTRUCTION SCHEDULE (GANTT CHART)

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 10 days of date established for the Notice to Proceed. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
 - 1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

2.05 REPORTS

- A. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare a detailed report. Submit with a request for information on CSI Form 13.2A. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.06 SPECIAL REPORTS

- A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.
- B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 – EXECUTION

3.01 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At two week intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
 - 1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 - 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 - 3. As the Work progresses, indicate Actual Completion percentage for each activity.

- B. Distribution: Distribute copies of approved schedule to Engineer/Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 01320

SECTION 01330
SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.

1.02 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Engineer's responsive action.
- B. Informational Submittals: Written information that does not require Engineer's approval. Submittals may be rejected for not complying with requirements.

1.03 SUBMITTAL PROCEDURES

- A. General: Electronic copies of CAD Drawings of the Contract Drawings will not be provided by Engineer for Contractor's use in preparing submittals.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- D. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Engineer's receipt of submittal.
 - 1. Initial Review: Allow 14 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Direct Transmittal to Engineer: Where the Contract Documents indicate that submittals may be transmitted directly to Engineer's consultants, provide duplicate copy of transmittal to Engineer. Submittal will be returned to Engineer before being returned to Contractor.
 - 3. Insert list of submittals below requiring direct transmittal to consultant or delete and identify submittals in the Sections where they are specified. Structural, mechanical, plumbing, and electrical components are examples of the Work that often require direct transmittal to consultants.

4. If intermediate submittal is necessary, process it in same manner as initial submittal.
 5. Allow 10 days for processing each resubmittal.
 6. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- E. Identification: Place a permanent label or title block on each submittal for identification.
1. Indicate name of firm or entity that prepared each submittal on label or title block.
 2. Provide a space approximately 4 by 5 inches on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.
 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Engineer.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Unique identifier, including revision number.
 - i. Number and title of appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Other necessary identification.
- F. **Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.**
- G. Additional Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Engineer.
 2. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.
- H. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will discard submittals received from sources other than Contractor.
1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
 2. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.

3. Submittal Transmittal Form: Available from Engineer with Notice of Award.
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Use only final submittals with mark indicating action taken by Engineer in connection with construction.

PART 2 – PRODUCTS

2.01 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
 1. Number of Copies: Submit copies of each submittal, as follows, unless otherwise indicated:
 - a. Initial Submittal: Submit a preliminary single copy of each submittal where selection of options, color, pattern, texture, or similar characteristics is required. Engineer will return submittal with options selected.
 - b. Final Submittal: Submit six copies, unless copies are required for operation and maintenance manuals. Engineer will retain four copies; remainder will be returned. Mark up and retain one returned copy as a Project Record Document.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
 1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Manufacturer's catalog cuts.
 - e. Wiring diagrams showing factory-installed wiring.
 - f. Printed performance curves.
 - g. Operational range diagrams.
 - h. Standard product operating and maintenance manuals.
 - i. Compliance with recognized testing agency standards.
 - j. Application of testing agency labels and seals.
- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
 1. Preparation: Include the following information, as applicable:
 - a. Dimensions.

- b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - e. Design calculations.
 - f. Compliance with specified standards.
 - g. Notation of dimensions established by field measurement.
- 2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
- 3. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 24 by 36 inches.
- 4. Number of Copies: Submit copies of each submittal, as follows:
 - a. Initial Submittal: Submit two blue- or black-line prints. Engineer will return one print.
 - b. Final Submittal: Submit six blue- or black-line prints, unless prints are required for operation and maintenance manuals. Engineer will retain four prints; remainder will be returned. Mark up and retain one returned print as a Project Record Drawing.
- D. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."
- E. Application for Payment: Comply with requirements in Division 1 Section "Payment Procedures."
- F. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
 - 1. Name, address, and telephone number of entity performing subcontract or supplying products.
 - 2. Number and title of related Specification Section(s) covered by subcontract.
 - 3. Drawing number and detail references, as appropriate, covered by subcontract.

2.02 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 - 1. Number of Copies: Submit four copies of each submittal, unless otherwise indicated. Engineer will not return copies.
 - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 3. Test and Inspection Reports: Comply with requirements in Division 1 Section "Quality Requirements."
- B. Contractor's Construction Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."

- C. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
- D. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- E. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:
 - 1. Preparation of substrates.
 - 2. Required substrate tolerances.
 - 3. Sequence of installation or erection.
 - 4. Required installation tolerances.
 - 5. Required adjustments.
 - 6. Recommendations for cleaning and protection.
- F. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
 - 1. Name, address, and telephone number of factory-authorized service representative making report.
 - 2. Statement on condition of substrates and their acceptability for installation of product.
 - 3. Statement that products at Project site comply with requirements.
 - 4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
 - 6. Statement whether conditions, products, and installation will affect warranty.
 - 7. Other required items indicated in individual Specification Sections.

PART 3 – EXECUTION

3.01 CONTRACTOR'S REVIEW

- A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.02 ENGINEER'S ACTION

- A. General: Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return it. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken.
- C. Informational Submittals: Engineer will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.
- D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

END OF SECTION 01330

SECTION 01400
QUALITY REQUIREMENTS

PART 1 –GENERAL

1.01 SECTION INCLUDES

- A. Field Samples.
- B. Mock-ups.
- C. Control of Installation.
- D. Tolerances.
- E. Testing Services.
- F. Manufacturers' Field Services

1.02 REFERENCE STANDARDS

- A. ASTM C1021 - Standard Practice for Laboratories Engaged in Testing of Building Sealants.
- B. ASTM C1077 - Standard Practice for Laboratories Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Laboratory Evaluation.
- C. ASTM C1093 - Standard Practice for Accreditation of Testing Agencies for Masonry.
- D. ASTM D3740 - Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.
- E. ASTM E329 - Standard Specification for Agencies Engaged Construction Inspection and/or Testing.
- F. ASTM E543 - Standard Specification for Agencies Performing Nondestructive Testing.

1.03 FIELD SAMPLES

- A. Install field samples at the site as required by individual specifications Sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field sample is specified in individual Sections to be removed, clear area after field sample has been accepted by Engineer.

1.04 TESTING SERVICES

- A. Owner will employ and pay for services of an independent testing agency to perform specified testing and inspection of asphalt paving, concrete and geotechnical/soils related activities.
- B. Owner may choose to have Engineer perform certain inspection and testing activities in addition to those specified as required by the Contractor. Payment for initial Owner/Engineer inspection and testing will be by Owner. Payment for Owner/Engineer retesting required because of non-conformance to specified requirements will be charged to the Contractor by deducting inspection and testing charges from the Contract Sum.
- C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

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 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 MOCK-UPS – NOT USED

3.03 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place

3.04 TESTING AND INSPECTION

- A. See individual specification sections for testing required.
- B. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Engineer and Contractor in performance of services.
 - 2. Perform inspections, sampling, testing, and other services specified in individual specification sections and as required by the Engineer.
 - 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 - 4. Promptly notify Engineer and Contractor of observed irregularities or non-conformance of Work or products.
 - 5. Perform additional tests and inspections required by Engineer.
 - 6. Submit reports of all tests/inspections specified to Engineer, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- C. Limits on Testing/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
 - 2. Agency may not approve or accept any portion of the Work.
 - 3. Agency may not assume any duties of Contractor.
 - 4. Agency has no authority to stop the Work.
- D. Contractor Responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs, equipment, tools, storage, and assistance as requested.

2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
 3. Provide incidental labor and facilities:
 - a. To provide access to Work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
 - c. To facilitate tests/inspections.
 - d. To provide storage and curing of test samples.
 4. Notify Engineer and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
 5. Make arrangements with testing agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
 6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Engineer. Payment for re-testing will be made by the Contractor.

SECTION 01420
REFERENCES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. "Standard Specifications for Road and Bridge Construction" prepared by the Illinois Department of Transportation and adopted by said department on January 1, 2012. The specification will be referred to throughout this project manual as the IDOT SSRBC.
- C. "Supplemental Specifications and Recurring Special Provisions" adopted by Illinois Department of Transportation on January 1, 2012.
- D. "Standard Specifications for Sewer and Water Main Construction in Illinois", Sixth Edition, July 2009. This specification will be referred to throughout this project manual as the ILLINOIS SEWER SPECS.
- E. "Standard Specifications for Soil Erosion and Sediment Control" adopted by the Illinois Environmental Protection Agency – Illinois Urban Manual.
- F. Subdivision Ordinance of the City of McHenry.
- G. Manual on Uniform Traffic Control Devices.

1.02 DEFINITIONS

- A. General: Basic Contract definitions are included in the Conditions of the Contract.
- B. "Approved": The term "approved," when used in conjunction with Engineer's action on Contractor's submittals, applications, and requests, is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.
- C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by Engineer, requested by Engineer, and similar phrases.
- D. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on Drawings; or to other paragraphs or schedules in Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference.
- E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- F. "Furnish": The term "furnish" means to supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

- G. "Install": The term "install" describes operations at Project site including unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.
- H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.
- I. "Installer": An installer is Contractor or another entity engaged by Contractor, as an employee, subcontractor, or contractor of lower tier, to perform a particular construction operation, including installation, erection, application, and similar operations.
- J. The term "experienced," when used with the term "installer," means having successfully completed a minimum of three previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.
 - 1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.
- K. "Project site" is the space available for performing construction activities, either exclusively or in conjunction with others performing other work as part of Project. The extent of Project site is shown on the Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.03 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of the date of the Contract Documents, unless otherwise indicated.
- C. Conflicting Requirements: Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Engineer for a decision before proceeding.
 - 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to Engineer for a decision before proceeding.
- D. Copies of Standards: Each entity engaged in construction on Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from the publication source and make them available on request.

- E. Abbreviations and Names: Abbreviations and acronyms are frequently used in the Specifications and other Contract Documents to represent the name of a trade association, standards-developing organization, authorities having jurisdiction, or other entity in the context of referencing a standard or publication. The following abbreviations and acronyms, as referenced in the Contract Documents, mean the associated names. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

| | | |
|--------|--|----------------------------------|
| AA | Aluminum Association | (202) 862-5100 |
| AAN | American Association of Nurserymen (See ANLA) | |
| AASHTO | American Association of State Highway and Transportation Officials | (202) 624-5800 |
| ABMA | American Bearing Manufacturers Association (Formerly: Anti-Friction Bearing Manufacturers Association) | (202) 429-5155 |
| ACI | American Concrete Institute | (248) 848-3700 |
| ACIL | ACIL: The Association of Independent Scientific, Engineering, & Testing Firms | (202) 887-5872 |
| ACPA | American Concrete Pipe Association | (972) 506-7216 |
| AEIC | Association of Edison Illuminating Companies | (205) 250-2530 |
| AFBMA | Anti-Friction Bearing Manufacturers Association (See ABMA) | |
| AFPA | American Forest and Paper Association (Formerly: National Forest Products Association) | (800) 878-8878 (202) 463-2700 |
| AGA | American Gas Association | (703) 841-8400 |
| AI | Asphalt Institute | (606) 288-4960 |
| AIA | The American Institute of Engineers | (202) 626-7300 |
| AIA | American Insurance Association | (202) 828-7100 |
| AISC | American Institute of Steel Construction | (800) 644-2400 |
| AISI | American Iron and Steel Institute | (202) 452-7100 |
| AITC | American Institute of Timber Construction | (303) 792-9559 |
| ALA | American Laminators Association (See LMA) | |
| ALCA | Associated Landscape Contractors of America | (800) 395-2522 |
| ALI | Associated Laboratories, Inc. | (214) 565-0593 |

| | | |
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| ALSC | American Lumber Standards Committee | (301) 972-1700 |
| ANLA | American Nursery and Landscape Association (Formerly: American Association of Nurserymen) | (202) 789-2900 |
| ANSI | American National Standards Institute | (888) 267-4783 |
| AOSA | Association of Official Seed Analysts | (402) 476-3852 |
| APA | APA-The Engineered Wood Association (Formerly: American Plywood Association) | (253) 565-6600 |
| APA | Architectural Precast Association | (941) 454-6989 |
| API | American Petroleum Institute | (202) 682-8000 |
| ASC | Adhesive and Sealant Council | (202) 452-1500 |
| ASCE | American Society of Civil Engineers World Headquarters | (800) 548-2723 (703) 295-6000 |
| ASLA | American Society of Landscape Engineers | (202) 898-2444 |
| ASME | American Society of Mechanical Engineers | (800) 843-2763 |
| ASPA | American Sod Producers Association (See TPI) | |
| ASPE | American Society of Plumbing Engineers | (805) 495-7120 |
| ASSE | American Society of Sanitary Engineering | (440) 835-3040 |
| ASTM | American Society for Testing and Materials | (610) 832-9500 |
| AWPA | American Wood-Preservers' Association | (817) 326-6300 |
| AWS | American Welding Society | (800) 443-9353 |
| AWWA | American Water Works Association | (800) 926-7337 |
| CISPI | Cast Iron Soil Pipe Institute | (423) 892-0137 |
| CLFMI | Chain Link Fence Manufacturers Institute | (301) 596-2584 |
| CPA | Composite Panel Association (Formerly: National Particleboard Association) | (301) 670-0604 |
| CPPA | Corrugated Polyethylene Pipe Association | (800) 510-2772 |
| CRSI | Concrete Reinforcing Steel Institute | (847) 517-1200 |
| DIPRA | Ductile Iron Pipe Research Association | (205) 402-8702 |
| EIA | Electronic Industries Association | (703) 907-7500 |
| FM | Factory Mutual System | (781) 762-4300 |

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|-------|---|----------------------------------|
| HI | Hydraulic Institute | (888) 786-7744 |
| HMA | Hardwood Manufacturers Association (Formerly: Southern Hardwood Lumber Manufacturers Association) | (412) 829-0770 |
| HPVA | Hardwood Plywood and Veneer Association | (703) 435-2900 |
| ICEA | Insulated Cable Engineers Association | (508) 394-4424 |
| IEC | International Electrotechnical Commission (Available from ANSI) | (888) 267-4783 (212) 642-4900 |
| IEEE | Institute of Electrical and Electronics Engineers | (800) 678-4333 |
| ISS | Iron and Steel Society | (412) 776-1535 |
| LGSI | Light Gage Structural Institute | (972) 625-4560 |
| NAA | National Arborist Association | (800) 733-2622 |
| NACE | NACE International (Formerly: National Association of Corrosion Engineers) | (281) 492-0535 (281) 492-8254 |
| NAPA | National Asphalt Pavement Association NAPA Building | (888) 468-6499 (301) 731-4748 |
| NCSPA | National Corrugated Steel Pipe Association | (202) 452-1700 |
| NEMA | National Electrical Manufacturers Association | (703) 841-3200 |
| NFPA | National Fire Protection Association | (800) 344-3555 |
| NRMCA | National Ready Mixed Concrete Association | (301) 587-1400 |
| NSF | NSF International (Formerly: National Sanitation Foundation) | (734) 769-8010 |
| PCA | Portland Cement Association | (847) 966-6200 |
| PCI | Precast/Prestressed Concrete Institute | (312) 786-0300 |
| PDI | Plumbing and Drainage Institute | (800) 589-8956 |
| PPFA | Plastic Pipe and Fittings Association | (888) 314-6774 |
| PPI | Plastics Pipe Institute (The Society of the Plastics Industry, Inc.) | (202) 974-5306 |
| SSPC | SSPC: The Society for Protective Coatings | (800) 837-8303 |
| SSPMA | Sump and Sewage Pump Manufacturers Association | (847) 559-9233 |
| SWPA | Submersible Wastewater Pump Association | (847) 729-7972 |

| | | |
|--------|--|----------------------------------|
| UL | Underwriters Laboratories Inc. | (800) 704-4050 |
| UNI | Uni-Bell PVC Pipe Association | (972) 243-3902 |
| WASTEC | Waste Equipment Technology Association | (202) 244-4700 |
| WEF | Water Environment Federation (Formerly: Water Pollution Control Federation) | (800) 666-0206 (703) 684-2400 |
| WPCF | Water Pollution Control Federation (See WEF) | |

- F. Federal Government Agencies: Names and titles of Federal Government standards- or specification-developing agencies are often abbreviated. The following abbreviations and acronyms referenced in the Contract Documents indicate names of standards- or specification-developing agencies of the Federal Government. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

| | | |
|------|--|----------------|
| CE | Corps of Engineers (U.S. Department of the Army) | (202) 761-0660 |
| CFR | Code of Federal Regulations | (202) 512-1800 |
| CPSC | Consumer Product Safety Commission | (800) 638-2772 |
| CS | Commercial Standard (U.S. Department of Commerce) Government Printing Office | (202) 512-1800 |
| DOC | Department of Commerce | (202) 482-2000 |
| DOT | Department of Transportation | (202) 366-4000 |
| EPA | Environmental Protection Agency | (202) 260-2090 |
| FAA | Federal Aviation Administration (U.S. Department of Transportation) | (202) 366-4000 |
| FCC | Federal Communications Commission | (202) 418-0126 |
| FDA | Food and Drug Administration | (301) 443-1544 |
| FHA | Federal Housing Administration (U.S. Department of Housing and Urban Development) | (202) 401-0388 |
| GSA | General Services Administration | (202) 708-5082 |
| MIL | Military Standardization Documents (U.S. Department of Defense) Defense Automated Printing Service | (215) 697-2179 |
| NIST | National Institute of Standards and Technology (U.S. Department of Commerce) | (301) 975-2000 |
| OSHA | Occupational Safety and Health Administration | (202) 219-8148 |

| | | |
|------|--|----------------|
| | (U.S. Department of Labor) | |
| PS | Product Standard of NBS (U.S. Department of Commerce) | (202) 512-1800 |
| TRB | Transportation Research Board, National Research Council | (202) 334-2934 |
| USDA | U.S. Department of Agriculture | (202) 720-8732 |
| USPS | U.S. Postal Service | (202) 268-2000 |

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END OF SECTION 01420

SECTION 01500
TEMPORARY FACILITIES AND CONTROLS

PART 1 –GENERAL

1.01 SUMMARY

- A. Utilities including lighting and electricity, heat, telephone service, and water.
- B. Project identification and temporary signs.
- C. Temporary sanitary facilities.
- D. Cleaning
- E. Staking and Survey
- F. Temporary Aggregate Surface
- G. Temporary Erosion Control Blanket

1.02 USE CHARGES

- A. General: Cost or use charges for temporary facilities are not chargeable to Owner or Engineer and shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, the following:
 - 1. Owner's construction forces.
 - 2. Occupants of Project.
 - 3. Engineer.
 - 4. Testing agencies.
 - 5. Personnel of authorities having jurisdiction.

1.04 PROJECT CONDITIONS

- A. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:
 - 1. Keep temporary services and facilities clean and neat.
 - 2. Relocate temporary services and facilities as required by progress of the Work.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if approved by Engineer. Provide materials suitable for use intended.

2.02 EQUIPMENT

- A. General: Provide equipment suitable for use intended.

2.03 TEMPORARY SANITARY FACILITIES

- A. Provide sanitary facilities in compliance with laws and regulations.
 - 1. Service, clean and maintain facilities and enclosures.
 - 2. Supply toilet tissue and dispenser at each toilet.

PART 3 – EXECUTION

3.01 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY SIGNS

- A. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.
 - 1. Engage an experienced sign painter to apply graphics for Project identification signs. Comply with details indicated.
 - 2. Prepare temporary signs to provide directional information to construction personnel and visitors.
 - 3. Construct signs of exterior-type Grade B-B high-density concrete form overlay plywood in sizes and thicknesses indicated. Support on posts or framing of preservative-treated wood or steel.
 - 4. Paint sign panel and applied graphics with exterior-grade alkyd gloss enamel over exterior primer.
- B. This work shall not be paid for separately but included in the cost for Traffic Control & Protection.

3.04 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
- B. Site: Maintain Project site free of waste materials and debris. When construction operations take place adjacent to public roadways the Contractor shall be responsible for removal of all loose debris deposited on the pavement. Streets shall be
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.

2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Pavement: Clean pavement surfaces and protect as necessary to ensure freedom from damage and deterioration, and accumulation of dirt.
- F. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- G. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- H. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- I. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- J. Progress Cleaning, as directed by the College, shall be considered incidental to the Contract.

3.05 WATER FOR CONSTRUCTION AND TESTING

- A. Contractor shall supply any water required for construction. Water is available from the College.
 1. Secure permission from water utility, obtain necessary permits, and notify Engineer before obtaining water from fire hydrants. Make arrangements and pay costs for water, for connecting to hydrants, and for temporary piping required to transport water to point of use.
 2. Connection to hydrants shall prevent backflow to system. Use only special hydrant operating wrenches to open hydrants. Make certain hydrant valves are open full. If hydrants are damaged, Contractor shall be responsible and shall notify appropriate agency so damage can be repaired as quickly as possible. Fire hydrants shall be completely accessible to Fire Department at all times.

3.06 DEWATERING

- A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.
 1. The Contractor shall be responsible for complying with all State, local, and federal regulatory requirements.
 2. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, that excavation does not flood, and that damage to subgrades and permanent structures is prevented.

3. Prevent surface water from entering excavations by grading, dikes, or other means.
 4. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
 5. Remove dewatering system when no longer required for construction.
- B. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
 2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.
- D. Filtration Devices: The Contractor will be required to filter all water from dewatering operations in all excavated areas throughout the project. The Contractor shall use filter bags or cartridge filter devices similar to the following:
1. Rosedale Bulk Loading Filters, Ann Arbor, MI 1-800-821-5373
 2. Dandy Dewatering Bags 1-888-795-0808
 3. U.S. Fabrics Filter Bags 1-800-518-2290
 4. GSI Sediment Bags 1-414-379-9478
 5. VAF Filter Bags 1-800-759-6554
 6. Or Equal
- E. The Contractor, after providing adequate filtering capabilities, can discharge the filtered water into nearby ditches or storm sewers or natural drainage channels.
- F. Filtered water shall be reasonably free of silt when it is discharged. The Contractor will be required to stop dewatering operations should there be any evidence that the filtering system is not functioning properly or not installed. Silt fencing or other forms of silt containment devices or methods will still be required to prevent any silty water during storm events from being discharged into the adjacent wetland areas/feature pond or tributaries and/or other surface waters.

3.07 TEMPORARY PAVEMENT PATCHING

- A. This Work shall consist of furnishing the labor, material, and equipment to provide and maintain a two (2) inch thick hot-mix asphalt pavement patch over sanitary sewer trenches when final restoration cannot be completed prior to snow plowing activities. Temporary pavement patching, if necessary, shall be considered incidental to the item of work being performed.
- B. Hot-Mix Asphalt for temporary access shall meet N50 mix design requirements. The width of the asphalt for temporary access shall be equal to the width of the existing trench. The Engineer shall approve equipment for placing and compacting the temporary asphalt.

- C. During the course of the contract, the Contractor shall construct and maintain temporary access to the length and width determined by the Engineer. The Contractor shall remove the temporary aggregate surface to permit construction of the hot-mix asphalt pavement patch. Prior to removal, the Engineer shall classify the amount of temporary aggregate which is salvageable. If classified salvageable, the Contractor shall incorporate this material into an approved use. Otherwise, all unsalvageable material shall be disposed of at the Contractor's expense.
- D. This work shall be measured for payment in square yards. The Contractor shall provide individual load tickets to the Engineer clearly indicating that the delivery is for temporary use. The use of combination load tickets from other pay items shall not be permitted and those amounts not designed in writing for temporary access will not be measured for payment.
- E. In the event that the temporary pavement patch or the asphalt for temporary access is deemed deficient as noted the College or authorized individual, the Contractor will be notified of the deficiency. The Contractor had four (4) hours to repair the pavement patch to the satisfaction of the College or authorized individual. Failure to do so will result in a penalty on one hundred dollars per hour (\$100.00/hr) starting four (4) hours from the time of notification.

3.08 TEMPORARY EROSION CONTROL

- A. Erosion Control Blanket shall be used to stabilize the construction areas where the final grade has been reached but cannot be permanently stabilized due to planting season restrictions. Stabilization practices shall be implemented where construction activity has permanently or temporarily ceases as follows:
 - 1. Where the initiation of stabilization measures by the 7th day after construction activities temporarily or permanently ceased is precluded by snow cover, stabilization measures shall be initiated as soon as practical.
 - 2. Where construction activity will resume on a portion of the site within 14 days from when activities ceased. In this case, stabilization measures do not have to be initiated on that portion of the job site by the 7th day after construction activities temporarily ceased.
- B. Temporary Erosion Control, if necessary, shall be considered incidental to the item of work being performed.

END OF SECTION 01500

SECTION 01550
TRAFFIC CONTROL AND PROTECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes warning signs and devices, temporary traffic signals, guardrails, handrails, temporary fencing, flagpersons, and other equipment and materials required to protect vehicular and pedestrian traffic from construction activities.
- B. The Contractor shall be responsible for the installation and maintenance of adequate signs, traffic control devices, and warning devices to inform and protect the public during all phases of construction.

1.02 SUBMITTALS

- A. Traffic Control Schedule:
 - 1. Schedule of lane closures, street closures, parking lot closures, and sidewalk closings, partial closings, and detours.
 - 2. Include procedures for pedestrian and vehicular traffic routing and protection in immediate construction area and surrounding area during working and non-working hours.
 - 3. Update as necessary to keep Owner and Maintaining Agency informed of traffic routing.
 - 4. Owners and Maintaining Agency review and acceptance shall not be construed as confirming adequacy of protection measures proposed.
 - 5. Contractor will notify Owner of construction schedules and traffic plans. Contractor shall be solely responsible for full protection of public and Contractor's own forces.

1.03 TRAFFIC CONTROL CONDITIONS

- A. Keep Work areas open to pedestrian and vehicular traffic to maximum extent practical.
- B. Provide minimum of 4-day notice before implementation of traffic restrictions.
- C. Provide safe passage to vehicular and pedestrian traffic at all times when traffic is allowed.
- D. Provide continuous access for emergency vehicles.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Traffic control materials shall conform to following reference documents:
 - 1. Illinois Manual on Uniform Traffic Control Devices for Streets and Highways

2. Section 701 -TRAFFIC CONTROL AND PROTECTION of the IDOT SSRBC

2.02 PERSONNEL

- A. Flagpersons (if applicable) shall be trained in accordance with State of Illinois regulations.

PART 3 – EXECUTION

3.01 GENERAL VEHICULAR TRAFFIC CONTROL REQUIREMENTS

- A. At a minimum, provide traffic control in following general locations:
1. Streets, parking lots, or highways along or in which construction is occurring.
 2. Areas where construction vehicles are entering or leaving streets or highways.
 3. Roadways temporarily restricted to one-way travel.
 4. Unpaved trenches and other disturbed areas in pavement.
 5. When work is occurring adjacent to a traveled roadway.
- B. Provide traffic control devices in accordance with following general conditions:
1. Flashing light barricades, Type I or Type II, to channel traffic to undisturbed pavement. Lights with barricades shall be provided for over night traffic control and protection.
 2. Flashing light barricades, Type III, to screen off disturbed areas and trenches from oncoming traffic.
- C. Placement of signs and barricades shall proceed in direction of flow of traffic. Remove signs and barricades at end of construction area and proceed toward oncoming traffic.

3.02 SPECIFIC TRAFFIC CONTROL REQUIREMENTS

- A. Streets
1. One (1) lane open with flagpersons.
 2. Detours must be approved by the Owner prior to implementation.
 3. The Contractor shall make every effort to keep construction traffic from delaying traffic entering/existing the College to U.S. Route 14.

3.03 PEDESTRIAN TRAFFIC CONTROL

- A. Protect pedestrians and students/faculty from construction operations and vehicular traffic traveling through construction area.
- B. Stockpiled materials shall not block streets, driveways, sidewalks, or crosswalks.
- C. Grade backfilled trenches uniformly and install temporary pavements as required to permit safe crossing by vehicles and pedestrians.

PART 4 – EXECUTION

- 4.01 TRAFFIC CONTROL AND PROTECTION is included as a Lump Sum unit price. A percentage of the Lump Sum shall be paid on each payment application in proportion total work completed as determined by the Engineer.

END OF SECTION 01550

SECTION 01560
ENVIRONMENT PROTECTION

PART 1 – GENERAL

1.01 SUMMARY

- A. General requirements pertaining to abatement and control of environmental pollution arising from activities of Contractor and Subcontractors in performance of the Work of the Contract.
- B. Contractor, in executing Work, shall maintain work areas free from environmental pollution that would be in violation of federal, state or local regulations.
- C. Items of work included under this section shall be paid for separately but included in the cost of the contract.
- D. Stormwater Pollution Prevention Plan (SWPPP)
 - 1. The project will require a stormwater discharge permit through the IEPA which will include a SWPPP. Engineer will provide the SWPPP for the contractor to use as a guide and working document. Contractor to modify SWPPP as appropriate to address erosion control issues and keep logs and inspection reports as required in the SWPPP. SWPPP will be required to be kept on-site at all times and available for review by City Inspectors and/or engineer. It is the contractor's responsibility to keep this plan updated at all times.

1.02 SUBMITTALS

- A. Storm Water Discharge Plan.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 GENERAL

- A. The land resources within boundaries of the Project, but outside the limits of permanent Work performed under this Contract, shall be preserved in their present condition or be restored to a condition after completion of construction that will appear to be natural and not detract from the appearance of the Project.
- B. Insofar as possible, confine activities to pertinent areas defined on the Drawings or elsewhere in the Contract Documents.
 - 1. Return construction areas to their preconstruction elevations except where surface elevations are otherwise noted to be changed.
 - 2. Maintain natural drainage patterns.
 - 3. Conduct construction activities in such a manner that ponding of stagnant water conducive to mosquito breeding habitat will not occur at any time.
- C. Land resources:
 - 1. Do not remove, cut, deface, injure, or destroy trees or other vegetation outside the Work area limits.

2. Do not remove, cut, deface, injure, or destroy trees or other vegetation inside the Work area limits, designated to be preserved, except as permitted by Engineer.
3. Land resources damaged by Contractor shall be promptly replaced or repaired to the approval of Engineer at Contractor's expense.

3.02 ARCHAEOLOGICAL FINDS DURING CONSTRUCTION

- A. There are no known archaeological remains at the Project site.
- B. Should skeletons, artifacts, or other archaeological remains be uncovered:
 1. Suspend operations of this Contract at the site of discovery.
 2. Notify Engineer immediately of the finding.
- C. Should the discovery site require archaeological studies resulting in delays and/or additional work, Contractor will be compensated by an adjustment under pertinent provisions of the Contract.

3.03 PROTECTION OF STORM SEWERS

- A. Prevent construction materials, concrete, earth or other debris from entering existing storm sewers or sewer construction.

3.04 PROTECTION OF WATERWAYS

- A. Observe rules and regulations of State of Illinois and agencies of U.S. government prohibiting pollution of lakes, streams, rivers or wetlands by dumping of refuse, rubbish, dredge material or debris. The Contractor shall comply with the requirements of the McHenry County Stormwater Ordinances.
- B. Disposal of materials into waters of state must conform to requirements of State of Illinois.
 1. Permits shall be obtained by Contractor.
- C. Provide approved method to divert flows, including storm flows and flows created by construction activity, to prevent excessive silting of waterways and flooding of Site.
- D. Comply with procedures outlined in U.S. EPA manuals entitled "Guidelines for Erosion and Sedimentation Control Planning and Implementation", Manual EPA-72-015 and "Processes, Procedures, and Methods to Control Pollution Resulting from All Construction Activity", Manual EPA-43019-73-007.

3.05 STORMWATER DISCHARGE

- A. Contractor shall comply with State of Illinois requirements.
 1. Engineer will inspect construction site and Contractor shall make corrections or repairs required.
 2. Contractor shall keep plan on site during the construction, available for review.

3.06 DISPOSAL OF EXCESS EXCAVATED AND OTHER WASTE MATERIALS

- A. Excess excavated material not required or suitable for backfill and other waste material shall be disposed of in accordance with local regulations and at a location within the College Campus as identified on the plans. All stockpiles shall be maintained/stabilized per details shown in the plans and all applicable erosion control measures implemented.
- B. Provide watertight conveyance of liquid, semi-liquid or saturated materials which tend to bleed during transport. Liquid loss from transported materials is not permitted, whether being delivered to construction site or hauled away for disposal.

3.07 PROTECTION OF AIR QUALITY

- A. Minimize air pollution by requiring use of properly operating combustion emission control devices on construction vehicles and equipment and encourage shutdown of motorized equipment not in use
- B. Do not burn trash on Site.
- C. If temporary heating devices are necessary for protection of Work, they shall not cause air pollution.

3.09 USE OF CHEMICALS

- A. Chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, shall be approved by U.S. EPA or U.S. Department of Agriculture or any other applicable regulatory agency.
- B. Use and disposal of chemicals and residues shall comply with manufacture's instructions.

3.10 NOISE CONTROL

- A. Conduct operations to cause least annoyance to residents in vicinity of Work, and comply with applicable local ordinances.
- B. Equip construction equipment and other apparatus with mechanical devices necessary to minimize noise.
- C. Equip compressors with silencers on intake lines.
- D. Equip gasoline or oil-powered equipment with silencers or mufflers on exhaust lines.
- E. Line storage bins and hoppers with material that will deaden sounds.
- F. Route vehicles carrying rock, concrete, or other material over such streets as will cause least annoyance to public and do not operate on public streets between hours of 7:00 p.m. and 7:00 a.m., nor on Saturdays, Sundays or legal holidays, unless approved by Owner.

3.11 DUST CONTROL

- A. Take special care in providing and maintaining temporary roads, Owner's existing roads, and public roads used during construction operations in clean, dust free condition.

- B. Comply with local regulations for dust control. If Contractor's dust control measures are considered inadequate by Engineer, Engineer may require Contractor to take additional dust control measures.

3.12 FUELS AND LUBRICANTS

- A. Comply with local, state, and federal regulations concerning transportation and storage of fuels and lubricants.
- B. Fuel storage area location shall be approved by Owner prior to installation.
- C. Report spills or leaks from fueling equipment or construction equipment to Owner and cleanup as required.
- D. OWNER may require Contractor to remove damaged or leaking equipment from Site.

3.13 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties, walkways, and waterways according to the Illinois Urban Manual.
- B. Filter fabric shall be placed between the frame and grate of all storm sewers and maintained in a clean condition to allow proper drainage of the road and adjoining areas until permanent vegetation is established. Filter fabric shall be considered incidental to the item of work being performed.
- C. Whenever, during construction operations, any loose material is deposited in the flow line or gutters, drainage structures, ditches, etc. such that the natural flow line of water is obstructed, this loose material shall be removed at the close of each working day. At the conclusion of construction operations, all drainage structures and flow lines shall be free from dirt and debris. This work shall be considered incidental to the contract.

END OF SECTION 01560

SECTION 01710
CONSTRUCTION SURVEYING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the work including, but not limited to, the following:
 - 1. Construction surveying.
- B. This section covers construction surveying work required to construct the project in accordance with the Contract Documents subject to the terms and conditions of the Contract. Work covered by this section includes but is not limited to the following elements:
 - 1. Grading.
 - 2. Storm drainage features.
- C. Construction surveying applies to all work except site clearing, tree protection, pavement marking, site furnishings, signage, seeding, fences and gates, boulders and temporary erosion and sedimentation control. The Contractor shall spot these items preliminarily. The College Representative shall verify locations prior to installation of any of these items.
- D. The Contractor is fully responsible for the methods to be used to achieve the requirements in this section.

1.02 RELATED SECTIONS

- A. Section 02300 – Earthwork

1.03 DEFINITIONS

- A. Licensed surveying: Specific surveying tasks that will be conducted by an independent Professional Licensed Surveyor (registered in Illinois).
- B. Non-licensed surveying: Specific surveying tasks that can be conducted by an individual that is not a registered Professional Licensed Surveyor.

1.04 SUBMITTALS

- A. Informational submittals: The following items shall be submitted to the College within fourteen (14) days after notice of Contract Award, and prior to starting any work.
 - 1. Qualification data: Contractor shall submit, to the College Representative, the credentials of the proposed licensed and non-licensed surveyors that will be utilized on the project.
 - 2. Equipment information: Contractor shall submit information regarding survey equipment to be utilized on the project, including manufacturer and model numbers.
 - 3. Contractor shall submit a description of construction survey work including methods and procedures to be utilized for construction survey and staking.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 CONSTRUCTION SURVEYING

A. General:

1. The Contractor shall engage a licensed surveyor to layout the work using accepted survey practices. The Contractor shall be responsible for all of the project surveying, including setting, maintaining, and resetting all alignment stakes, slope stakes, and grades necessary for the construction of the improvements. Except for the survey control data furnished by the College in the Contract Drawings, all calculations, surveying, and measuring required for setting and maintaining the necessary lines and grades shall be the Contractor's responsibility.
2. Before proceeding to lay out the work, verify layout information shown on Contract Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify the College Representative promptly.
3. The Contractor shall be responsible for collection of additional topographic data as needed to match into existing roadways such that the transition from the new to the existing is smooth and such that pavements drain properly.
4. The College Representative shall approve of Contractor-provided stakes prior to work beginning. Such approval shall not relieve the Contractor of responsibility for the accuracy of the stakes.
5. The College Representative may spot-check the Contractor's surveying. These spot checks shall not change the requirements for normal checking by the Contractor.
6. The Contractor shall inform the College when monuments are discovered that were not identified in the Contract Drawings and construction activity may disturb or damage the monuments.

- B. Qualifications: The licensed surveyor shall be independent and have a minimum of 10 years of experience as a registered professional surveyor. The non-licensed surveyor may be an employee of the Contractor, but shall have a minimum of five (5) years of experience operating appropriate survey equipment and performing field surveys.

- C. Survey log: The Contractor shall maintain detailed survey log, including a description of the work performed on each shift, the methods and equipment utilized, and the control points used.

The log shall include a list of layout control work and record deviations from required lines and levels. The log shall be available to the College Representative at any time. Daily logs shall be provided to the College Representative within three (3) working days, or as approved by the College Representative.

D. Construction Layout

1. Reference points and verification: Locate existing permanent benchmarks, control points, and similar reference points before beginning the work. Verify the primary horizontal and vertical control furnished by the College. If discrepancies are discovered or monuments not identified in the Contract Drawings are discovered, promptly notify the College Representative.
 - a. Do not change or relocate existing benchmarks or control points without prior written approval of the College Representative. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to the College Representative before proceeding.
 - b. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
2. General:
 - a. Establish temporary benchmarks and secondary control points necessary to set

lines and levels as needed to locate each element of project.

- 1) Record benchmark locations, with horizontal and vertical data, on Project Record Drawings.
 - 2) Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the work.
 - 3) Remove temporary reference points when no longer needed. Restore marked construction to its original condition
- b. Establish dimensions within tolerances indicated. Do not scale Contract Drawings to obtain required dimensions.
 - c. Inform installers of lines and levels to which they must comply.
 - d. Check the location, level and plumb, of every major element as the work progresses.
 - e. Notify the College Representative when deviations from required lines and levels exceed allowable tolerances.
 - f. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
 - g. For alignments the Contractor shall perform independent checks from different secondary control to ensure that the points staked are within specified survey tolerances.

3.02 Site Improvements

- a. Provide staking and layout information necessary to accomplish excavation, grading, and fill activities.
- b. Establish centerlines of alignments by placing hubs, stakes or marks on centerline or offsets to centerline at all curve points (Point of Curvature (PC), Point of Tangency (PT), and Point of Intersection (PI) and at points on the alignments, space no further than 50 feet.
- c. Establish the horizontal and vertical location of all drainage features.
- d. Provide staking and layout necessary to adequately locate, construct, and check other construction activities.

3.03 Tolerances: The Contractor shall ensure a surveying accuracy within the following tolerances:

| | <u>Vertical</u> | <u>Horizontal</u> |
|--|-----------------|--|
| Slope stakes | □ 0.1 feet | □ 0.1 feet |
| Subgrade grade stakes set 0.04 feet below grade | □ 0.01 feet | □ 0.5 feet (parallel to alignment) □ 0.1 feet (normal to alignment) |
| Surfacing grade stakes | □ 0.01 feet | □ 0.5 feet |

END OF SECTION 01710

SECTION 01770
CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

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

1.02 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project Record Documents.
 - 3. Operation and maintenance manuals.
 - 4. Warranties.
 - 5. Instruction of Owner's personnel.
 - 6. Final cleaning.
- B. Related Sections include the following:
 - 1. Division 1 Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
 - 2. Divisions 2 Sections for specific closeout and special cleaning requirements for products of those Sections.

1.03 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 - 2. Advise Owner of pending insurance changeover requirements.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.

7. Submit test/adjust/balance records.
 9. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 10. Complete final cleaning requirements, including touchup painting.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.04 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a Final Application for Payment according to Division 1 Section "Payment Procedures."
 2. Submit certified copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.05 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
 - 1. Organize list of areas in sequential order.
 - 2. Organize items applying to each space by major element, including categories for equipment and sewage systems.
 - 3. Include the following information at the top of each page:
 - a. Project name.
 - b. Date.
 - c. Name of Engineer.
 - d. Name of Contractor.
 - e. Page number.

1.06 PROJECT RECORD DOCUMENTS

- A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Engineer's reference during normal working hours.
- B. Record Drawings: Maintain and submit one set of blue- or black-line white prints of Contract Drawings and Shop Drawings.
 - 1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
 - a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
 - b. Accurately record information in an understandable drawing technique.
 - c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
 - d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.
 - 2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.
 - 3. Mark important additional information that was either shown schematically or omitted from original Drawings.
 - 4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.

5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.
- C. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications. Mark copy to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Note related Change Orders, Record Drawings, and Product Data, where applicable.
- D. Record Product Data: Submit one copy of each Product Data submittal. Mark one set to indicate the actual product installation where installation varies substantially from that indicated in Product Data.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, Record Drawings, and Record Specifications, where applicable.
- E. Miscellaneous Record Submittals: Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.07 OPERATION AND MAINTENANCE MANUALS **(OMITTED)**

1.08 WARRANTIES

- A. McHenry County College will require the contractor to warranty the project for a term of two (2) years after final completion of the project against any defects in workmanship or materials. Contractor will be required to submit a Maintenance Bond in the amount of 10% of the project cost to address any items that arise within the warranty period. The Maintenance Bond will be required to be posted prior to final payout of the project. At the end of the one (2) years, a walkthrough with the Contractor will be completed to identify any deficient items. It will be the responsibility of the Contractor to correct the deficient items to the satisfaction of the College prior to the Maintenance bond being released.
- B. Submittal Time: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- C. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

- D. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
 - 1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8 ½ by 11 inch paper.
 - 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
 - 3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- E. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 – EXECUTION

3.01 DEMONSTRATION AND TRAINING

- A. Instruction: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Provide instructors experienced in operation and maintenance procedures.
 - 2. Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at the start of each season.
 - 3. Schedule training with Owner, through Engineer, with at least 7 days' advance notice.
 - 4. Coordinate instructors, including providing notification of dates, times, length of instruction, and course content.
- B. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. For each training module, develop a learning objective and teaching outline. Include instruction for the following:
 - 1. System design and operational philosophy.
 - 2. Review of documentation.
 - 3. Operations.
 - 4. Adjustments.

5. Troubleshooting.
6. Maintenance.

3.02 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01770

DIVISON 2

PROJECT CONSTRUCTION

**SECTION 02100
ASPHALT PAVEMENT REMOVAL**

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Furnish all labor, tools and equipment necessary to remove the existing pavement area as needed for the installation of the proposed resurfacing and any other items required to complete this Contract.

1.02 REFERENCES

- A. Except as modified herein, the work shall conform to the applicable portions of the Illinois DOT Standard Specification Section 440.

1.03 SPECIAL REQUIREMENTS

- A. Conduct site clearing operations to ensure minimum interference with roads, street, walks, or adjacent facilities. Do not close traveled ways without written permission from authorities having jurisdiction.
- B. Provide protection to prevent damage to existing structures, roadway, sidewalk or other improvements on or adjacent to the job site. Restore any damaged improvement to its original condition as acceptable to parties having jurisdiction.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 MISCELLANEOUS

- A. All obstructions interfering with the proposed work shall be removed and disposed of legally at the Contractor's expense.
- B. All material shall be disposed of legally at the Contractor's expense. The Engineer shall be informed in writing of the disposal site and shall be given a copy of whatever permit(s) are necessary. If the disposal site is on private property the Engineer shall be given a copy of written permission from the property owner allowing the disposal.
- C. The Contractor shall control dust on the site by spraying water or by other means satisfactory to the Engineer.

3.02 FULL DEPTH PAVEMENT REMOVAL

- A. This work shall consist of constructing butt joints for a satisfactory transition between pavement being resurfaced and pavement remaining at existing grade, and shall be accomplished in accordance with the applicable portions of Article 406.08 and Section 440 of the Standard Specifications and the detail included herein. Should any pavement be damaged by removal operations sufficient to warrant replacement, in the Engineer's judgment, the Contractor shall replace it in kind for no additional payment.

- B. The Contractor shall provide and maintain temporary asphalt ramps at both upstream and downstream ends of the pavement area removed. The temporary ramps shall be constructed immediately upon completion of the removal operation by leveling and filling with bituminous material, as necessary. Ramps shall have a minimum taper rate of three foot (3') per one inch (1") of thickness and shall be removed prior to placing the proposed surface course. Temporary ramps will not be paid for separately but shall be considered incidental to the bid price per square yard for Hot-Mix Asphalt Surface Removal.
- C. Pavement removal shall consist of either breaking apart the asphalt and hauling debris offsite or milling the existing asphalt pavement and reusing grindings onsite as shown on the plans pavement sections.
- D. Saw cutting shall be considered incidental.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. FULL DEPTH PAVEMENT REMOVAL, shall be measured for payment per SQUARE YARD removed.

4.02 PAYMENT

- A. FULL DEPTH PAVEMENT REMOVAL, shall be paid for at the contract unit price per SQUARE YARD as indicated on the Schedule of Prices.

END OF SECTION 02100

SECTION 02230
SITE CLEARING AND PREPARATION

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Protecting existing trees and vegetation to remain.
 - 2. Removing existing trees.
 - 3. Clearing and grubbing.
 - 4. Stripping and stockpiling topsoil.

1.02 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.

1.03 MATERIAL OWNERSHIP

- A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site

1.04 PROJECT CONDITIONS

- A. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 – PRODUCTS (Not used)

PART 3 – EXECUTION

3.01 TREE PROTECTION

- A. Quality Assurance
 - 1. Tree Service Qualifications: An experienced tree service firm that has successfully completed tree protection and trimming work similar to that required for this Project and that will assign an experienced, qualified arborist to Project site on a part-time basis during execution of the Work.
 - 2. Arborist Qualifications: An arborist certified by the International Society of Arboriculture or licensed in the jurisdiction where Project is located.
 - 3. Tree Pruning Standards: Comply with ANSI A300, "Trees, Shrubs, and Other Woody Plant Maintenance Standard Practices," unless more stringent requirements are indicated.

- B. Locate and clearly flag trees and vegetation to remain or to be relocated.
- C. Erect and maintain temporary fencing around drip line of individual trees or around perimeter drip line of groups of trees to remain before starting site clearing. Remove fence when construction is complete.
 - 1. Do not store construction materials, debris, or excavated material within fenced area.
 - 2. Do not permit vehicles, equipment, or foot traffic within fenced area.
 - 3. Maintain fenced area free of weeds and trash.
- D. Do not excavate within tree protection zones, unless otherwise indicated.
- E. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.
 - 1. Cover exposed roots with burlap and water regularly.
 - 2. Do not cut main lateral roots, or taproots; cut only smaller roots that interfere with installation. Cut roots with sharp pruning instruments; do not break or chop.
 - 3. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
 - 4. Coat cut faces of roots more than 1 ½ inches in diameter with emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
 - 5. Backfill with soil as soon as possible.
- F. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Engineer.
 - 1. Employ a qualified arborist, licensed in jurisdiction where Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
 - 2. Replace trees that cannot be repaired and restored to full-growth status, as determined by qualified arborist.

3.02 TREE REMOVAL

- A. Trees to be removed are indicated on the Plans. Contractor shall completely remove tree above and below ground. This work shall be done as specified in Section 201 CLEARING, TREE REMOVAL AND PROTECTION, CARE, AND REPAIR OF EXISTING PLANT MATERIAL of the IDOT SSRBC.

3.03 CLEARING AND GRUBBING

- A. Remove and dispose of obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.

2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 3. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
 4. Use only hand methods for grubbing within tree protection zone.
 5. Chip removed tree branches and dispose of off-site.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches and compact each layer to a density equal to adjacent original ground.

3.04 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.
- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
1. Remove subsoil and nonsoil materials from topsoil, including trash, debris, weeds, roots, and other waste materials.
- C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
1. Limit height of topsoil stockpiles to 72 inches.
 2. Do not stockpile topsoil within tree protection zones.
 3. Dispose of excess topsoil as specified for waste material disposal.
 4. Stockpile surplus topsoil to allow for resspreading deeper topsoil.
 5. Maintain stockpile as not to obstruct the natural flow of drainage.
 6. Protect Stockpile from erosion
 7. Keep stockpile free from debris or trash.

3.05 DISPOSAL

- A. Disposal: Remove obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property. Surplus soil material and unsuitable topsoil will be allowed to be disposed of and stockpiled on Owner's property in the location shown on the plans. All stockpiles shall be stabilized as described above.
- B. Burning is not an acceptable method of disposal.
- C. Do not allow debris to accumulate on-site.

END OF SECTION 02230

SECTION 02300
EARTHWORK

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Preparing subgrades for walks, pavements, lawns, and plantings.
 - 2. Rough and Finish Grading

1.02 DEFINITIONS

- A. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- B. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
- C. Fill: Soil materials used to raise existing grades.
- D. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

1.03 SUBMITTALS

- A. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance.

1.04 QUALITY ASSURANCE

- A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials testing, as documented according to ASTM D 3740 and ASTM E 548.
- B. Prior to the placement of any excavated or borrowed soils, each type of soil approved for fill or backfill shall have a Standard Proctor Curve developed to indicate the moisture-density relationship required to obtain maximum density
- C. All Density Tests and Proctor Curves required shall be obtained from the College's on-site Geotechnical Engineer. All density tests and Proctor Curve results shall be submitted to the Engineer.

PART 2 – PRODUCTS

2.01 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

- C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487 or a combination of these groups. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Underground utilities shall be located and protected as specified in Division 1 Section "Temporary Facilities and Controls".
- C. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2 Section "Site Clearing."
- D. Protect and maintain erosion and sedimentation controls, which are specified in Division 1 Section "Temporary Facilities and Controls," during earthwork operations.
- E. Perform dewatering operations as specified in Division 1 Section "Temporary Facilities and Controls".

3.02 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
- B. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Engineer. The Contract Sum will be adjusted for rock excavation according to unit prices included in the Contract Documents. Changes in the Contract time may be authorized for rock excavation.
 - 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.
 - a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

3.03 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.04 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.05 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2% of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2% and is too wet to compact to specified dry unit weight.

3.06 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D698.
 - 1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95%.
 - 2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 92%.
 - 3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85%.
 - 4. For utility trenches, compact each layer of initial and final backfill soil material at 85%.

3.07 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between adjacent existing grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
1. Lawn or Unpaved Areas: Plus or minus 1 inch.
 2. Walks: Plus or minus 1 inch
 3. Pavements: Plus or minus ½ inch

3.08 FIELD QUALITY CONTROL

- A. Testing Agency: College will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least 1 test for every 2,000 square feet or less of paved area or building slab, but in no case fewer than 3 tests.
 3. Trench Backfill: At each compacted initial and final backfill layer, at least 1 test for each 150 feet or less of trench length, but no fewer than 2 tests.
- D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.09 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it on Owner's property. Location of disposal is shown on plans.
- B. Disposal shall not be paid for separately but shall be considered incidental to the item of Work being performed.
- C. If any surplus soil is determined it will need to be hauled and disposed of off-site, it will need to be certified that it is not contaminated as defined under 415 ILCS 5/3.160 and any fees, taxes, surcharge charged by or thorough the operator(s) of clean construction or demolition debris (CCDDE) or a contaminated soil fill operations for the acceptance of uncontaminated soil, shall be paid for by the contactor and those fees included in their bid price.

END OF SECTION 02300

SECTION 02350
TRENCHING AND BACKFILLING

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes the following:

1. Trenching and Backfilling
2. Compaction of Trench Backfill

1.02 GENERAL

1. Where working conditions and the right-of-way is sufficient to accommodate traditional open cut construction methods, pipe line trenches with sloping sides may be used.
2. Safety and Protection: Shoring, sheeting, bracing shall be provided as required to protect the work and workmen from damage or injury by caving or sloughing. Laws and ordinances regulating health and safety measures shall be strictly observed.
3. Blasting: Blasting will not be permitted unless Owner provides written permission to do so.

1.03 SUBMITTALS

- A. Density Test Reports: The Contractor shall provide Engineer with all reports for nuclear density testing that is performed under the quality control program.

1.04 QUALITY ASSURANCE

- A. Nuclear Density Testing of Trench backfill shall be performed by a qualified testing agency during the installation of sanitary sewers.
- B. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials testing, as documented according to ASTM D 3740 and ASTM E 548.
- C. Prior to the placement of any excavated or borrowed soils, each type of soil approved for fill or backfill shall have a Standard Proctor Curve developed to indicate the moisture-density relationship required to obtain maximum density.
- D. All Laboratory Density Tests and Proctor Curves required shall be obtained and paid for by the Contractor. All density tests and Proctor Curve results shall be submitted to the Engineer.
- E. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of applicable sections of the ILLINOIS SEWER SPECS. Measurement and payment provisions set forth in the ILLINOIS SEWER SPECS do not apply to this Section. The Schedule of Prices included in the bid form will govern payment.

PART 2 – PRODUCTS

2.01 SEWER PIPE AND SERVICE LINE AGGREGATE BEDDING MATERIAL

- A. Bedding material shall meet the gradation requirements of Coarse Aggregate Gradation CA-7, as specified in Section 1004 COARSE AGGREGATES of the IDOT SSRBC.

2.02 SEWER PIPE AND SERVICE LINE AGGREGATE BACKFILLING MATERIALS

- A. Backfilling Materials shall meet one of the following gradation requirements:
 - 1. Coarse Aggregate Gradation CA-6 as specified in Section 1004 COARSE AGGREGATES of the IDOT SSRBC.
 - 2. Fine Aggregate Gradation FA-6 as specified in Section 1003 FINE AGGREGATE of the IDOT SSRBC

2.03 SEWER PIPE AND SERVICE LINE SOIL BACKFILLING MATERIALS

- A. Satisfactory Soils: Satisfactory soils for backfilling trenches shall be approved selected material taken from the trench or other excavation, suitable for compaction and meeting the following requirements:
 - 1. ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- B. Unsatisfactory Soils: Unsatisfactory soils not suitable for backfilling trenches are defined as follows:
 - 1. Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487 or a combination of these groups.
 - 2. Unsatisfactory soils also include satisfactory soils not maintained within 2% of optimum moisture content at time of compaction.
 - 3. Material not suitable for embankment, fill, or backfill or in excess of requirements shall be disposed of off site at a location provided by the Contractor. Transportation of such material shall be provided by the Contractor. Disposal of such materials shall not be paid for separately but shall be considered incidental to the contract.

2.04 BORROW MATERIAL

- A. Where suitable soil backfilling materials are not available in sufficient quantity from all required excavations under this contract, approved materials shall be obtained from approved sources off site at the Contractor's responsibility and expense. Borrow materials must meet the requirements of satisfactory soils as defined above.

2.05 TEMPORARY AGGREGATE SURFACE

- A. This work consists of furnishing the labor, material, and equipment to fill in the area between the trench backfill limits and the existing pavement during installation of the sanitary sewer and storm sewer.

- B. Aggregate for Temporary Surface shall be Coarse Aggregate Gradation CA-6 as specified in Section 1004 COARSE AGGREGATES of the IDOT SSRBC. The width of the aggregate for temporary surface shall be equal to the width of the existing trench. The Engineer shall approve equipment for placing and compacting the Temporary Aggregate Surface.
- C. During the course of the contract, the Contractor shall construct and maintain the Temporary Aggregate Surface to the length and width determined by the Engineer.
- D. This work shall be measured for payment in cubic yards. The Contractor shall provide individual load tickets to the Engineer clearly indicating that the delivery is for Temporary Aggregate Surface. The use of combination load tickets from other pay items shall not be permitted and those amounts not designed in writing for Temporary Aggregate Surface will not be measured for payment.
- E. In the event that the Temporary Aggregate Surface is deemed deficient as noted by the Village or authorized individual, the Contractor will be notified of the deficiency. The Contractor has four (4) hours to repair or install aggregate to the satisfaction of the Village. Failure to do so will result in a penalty of one hundred dollars (\$100/hr) starting four (4) hours from the time of notification.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by trenching and backfilling operations.
- B. Underground utilities shall be located and protected as specified in Division 1 Section "Temporary Facilities and Controls".
- C. Preparation of subgrade for trenching operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 2 Section "Site Clearing."
- D. Protect and maintain erosion and sedimentation controls, which are specified in Division 1 Section "Environmental Protection," during earthwork operations.
- E. Perform dewatering operations as specified in Division 1 Section "Temporary Facilities and Controls".

3.02 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch if applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

3.03 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations necessary for proper laying of pipe.

- B. Excavate trench walls vertically from trench bottom to a point 12 inches higher than top of pipe or conduit, unless otherwise indicated. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit.
 - 1. Width of Trench: The width of the trench at the top of the pipe shall be as follows:
 - a. Minimum: Pipe Outside Diameter +24 Inches
 - b. Maximum: Pipe Outside Diameter + 36 Inches
- C. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Remove projecting stones and sharp objects along trench subgrade. Where firm foundation is not encountered at the grade established due to unsuitable soil, all such unsuitable material shall be removed and replaced with approved compacted granular material.
- D. Sloping Sides: Where working conditions and the right-of-way is sufficient to accommodate traditional open cut construction methods, pipe line trenches with sloping sides may be used. The slopes shall extend to a point 12 inches above the top of the pipe, and trench excavations below this point shall be made with vertical sides with widths not exceeding those specified herein for the various sizes of pipe.

3.04 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Stockpile soil materials away from edge of excavations.

3.05 BEDDING AND INITIAL BACKFILL REQUIREMENTS

- A. Place bedding on subgrades free of mud, frost, snow, or ice.
- B. Place and compact CA-7 bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Place and compact initial backfill of CA-7, to a height of 12 inches over the utility pipe or conduit. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit.

3.06 COMPACTION AND BACKFILLING OF TRENCHES

- A. Whenever the excavation is in or within 2 feet of an existing or proposed street, parking area, driveway, curb and gutter, sidewalk, or other paved area or specifically called for on plans, the entire trench shall be backfilled with approved selected granular material IDOT CA-6 or FA-6 and compacted in place. Trench Backfill shall be compacted to 95% of maximum density at optimum moisture as determined by the Standard Proctor Test.
- B. In all other areas, satisfactory native fill shall be used as backfill and shall be compacted in lifts. Suitable native fill shall be compacted to a minimum of 90% of maximum density at optimum moisture as determined by the Standard Proctor Test.

- C. Place all backfill materials in layers not more than 12 inches in loose depth and mechanically compact.
- D. All trenches are to be closed and backfilled at the end of each day. All surface drainage shall be restored to a like or better condition to that prior to starting construction.
- E. Wherever sewers are installed under traveled roadways, driveways, sidewalks, or other traveled surfaces, a temporary surface of 1' depth shall be placed over the top of the trench backfill as soon as possible after compaction has been satisfactorily completed. The temporary surface shall be IDOT CA-6 and shall be smooth and meet the grade of the adjacent undisturbed surface. The temporary surface shall be maintained by the Contractor until the final restoration of the surface is completed.

3.07 EXISTING UTILITY CROSSINGS

- A. Notify utility companies before excavating; utilize Illinois One Call (800-892-0123); conform to current utility notification requirements.
- B. Where new construction crosses or closely parallels existing utilities or utility services, excavate in advance of pipe laying to determine location and crossing arrangement, including exact construction line and grade.
- C. Utility mains shown on Drawings in conflict with new facilities: Perform relocation or make arrangements with utility to perform Work at no additional cost to Owner.
- D. Utility mains not shown on Drawings in conflict with new facility: Notify Engineer immediately.
- E. Provide compacted granular material under all existing utilities or service lines that are located above the new pipeline. Compact material to a minimum of 95% Standard Proctor Density.
- F. Repair any drainage tile interrupted during the course of construction according to details on Drawings and/or Typical Detail Drawings.
- G. Costs for exploratory excavation of existing utility crossings are incidental to the contract.

3.08 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent backfilling only after test results for previously completed work comply with requirements.
- C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable. Tests will be performed at the following locations and frequencies:
 - 1. Trench Backfill: At each compacted initial and final backfill layer, at least 1 test for each 150 feet or less of trench length, but no fewer than 1 test between structures.
- D. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.09 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove trash and debris and legally dispose of it off Owner's property. Disposal of such materials shall not be paid for separately but shall be considered incidental to the contract. Surplus satisfactory soil, including unsatisfactory soil and dispose of it at a location identified on the Plan on the Owner's property.
- B. All surplus soil that will need to be hauled and disposed of off-site will need to be certified that it is not contaminated as defined under 415 ILCS 5/3.160 and any fees, taxes, surcharge charged by or thorough the operator(s) of clean construction or demolition debris (CCDDE) or a contaminated soil fill operations for the acceptance of uncontaminated soil, shall be paid for by the contactor and those fees included in their bid price.

END OF SECTION 02350

SECTION 02550
SITE STORM UTILITY DRAINAGE PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Storm drainage piping, fittings, joints and accessories.
- B. Drainage Structures.

1.02 REFERENCE STANDARDS

- A. AASHTO M 170 - Circular Concrete Pipe.
- B. AASHTO M 199 - Precast Concrete Utility Access Units and Intakes.
- C. AASHTO M 294 - Corrugated Polyethylene Pipe, 12- to 36-inch Diameter.
- D. ASTM C76 - Standard Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
- E. ASTM C443 - Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
- F. ASTM C 478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.
- G. ASTM D 1248 - Polyethylene Plastics Moldings and Extrusion Materials.
- H. ASTM D 3350 - Polyethylene Plastic Pipe and Fittings Material.
- I. ASTM F 405 - Standard Specification for Corrugated Polyethylene (PE) Tubing and Fittings.
- J. Illinois Department of Transportation "Standard Specifications for Road and Bridge Construction," latest edition and current supplements thereto.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Include one copy of results of tests and certification reports with each shipment of materials.
- C. Product Data: Provide data indicating pipe and pipe accessories, castings and precast products. Indicate special procedures required to install products specified.
- D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- E. Project Record Documents:
 - 1. Record location of structures, pipe runs, connections, and invert elevations.
 - 2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.04 QUALITY ASSURANCE

- A. Contractor shall employ and pay for services of the independent testing laboratory for tests required to show compliance with the specifications. Test results shall be submitted directly to Owner/Engineer. Selection of the testing laboratory is subject to approval of Owner/Engineer.
- B. Certify that pipe materials and special fittings are manufactured in accordance with applicable specifications. Provide copies of concrete cylinder compression tests made during manufacture of precast materials.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products according to Manufacturer's recommendations and under provisions of Section 01 6000.
- B. Protect PVC and HDPE pipe from direct sunlight.

PART 2 PRODUCTS

2.01 STORM SEWER PIPE MATERIALS

- A. Ductile Iron Pipe (DIP): AWWA C150 manufactured in accordance with AWWA C151; thickness Class 52; coat outside with standard coating; coat inside with standard cement lining AWWA C104.
 - 1. Fittings:
 - a. Ductile iron compact fittings, mechanical joint, AWWA C153, 250 psi minimum pressure rating in cases where compact fittings are available. Asphaltic exterior coating 1-mil thick, AWWA C104 standard thickness interior cement lining with seal coat. Provide mechanical joint fittings conforming to AWWA C111.
 - b. Bolts and nuts: Stainless steel or Cor-Blue.
 - c. Wrap fittings with polyethylene film, as specified.
 - d. Restrained Joint Fittings: See Section 33 3111.
- B. Concrete Pipe: Reinforced, ASTM C 76 (AASHTO M170), Class IV (2000D) with Wall type B; mesh reinforcement.
 - 1. Reinforced Concrete Pipe Joint Device: ASTM C 443 (ASTM C 443M), continuous O-ring rubber gasket joint. Separation between joints shall be minimized.
 - 2. Tongue and groove end joints, machined ends.
 - 3. Apply joint material to bottom of groove and top of matching tongue in sufficient quantity to fill jointing; force adjoining pipe together. Fill all remaining voids in joints both inside and outside of pipe; trowel inside of pipe 24" and larger; wipe interior joint clean in pipes smaller than 24".
 - 4. Label each piece by class and show date of manufacture.
- C. Corrugated Polyethylene Pipe: AASHTO M 294 Type HDPE N-12, 12 inches to 36 inches,
 - 1. Corrugated Polyethylene Pipe and Fitting Material: Pipe and fitting material shall be high density polyethylene meeting the requirements of ASTM D 3350 Cell Classification 324420C; or ASTM D 1248 Type III, Class C, Category 4, Grade P33.
 - 2. Corrugated Polyethylene Pipe Joint Device: Pipe shall be joined with standard manufacturer joint meeting the requirements of AASHTO M 294. The bell shall be an integral part of the pipe and provide a minimum pull-apart strength of 400 lbs. The bell-and-spigot joint shall incorporate a manufacturer-installed gasket making it silt-tight.
 - 3. Pipe shall have a smooth interior and corrugated exterior.

2.02 PIPE APRONS

- A. Reinforced Concrete Pipe Apron (Flared End Section): Construct with reinforcing steel and concrete in accordance with ASTM C76. Strength not less than adjoining sections.
 - 1. Attach pipe aprons to storm sewer/culvert pipe with connected pipe joints for last two joints.
 - 2. As specified on plans, include pipe apron according to IDOT Standard 542301-03.
 - 3. Pipe apron guard/grating for concrete flared end sections shall be in accordance with IDOT Standard 542311-02.

2.03 PIPE ACCESSORIES

- A. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.
- B. Filter Fabric: Shall meet the requirements defined in Illinois DOT Specifications.
- C. Trace Wire: Magnetic detectable conductor, brightly colored plastic covering, imprinted with " Storm Sewer Service " in large letters.

2.04 DRAINAGE STRUCTURES

- A. Manholes, Catch Basins, Inlets:
 - 1. Conform to elevations, locations, and connection orientations shown on the drawings.
 - 2. Joints, Wall:
 - a. Precast: Male and female ends, mastic seals.
 - b. Cast-in-Place: Construction joints.
 - 3. Concrete:
 - a. Precast: Precast concrete intake constructed in accordance with Illinois DOT.
 - 1) Reinforced Concrete: Conform to ASTM C913.
 - 2) Reinforcing: One or two cage; minimum 0.187 square inches reinforcement per lineal foot of riser section.
 - 3) Wall Thickness: As indicated in drawings or on Illinois DOT Standard Road Plans, 5" minimum.
 - b. Cast-in-Place: Reinforced cast-in-place intake constructed in accordance with Illinois DOT.
 - 1) Comply with Division 3 Specifications.
 - 4. Base:
 - a. Precast: Integral concrete bottom section and base.
 - 1) Provide smooth, semi-circular invert, same size as outlet pipe, make curve as large a radius as practical for changes in flow direction; all water shall drain freely; slope for 1/2-inch per foot towards invert.
 - b. Cast-in-Place:
 - 1) As shown on drawings.
 - 5. Pipe Connection:
 - a. Precast Intake: Factory fabricated openings.
 - b. Cast-in-Place: Structure wall poured around pipe stub.
 - 6. Grate Casting:
 - a. As specified in the plans
 - 7. Nyloplast Inline Drain Basins
 - a. In accordance with manufacturer details and specifications.
 - 8. Trench Drain
 - a. In accordance with the manufacturer's details and specifications.
 - 9. Inlets Type A
 - a. In accordance with IDOT Standard 602301-03.
 - 10. Catch Basin Type A
 - a. In accordance with IDOT Standard 602001-02.
 - 11. Manhole Type A
 - a. In accordance with IDOT Standard 602401-03

PART 3 EXECUTION

3.01 TRENCHING

- A. See Section 31 2316.13 for additional requirements.

3.02 INSTALLATION - PIPE

- A. Verify that trench cut and excavation are ready to receive work and excavations, dimensions, and elevations are as indicated on drawings.
- B. Install pipe, fittings, and accessories in accordance with manufacturer's instructions.
- C. Install in accordance with applicable Illinois DOT Specifications.
- D. Before laying pipe, verify all measurements at site; make necessary field measurements to accurately determine sewer makeup length or closures.
- E. Begin at lowest point on line; lay bell ends pointing upstream.
- F. Lift or roll pipe into position. Do not drop or drag pipe over prepared bedding.
- G. Shore pipe to required position; retain in place until after compaction of adjacent fills. Ensure pipe remains in correct position and to required slope.
- H. Provide smooth and uniform invert; bear tongue against groove shoulders.
- I. Make joints with equipment recommended by pipe manufacturer; do not use backhoe to push joints together.
- J. Pipe joint gasket lubricant shall be a type approved by the pipe manufacturer.
- K. Apply joint material to bottom one-half (1/2) of groove and top one-half (1/2) of matching tongue in sufficient quantity to fill jointing force adjoining pipe together.
- L. Fill all remaining voids in joints both inside and outside of pipe; trowel inside of pipe 24 inches and larger; wipe interior joint clean in pipes smaller than 24 inches.
- M. Visually inspect pipe for defects before carefully lowering into trench; lay true to line and grade; provide for uniform bearing of the pipe barrel on the trench bottom.
- N. Keep pipe free of all dirt and foreign material.
- O. Saw cut end of pipe or other manufacturer approved method, at manholes and intakes; do not hammer, cut, or break pipe.
- P. The length of RCP sections shall typically be 8 feet, but not be less than 6 feet, unless approved by Engineer.
- Q. Line and grade:
 - 1. Use laser light equipment or batter boards for line and grade control. Use detection equipment to monitor laser light to prevent movement or drift of line from line and grade. Use minimum of three batter boards not more than 25 feet apart.
 - 2. Check line and grade of each pipe length; horizontal and vertical alignment of the installed pipe shall not vary more than plus or minus 1/4 inches per foot of pipe diameter.
 - 3. Check sewer grade at maximum 100 foot intervals with level and level rod.
 - 4. Continuously check alignment of sewer by flashing light between manholes or between last piece of pipe laid and opening at downstream manhole.
 - 5. Correct misalignment displacement, or otherwise defective sewer.
- R. Where indicated on the Drawings, the Contractor will be required to connect the proposed storm sewer into a new manhole or intake. These connections shall be structurally sound and water tight. They shall be constructed in such a way to minimize impedance of flow.
- S. Lift holes shall be plugged with a non-shrink grout from an approved mix.
- T. Use manufactured special adaptors or couplings with full-width stainless steel bands whenever possible. If coupling is not available, use concrete collar 6 inches thick and 12 inches each way from joint; reinforce with 6" x 6" C W2.0 x W2.9 welded wire fabric. Concrete collar to be approved by Engineer prior to use.
- U. Lay pipe to slope gradients noted on drawings; with maximum variation from true slope of 1/8 inch in 10 feet.
- V. Connect to building storm drainage system, foundation drainage system, and utility/municipal sewer system.

W. Install continuous trace wire 6 inches above top of pipe; coordinate with Section 31 2316.13.

3.03 WATERMAIN CONFLICT

- A. Horizontal separation:
 - 1. Sewers shall be laid at least 10' (3 m) horizontally from any existing or proposed watermain. The distance shall be measured edge to edge.
 - 2. For cases where it is not practical to maintain 10' separation, the sewer shall be placed in a separate trench or in the same trench provided the watermain is on bench of undisturbed earth at minimum horizontal separation of 3' (900 mm) and a minimum vertical separation of 18" (450 mm) from the sewer.
 - 3. Other regulating authorities may require more stringent limitations.
- B. Vertical Separation:
 - 1. Sewers crossing under watermain: The sewer shall be laid to provide a minimum 18" (450 mm) from the top of the sewer to the bottom of the watermain. The crossing shall be arranged so the sewer joints will be equidistant and as far as possible from the watermain joints.
 - 2. Sewers crossing over watermain: The sewer shall be laid to provide a minimum of 18" (450 mm) from the top of the watermain to the bottom of the sewer provided the watermain is constructed of PVC, ABS, HDPE, or Ductile Iron with cathodic protection. The crossing shall be arranged so the sewer joints will be equidistant and as far as possible from the watermain joints.
 - 3. Other regulating authorities may require more stringent limitations.
- C. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods must be utilized:
 - 1. Water Pipe: The sewer shall be designed and constructed equal to water pipe and shall be pressure tested at 150 psi to assure watertightness.
 - 2. Carrier Pipe: Either the watermain or the sewer line may be encased in a watertight carrier pipe that extends 10' (3 m) on both sides of the crossing, measured perpendicular to the watermain. The carrier pipe shall be PVC, ABS, or HDPE and the ends sealed with a rubber gasket or boot. Backfill the trench with low permeability soil for 10' (3m) on both side of the crossing.

3.04 INSTALLATION - DRAINAGE STRUCTURES

- A. Install cast-in-place and reinforced precast concrete structures in accordance with Drawings and applicable Illinois DOT specifications.
 - 1. Place concrete base pad on a minimum of 8 inches of granular bedding material.
 - 2. Cast-in-place concrete bases shall be reinforced with No. 4 reinforcing bars on 12" centers both ways, placed in center of the base, unless noted otherwise on plans.
 - 3. Only one precast manhole riser section shall be placed upon new cast-in-place concrete bases until the concrete has reached 50 percent of its design strength.
- B. Pipe Connection to Drainage Structures:
 - 1. Pipe connections into drainage structures through precast or saw cut open hole shall be sealed with concrete on the inside and outside of the structure wall to the satisfaction of Engineer or Inspector.
 - 2. Where indicated on the Drawings, the Contractor will be required to connect the proposed storm sewer into a new manhole or intake. These connections shall be structurally sound and water tight. They shall be constructed in such a way to minimize impedance of flow.
 - 3. PVC pipe connections to drainage structures shall use a manhole waterstop gasket assembly approved in advance by Engineer, unless precast A-Lok gaskets are used.
- C. Form bottom of excavation clean and smooth to correct elevation.

3.05 MAINTENANCE OF FLOW

- A. At the end of each work day, the Contractor shall re-establish the full capacity of any drainage system affected by construction. Diversion of storm water into the sanitary sewer system is not allowed.

3.06 FIELD QUALITY CONTROL

- A. Perform field inspection and testing in accordance with Section 01 4000.
- B. The testing shall be done on a daily basis in a timely manner with the progress of the work to insure acceptable construction workmanship. Subsequent work shall not proceed without acceptable test results of the previous work. Testing of embankment or backfill shall occur at the time of placement and compaction. Returning later to perform testing is unacceptable.
- C. Perform the following tests:
 - 1. Trench backfill:
 - a. Standard Proctor: One minimum.
 - b. In-place Density and Moisture: Upper 3 feet, 1 per 6 inch lift per 1000 LF; below 3 feet, 1 per 12 inch lift per 1000 LF.
 - 2. Granular material
 - a. Gradation: 1/2000 TN.
 - b. Standard Proctor: One minimum.
 - c. In-place Density and Moisture: 1/500 LF.
- D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.07 PROTECTION

- A. Protect pipe and bedding cover from damage or displacement until backfilling operation is in progress.

END OF SECTION 02550

SECTION 02577
PARKING LOT STRIPING

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

- A. This work shall consist of furnishing all labor, materials, tools, and equipment necessary for surface preparation and application of paint pavement markings, including clean-up and restoration of the location. This work shall consist of installation of signage as indicated on plans.

1.02 REFERENCES

- A. Work under this item shall be performed in accordance with Sections 780 and 1095 of the Standard Specifications, except as herein modified, and the Manual of Uniform Traffic Control Devices (MUTCD).

1.03 STANDARDS

- A. Parking Lot Striping Plan, as shown in the Drawings.

1.04 SUBMITTALS

- A. The contractor shall submit to the Engineer a certificate from the supplier indicating compliance with Articles 1095.01 of the Standard Specifications.

PART 2 – PRODUCTS

2.01 PAINT

- A. Paint materials shall meet the requirements of Article 1095.02 of the Standard Specifications.

2.02 THERMOPLASTIC

- A. Thermoplastic materials shall meet the requirements of Article 1095.02 of the Standard Specifications.

PART 3 – EXECUTION

3.01 PAINT PAVEMENT MARKINGS

Work under this item shall be performed in accordance with Articles 780.01, 780.02, 780.03, 780.04, and 780.06 of the Standard Specifications, except as herein modified.

- A. Do not apply paint pavement markings until the layout and placement has been verified by the Engineer.
- B. The paint shall be applied with mechanical equipment to produce uniform straight line edges.
- C. Rate of application shall be as per manufacturer's recommended rate, but in no case shall the rate of application be less than that specified in Article 780.06.

3.02 THERMOPLSTIC PAVEMENT MARKINGS

Work under this item shall be performed in accordance with Articles 780 of the Standard Specifications, except as herein modified.

- A. Do not apply pavement markings until the layout and placement has been verified by the Engineer.
- B. The pavement markings shall be applied with mechanical equipment to produce uniform straight line edges.
- C. Rate of application shall be as per manufacturer's recommended rate, but in no case shall the rate of application be less than that specified in Article 780.05.

PART 4 – MEASUREMENT AND PAYMENT

4.01 MEASUREMENT

- A. No separate measurement shall be made for PARKING LOT STRIPING.
- B. Pavement Markings shall be measured in place as THERMOPLASTIC PAVEMENT MARKING, LINE of the width specified measured per linear foot (FOOT).

4.02 PAYMENT

- A. This work will be paid for at the contract unit prices per foot of applied line width, as specified, for PAINT PAVEMENT MARKING – LINE 4 INCHES (YELLOW), THERMOPLASTIC PAVEMENT MARKING LINE, and per square foot for PAINT PAVEMENT MARKING – LETTERS AND SYMBOLS AND PAINT PAVEMENT MARKING – PARKING STALL NUMBERING, as shown in the Schedule of Prices.

END OF SECTION 02577

SECTION 02740
AGGREGATE BASE COURSES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Aggregate base course.

1.02 REFERENCE STANDARDS

- A. Illinois DOT Standard Specifications for Road and Bridge Construction, Latest Edition and Current Supplements thereto.
- B. AASHTO M 147 - Standard Specification for Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses; American Association of State Highway and Transportation Officials.
- C. ASTM D698 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³)).
- D. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
- E. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN m/m³)).
- F. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Materials Sources: Submit name of imported materials source.
- C. Aggregate Composition Test Reports: Results of laboratory tests on actual materials used.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Materials shall be in accordance with IDOT Article/Section 1004.04.

2.02 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for general requirements for testing and analysis of aggregate materials.
- B. Where aggregate materials are specified using ASTM D2487 classification, test and analyze samples for compliance before delivery to site.

PART 3 EXECUTION

3.01 EXAMINATION

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

- B. Verify substrate has been inspected, gradients and elevations are correct, and is dry.

3.02 PREPARATION

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place aggregate on soft, muddy, or frozen surfaces.

3.03 INSTALLATION

- A. Installed in accordance with IDOT Section 351.05.
- B. Spread aggregate over prepared substrate to a total compacted thickness as shown on the Drawings.
- C. Aggregate base coarse shall be used under Concrete Paving and Asphalt Paving as shown on the Drawings.
- D. Compact to 97 percent of maximum dry density, as determined by the standard proctor test.
- E. Place aggregate in maximum 4 inch layers and roller compact to specified density.
- F. Level and contour surfaces to elevations and gradients indicated.
- G. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.
- H. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- I. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 TOLERANCES

- A. Variation From Design Elevation: Within 1/2 inch.

3.05 FIELD QUALITY CONTROL

- A. Compaction density testing will be performed on compacted aggregate base course in accordance with ASTM D1556.
- B. Results will be evaluated in relation to compaction curve determined by testing uncompacted material in accordance with ASTM D 698 ("standard Proctor").
- C. If tests indicate work does not meet specified requirements, remove work, replace and retest.
- D. Proof roll compacted aggregate at surfaces that will be under slabs-on-grade and paving.

END OF SECTION 02740

SECTION 02741
HOT-MIX ASPHALT PAVING

PART 1 – GENERAL

1.01 SUMMARY

- A. This section includes the following:
 - 1. Hot-mix Asphalt Pavement Patching
 - 2. Hot-mix Asphalt Pavement

1.02 SUBMITTALS

- A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.

1.03 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Engage a firm experienced in manufacturing hot-mix asphalt similar to that indicated for this Project and with a record of successful in-service performance.
- B. Firm shall be a registered and approved paving mix manufacturer for IDOT.
- C. Installer Qualifications: Engage an experienced installer who has completed hot-mix asphalt paving similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- D. Testing Agency Qualifications: Demonstrate to the Engineer's satisfaction, based on Engineer's evaluation of criteria conforming to ASTM D 3666, that the independent testing agency has the experience and capability to satisfactorily conduct the testing indicated without delaying the Work.
- E. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of Section 406 Hot-mix Asphalt Binder and Surface Course and Section 442 PAVEMENT PATCHING and other applicable sections of the IDOT SSRBC. Measurement and payment provisions set forth in the IDOT SSRBC do not apply to this Section. The Schedule of Prices included in the Bid Form shall govern payment for furnishing the labor, material, and equipment for the construction of hot-mix asphalt surfaces and pavement patches.

1.04 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
 - 1. Prime Coat: Minimum surface temperature of 60° F
 - 2. Asphalt Surface Course: Minimum surface temperature of 45° F and rising in the shade at time of placement.
 - 3. Asphalt Binder Course: Minimum surface temperature of 40° F and rising into shade at time of placement.

PART 2 – PRODUCTS

2.01 BITUMINOUS MATERIALS

- A. Prime Coat: Prime shall be MC-30 as specified in the IDOT SSRBC.
- B. Hot-Mix Asphalt Surface Course: HMA N-50 as specified in the IDOT SSRBC. Use materials and gradations that have performed satisfactorily in previous installations. Coarse and Fine Aggregate shall be as specified in the IDOT SSRBC.
- C. Hot-Mix Asphalt Binder Course: HMA N-50 as specified in the IDOT SSRBC. Use materials and gradations that have performed satisfactorily in previous installations. Coarse and Fine Aggregate shall be as specified in the IDOT SSRBC.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to begin paving.
- B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
 - 1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph.
 - 2. Proof roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
 - 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Engineer, and replace with compacted backfill or fill as directed.
- C. Notify Engineer in writing of any unsatisfactory conditions. Do not begin paving installation until these conditions have been satisfactorily met. Proceed with paving only after unsatisfactory conditions have been corrected.
- D. Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces.

3.02 HOT-MIX ASPHALT PAVEMENT PATCHING

- A. Preparation: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 6 inches into adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove temporary surface materials to the required depth, and remove excavated materials and legally dispose of them in an EPA-approved landfill. Recompact existing unbound-aggregate base course to form new subgrade. The new patch shall meet the thickness of the adjacent pavement.
- B. Prime Coat: Apply uniformly to vertical surfaces abutting or projecting into new, hot-mix asphalt paving at a rate of 0.35 gallon/square yard.
 - 1. Allow prime coat to cure undisturbed before applying hot-mix asphalt paving.
 - 2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

- C. Patching: Fill excavated pavements with hot-mix asphalt surface mix for full thickness of patch in the Access Drive as noted on the plans and, while still hot, compact flush with adjacent surface. The patch shall be Class D as specified in Section 442 PAVEMENT PATCHING of the IDOT SSRBC.
Fill excavated pavements with hot-mix asphalt surface mix at a thickness of two and one half (2 ½) inches of patch in the Parking Lot as noted on the plans and, while still hot, compact flush with adjacent surface. The patch shall be Class D as specified in Section 442 PAVEMENT PATCHING of the IDOT SSRBC.
- D. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
- E. The Schedule of Prices in the Bid Form shall govern payment for furnishing the labor, material and equipment for construction of pavement patches.

3.03 HOT-MIX ASPHALT PAVING

- A. This work shall consist of the placement of bituminous pavement. This work shall be constructed in compliance with Section 406 hot-mix asphalt surface course of the IDOT SSRBC and follow the pavement section thickness as depicted on the plans.

3.04 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers. Pavement shall be compacted in 2 lifts in compliance with Section 406 HOT MIX ASPHALT BINDER AND SURFACE COURSE of the IDOT SSRBC.
 - 1. Complete Compaction before mix temperature cools to 185° F.
 - 2. Pavement Density: 95% of reference laboratory density according to ASTM D 1559.
- B. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- C. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- D. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.05 FIELD QUALITY CONTROL

- A. Testing Agency: Contractor shall engage a qualified testing agency to perform tests and inspections.
- B. In-Place Density: Testing Agency will perform density testing during paving operations by nuclear method.
- C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.06 BASIS OF PAYMENT

- A. Asphalt will be paid for at the contract unit price per square yard for HOT MIX ASPHALT CLASS "D" PATCHES, 4" and HOT MIX ASPHALT CLASS "D" PATCHES, FULL DEPTH as shown on the Schedule of Prices
- B. Prime Coat will be paid at the contract unit prices per gallon for BITUMINOUS MATERIALS (PRIME COAT), as shown in the Schedule of Prices

END OF SECTION 02741

SECTION 02751
CEMENT CONCRETE PAVEMENT

PART 1 – GENERAL

1.01 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:

1. Driveways and roadways.
2. Curbs and gutters.
3. Walkways.

1.02 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.03 QUALITY ASSURANCE

- A. Hot weather placement: When hot weather conditions exist, that will impair the quality and strength of concrete, place concrete in full compliance with ACI 305.
- B. Cold weather placement: Protect all concrete work from physical damage or reduced strength, which could be caused by frost, freezing action, or low temperatures in full compliance with ACI 306.

PART 2 – PRODUCTS

2.01 CONCRETE MATERIALS

- A. Ready mix concrete conforming to ASTM C-94
- B. Portland Cement shall be ASTM C 150. Fly ash and Calcium chloride shall not be used.
- C. Curing Compound complying with ASTM C 903.
- D. Concrete mix to comply with IDOT SSRBC standards and the following strength: 3,500 PSI at 14 days

PART 3 – EXECUTION

3.01 CONCRETE CURB AND GUTTER

- A. Any City requirements regarding expansion and contraction joints shall govern construction. Where proposed curb connects to an existing curb, the existing curb shall be saw cut and then two (2) 18" long x $\frac{3}{4}$ " (#6) dowel bars shall be drilled and installed 9" into the existing and proposed curb, as well as preformed expansion joints. Curb and gutter cross-section shall match the adjacent curb and gutter. Concrete curb and gutter shall be installed on 4" CA-6 aggregate base. Comply with materials, workmanship, and other applicable requirements of Section 606 CONCRETE GUTTER, CURB, MEDIAN, AND PAVED DITCH and other applicable sections of the IDOT SSRBC. Measurement and payment provisions set forth in the IDOT SSRBC do not apply to this Section. The Schedule of Prices included in the Bid Form shall govern payment for furnishing the labor, material, and equipment for the removal and/or replacement of concrete curb and gutter. CA-6 aggregate base is included in concrete curb and gutter pay item.

3.02 CONCRETE SIDEWALKS

- A. Comply with materials, workmanship, and other applicable requirements of Section 424 PORTLAND CEMENT CONCRETE SIDEWALK and other applicable sections of the IDOT SSRBC. Measurement and payment provisions set forth in the IDOT SSRBC do not apply to this Section. Sidewalk width shall be match the existing sidewalk adjacent to pour. Newly installed sidewalk shall be pitched at $\frac{1}{4}$ "/ft to allow drainage. 2-#4 steel reinforcing bars 20' long shall be placed over all trenches. Sidewalk base shall be installed on subgrade that has been compacted to a least 90% of standard proctor density. Sidewalk shall be installed on 2" CA-6 aggregate base which has been compacted and rolled. PCC shall be finished with a light broomed surface. The Schedule of Prices included in the Bid Form shall govern payment for furnishing the labor, material, and equipment for the removal and/or replacement of concrete sidewalk. CA-6 aggregate base is included in concrete sidewalks pay item.

3.03 CONCRETE DRIVEWAYS (OMITTED)

3.04 CONCRETE DITCH (OMITTED)

END OF SECTION 02751

SECTION 02752 CONCRETE CURING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Initial and final curing of horizontal and vertical concrete surfaces.

1.02 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International.
- B. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International.
- C. ACI 305R - Hot Weather Concreting.
- D. ACI 308R - Guide to Curing Concrete; American Concrete Institute International.
- E. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete.
- F. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
- G. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on curing compounds and moisture-retaining sheet, including compatibility of different products and limitations.

1.04 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301 and ACI 302.1R.
- B. Maintain one copy of each document on project site.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver curing materials in manufacturer's sealed packaging, including application instructions.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Membrane Curing Compound: ASTM C309 Type 1 - Clear or translucent, Class A.
 - 1. Do not use for surfaces which will be in contact with process water.
 - 2. Should not prevent bond to future additional concrete or to other finishes.
- B. Moisture-Retaining Sheet: ASTM C171.
 - 1. White-burlap-polyethylene sheet, weighing not less than 10 oz/per linear yd, 40 inches wide.
- C. Polyethylene Film: ASTM D2103, 6 mil thick, clear.
- D. Water: Potable, not detrimental to concrete.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to be cured.

3.02 EXECUTION - HORIZONTAL SURFACES

- A. Curing by ponding, spraying or saturated sheet shall be used for all surfaces which will be in contact with process water, and for all other structures where possible. Membrane curing compound may be used for other structures if specifically requested by Contractor and approved by Engineer.
- B. Cure floor surfaces in accordance with ACI 308R.
- C. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for 4 days.
- D. Spraying: Spray water over floor slab areas and maintain wet for 7 days.
- E. Absorptive Moisture-Retaining Sheet: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place for 7 days.
- F. Membrane Curing Compound: Apply curing compound in accordance with manufacturer's instructions in two coats, with second coat applied at right angles to first.

3.03 EXECUTION - VERTICAL SURFACES

- A. Cure surfaces in accordance with ACI 308R.
- B. Cure walls of liquid-retaining structures by covering with moisture-retaining sheets and poly. Run soaker hose along top of wall and allow water to soak both sides of wall continuously for 7 days.
 - 1. In lieu of this, loosen wall forms slightly, protect wall forms from freezing and evaporation loss, and use soaker hose as above.
- C. For non-liquid-retaining structures, additional curing possibilities are:
 - 1. Spraying: Spray water over surfaces and maintain wet for 7 days.
 - 2. Membrane Curing Compound: Apply compound in accordance with manufacturer's instructions in two coats, with second coat applied at right angles to first.

3.04 PROTECTION

- A. Do not permit traffic over unprotected floor surface.

3.05 FIELD QUALITY CONTROL

- A. Method and application of curing shall account for concrete temperature, air temperature, relative humidity, and wind velocity. When evaporation rates exceed 0.2 lb/sq.ft./hour, precautions shall be taken to prevent plastic shrinkage cracking. Use Figure 2.1.5 of ACI 305R for evaluating.

END OF SECTION 033900

SECTION 02832
SEGMENTAL RETAINING WALLS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Segmental retaining walls made of modular concrete units with or without soil reinforcement.
- B. Shop drawings.
- C. Retaining wall units.
- D. Cap units.
- E. Shear connectors.
- F. Soil reinforcement.
- G. Drainage filter.
- H. Aggregate for leveling pad.
- I. Drainage fill.
- J. Reinforced backfill.
- K. Drainage pipe.

1.02 RELATED REQUIREMENTS

- A. Section 02230 - Site Clearing and Preparation.
- B. Section 02300 - Earthwork.

1.04 REFERENCE STANDARDS

- A. AASHTO M 288 - Standard Specification for Geosynthetic Specification for Highway Applications; 2017.
- B. AASHTO NTPEP - National Transportation Product Evaluation Program; Current Edition.
- C. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
- D. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units; 2016a.
- E. ASTM C150/C150M - Standard Specification for Portland Cement; 2018.
- F. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.
- G. ASTM D2166/D2166M - Standard Test Method for Unconfined Compressive Strength of Cohesive Soil; 2016.
- H. ASTM D5262 - Standard Test Method for Evaluating the Unconfined Tension Creep and Creep Rupture Behavior of Geosynthetics; 2007 (Reapproved 2016).
- I. ASTM D5818 - Standard Practice for Exposure and Retrieval of Samples to Evaluate Installation Damage of Geosynthetics; 2011.
- J. ASTM D6638 - Standard Test Method for Determining Connection Strength Between Geosynthetic Reinforcement and Segmental Concrete Units (Modular Concrete Blocks); 2011.
- K. ASTM D6916 - Standard Test Method for Determining the Shear Strength Between Segmental Concrete Units (Modular Concrete Blocks); 2011.
- L. ASTM D1241 - Standard Specification for Materials for Soil-Aggregate Subbase, Base, and Surface Courses; 2015.
- M. ASTM D4355/D4355M - Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus; 2014.
- N. ASTM D4632/D4632M - Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 2015a.

- O. ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile; 2016.
- P. ASTM D7928 - Standard Test Method for Particle-Size Distribution (Gradation) of Fine-Grained Soils Using the Sedimentation (Hydrometer) Analysis; 2017.
- Q. NCMA TR-160 - Seismic Design Manual for Segmental Retaining Walls; National Concrete Masonry Association; 1998.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Coordination: Coordinate the installation of soil reinforcement with segmental retaining wall size, location, and installation of service utilities.
- B. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to the start of the work of this section with the material supplier, installer, and the Architect.
- C. Sequencing: Ensure that utility connections are achieved in an orderly and expeditious manner.

1.06 SUBMITTALS

- A. See Section 01330 – Submittals Procedure, for submittal procedures.
- B. Segmental Retaining Wall Units:
 - 1. Manufacturer's product data.
 - 2. ICC-ES evaluation report.
 - 3. Test data on freeze-thaw durability per ASTM C1372.
 - 4. Test data on unit strength and shear resistance between units.
 - 5. Test data on soil reinforcement connection.
 - 6. Manufacturer's certification that units meet requirements of specification.
 - 7. Storage and handling requirements and recommendations.
 - 8. Installation methods.
- C. Soil Reinforcement:
 - 1. Manufacturer's product data.
 - 2. ICC-ES evaluation report.
 - 3. Manufacturer's certification that product meets requirements of specification.
 - 4. Preparation instructions and recommendations.
 - 5. Storage and handling requirements and recommendations.
 - 6. Installation methods.
- D. Shop Drawings: Engineering drawings for installation, including elevations, large-scale details of elevations, typical sections, details, and connections, soil reinforcement, and drainage provisions.
 - 1. Include marked up contract drawings showing exact dimensions for blocks, required coping, and other minor revisions.
 - 2. Design Data: Submit detailed design calculations showing compliance with specified design criteria and material evaluations performed in accordance with specified design standard, signed and sealed by Design Engineer.
 - 3. Submit no less than 2 weeks prior to start of work.
 - 4. Obtain approval of Owner's Engineer prior to start of work.
- E. Product Certification: Provide with each shipment indicating that specified materials have been delivered.
- F. Unit Sample for Selection: Minimum 3 inch (75 mm) square pieces of actual units showing colors and finish textures available.
- G. Unit Sample: One unit units typical of size, color, and finish texture specified.
- H. Soil Reinforcement Sample: Two pieces of each specified type, labeled, 12 by 12 inches (305 by 305 mm).
- I. Soil Reinforcement to Unit Connector: One connector.

- J. Preconstruction Soil Test Reports.
- K. Design Engineer's Qualification Statement.
- L. Concrete Unit Manufacturer Qualification Statement.
- M. Installer Qualification Statement.
- N. Maintenance Materials: Provide the following for Owner's use in maintenance of project.
 - 1. Extra Retaining Wall Units: Quantity equal to one (1) percent of total installed, matching installed units.

1.07 QUALITY ASSURANCE

- A. Design Engineer Qualifications: Provide design by or under direct supervision of Professional Engineer experienced in the work of this section and licensed in the State in which the Project is located and:
 - 1. Having minimum of five years documented experience in design of reinforced soil structures.
 - 2. Employed by firm that has designed a minimum of 500,000 square feet (46,450 sq m) of segmental retaining walls.
 - 3. Having minimum of \$5,000,000 aggregate liability insurance.
- B. Geotechnical Engineer: Employed by Owner; licensed in the State in which the Project is located.
- C. Manufacturer Qualifications -- Concrete Units: Firm specializing in manufacturing products specified in this section and:
 - 1. With not less than 2 years experience.
 - 2. Whose products have been used on a minimum of five successfully completed projects similar in scope and size.
 - 3. Having a minimum of 1,000,000 square feet (92,900 sm) of successfully completed retaining walls.
 - 4. Provide certification that concrete units meet the requirements of this specification.
- D. Manufacturer Qualifications -- Soil Reinforcement: Firm specializing in manufacturing products specified in this section and:
 - 1. With not less than 2 years experience.
 - 2. Whose products have been used on a minimum of five successfully completed projects similar in scope and size.
 - 3. Having a minimum of 1,000,000 square feet (92,900 sm) of successfully completed retaining walls.
 - 4. Provide certification that soil reinforcement meet the requirements of this specification.
- E. Installer Qualifications: Firm specializing in design and installation of segmental retaining walls and:
 - 1. With not less than 2 years documented experience.
 - 2. With a minimum of five previously constructed successful projects, similar in size and magnitude, using specified retaining wall system; provide contact names and numbers.
 - 3. Having site supervisor with verifiable qualified experience suitable for this project.
 - 4. Approved by retaining wall system manufacturer.
- F. Preconstruction Soil Testing: Engage a qualified independent testing agency to test soil reinforcement and backfill materials for compliance with design criteria.
- G. Product Testing: Performed by qualified independent testing agency or by manufacturer and witnessed by qualified independent testing agency.
- H. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes execution requirements.

1.08 MOCK-UP

- A. Prior to erection of retaining walls, provide mock-up for evaluation of installation workmanship.
- B. Erect 4 by 4 feet (1200 by 1200 mm) sample wall using materials specified.

- C. Locate mock-up where directed by Owner.
- D. Do not start masonry work until mock-up has been approved by Owner.
- E. Retain mock-up during construction as standard for judging completed work. Do not alter or destroy mock-up until work is completed.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Confirm that the specified materials have been delivered. Provide a product certification with each shipment.
- B. Store products above ground on wood pallets or blocking, in manufacturer's unopened packaging, until ready for installation.
- C. Prevent excessive soil and mud from coming in contact with face of concrete units.
- D. Polymeric Materials: Store at temperatures above minus 20 degrees F (minus 29 degrees C); rolled materials may be laid flat or stood on end.
- E. Protect material from damage. Do not use damaged material. Remove damaged material from the site.
- F. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.10 FIELD CONDITIONS

- A. Ambient Conditions: Do not install polymeric materials when temperatures are below minus 20 degrees F (minus 29 degrees C).
- B. Existing Conditions: See subsurface investigation report; see Section 00 3100.

1.11 WARRANTY

- A. See Section 01770 - Closeout Procedures, for additional warranty requirements.
- B. Correct defective Work within a two year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for Segmental Retaining Wall.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Segmental Retaining Walls:
 1. Anchor Wall Systems, Inc; Diamond Pro: www.anchorwall.com.
 2. Keystone Retaining Wall Systems LLC; Keystone Compac: www.kestonewalls.com/#sle.
 3. Allen Block; Classic; www.allenblock.com
 4. Approved equal.
 5. Reinforcement shall have AASHTO NTPEP approval.

2.02 RETAINING WALLS

- A. Contractor is responsible for design of the retaining walls.
- B. Design Standard: Design retaining walls to be capable of withstanding the effects of gravity loads due to soil pressures resulting from grades indicated, determined in accordance with:
 1. NCMA TR-127.
 2. FHWA NHI-10-024 and FHWA NHI-10-025.
 3. Include effects of sloped backfill as indicated on the drawings.
 4. Include effects of superimposed loads (surcharge) as indicated on the drawings.
 5. In addition, comply with applicable local, state, and federal codes and regulations.
 6. This design method considers potential failure modes categorized by external, internal, local, compound, and global stability.
 7. Seismic Stability: Perform analysis in accordance with ASCE 7.
 8. Provide engineering services as required for analysis for all modes of stability.
 9. Use of design software for calculations is permitted.
 10. Submit complete shop drawings showing all features of the design.

- C. Batter Ratio: Between 1 horizontal in 16 vertical and 1 horizontal to 6 vertical.
- D. Setback: 1/8 inch (3 mm) back from face per course.
- E. Mass (Weight) Per Wall Face Area: 35 pounds per square foot (171 kg per sq m), minimum, including filled voids.
- F. Shear Resistance: Design the wall not to exceed the capacity of materials and soils to resist shear:
 - 1. Shear Resistance Between Units: Determine in accordance with ASTM D6916.
 - 2. Connection Between Units and Soil Reinforcement: Determine in accordance with ASTM D6638. Strength shall exceed the maximum tensile force with a Factor of Safety of 1.5.
 - 3. Coefficient for Direct Shear of Reinforcement on Soil: Determine in accordance with ASTM D5321/D5321M using soil similar in gradation and texture to that to be used for fill in the reinforced zone.
- G Soil Reinforcement:
 - 1. Test reinforcement to be used in accordance with ASTM D6706 using soil taken from project site.
 - 2. Do not use more than one type of reinforcement attached to units within the same wall; do not use products made by different manufacturers in the same wall; minimize the number of different reinforcement and filter products to avoid confusion in placement.
 - 3. Walls Less Than 12 feet (3.5 m) High: Use only one type of reinforcement of one grade and strength.
 - 4. NCMA Method: Determine in accordance with NCMA TR-127:
 - 5. Length Back from Wall: Not less than dimensions shown on the drawings.
 - 6. Long Term Design Strength of Reinforcement: $LTDS = T_{ult} / (RF_d \times RF_{id} \times RF_{cr})$, where:
 - a. T_{ult} = Ultimate (tensile) strength per ASTM D4595.
 - b. RF_d = Reduction Factor for chemical and biological durability; minimum 2.0 if durability testing has not been conducted, otherwise 1.1 for High-density polyethylene (HDPE), and 1.1 for polyethylene terephthalate (PET).
 - c. RF_{id} = Reduction Factor for Installation Damage; minimum 1.1 and 3.0 if testing per ASTM D5818 has not been conducted.
 - d. RF_{cr} = Reduction Factor for Creep; consistent with test procedure used for determining the ultimate strength per ASTM D5262.
 - e. The product $RF_d \times RF_{id} \times RF_{cr}$ shall be greater than 2.0.
 - 7. Lowest Layer of Reinforcement: Long term design strength as specified, minimum.
 - 8. FHWA Method: Determine in accordance with FHWA NHI-10-025:
 - a. Calculate total reinforcement tension per unit width of slope: $T_s = (F_{Sr} - F_{Su}) \times (M_d / D)$, where:
 - 1) T_s = Sum of the required tensile force per unit width of reinforcement.
 - 2) M_d = Driving moment about the center of the failure circle.
 - 3) D = Moment arm of T_s about the center of the failure circle.
 - 4) F_{Su} = Unreinforced slope safety factor.
 - 5) F_{Sr} = Target minimum slope factor of safety.
 - b. Determine the total design tension per unit width of slope: The largest T_s calculated: T_{s-max} .
 - c. Determine the distribution of reinforcement:
 - 1) For low slopes ($H \leq 20$ feet (6 m)): Use T_{s-max} to determine.
 - 2) For high slopes ($H > 20$ feet (6 m)):
 - (a) Use 1 vertical zone: T_{s-max} , or;
 - (b) Use 2 vertical zones: $T_{bottom} = 3/4 T_{s-max}$; and $T_{top} = 1/4 T_{s-max}$, or;
 - (c) Use 3 vertical zones: $T_{bottom} = 1/2 T_{s-max}$; $T_{middle} = 1/3 T_{s-max}$; and $T_{top} = 1/6 T_{s-max}$.
 - d. Determine the vertical reinforcement spacing: $T_{max} = (T_{zone} \times S_v) / H_{zone}$:
 - 1) T_{zone} = Maximum reinforcement tension required for each zone.
 - 2) S_v = Vertical spacing of reinforcement.

- 3) H-zone = Height of zone.
- e. Determine the reinforcement length required: $Le = (T_{max} \times FS) / (F^* \times a \times o'v \times R_c \times C)$:
 - 1) Le = Embedment or adherence length in the resisting zone behind the failure surface.
 - 2) FS = Factor of safety.
 - 3) F^* = Pullout resistance.
 - 4) a = Scale effect correction factor.
 - 5) $o'v$ = Effective vertical stress at the soil-reinforcement interfaces.
 - 6) R_c = Coverage ration.
 - 7) C = Reinforcement effective unit perimeter.
- H. Drainage: Design to prevent water accumulation in retained soil; use drainage fill and drainage pipe as specified by manufacturer; provide outlets at 50 foot (15 m) intervals along length of wall, minimum.
- I. Minimum Factor of Safety: Design with the following stability requirements:
 1. Sliding = 1.5.
 2. Pullout = 1.5.
 3. Tensile Overstress = 1.5.
 4. Overturning = 2.0.
 5. Bearing Capacity = 2.0.

2.03 MATERIALS

- A. Retaining Wall Units: Machine-formed concrete blocks of shapes and sizes suitable for the retaining wall configuration required and complying with ASTM C1372 and the following:
 1. Portland Cement: Type I in accordance with ASTM C150/C150M.
 2. Face Color: Tan Buff.
 3. Texture: Split face, on exposed surfaces.
 4. Face Shape: Straight (flat).
 5. Curved Walls: Provide unit shapes that accommodate the required curves without cutting and with gaps between faces of adjacent units of not more than 1/8 inch (3 mm) and a minimum radius of 3 1/2 feet (1 m).
 6. Acute Corners: Provide special shapes to form corners without cutting; exposed faces finished to match.
 7. Unit Face Area: 2/3 square feet (0.06 sq m), minimum.
 8. Height: 4 inches (102 mm), minimum.
 9. Length (Face Width): 8 inches (203 mm), minimum.
 10. Width (Depth from Face): 11 inches (279 mm), minimum, not including textured finish.
 11. Face Wall Thickness: 2 inches (51 mm), minimum.
 12. Batter Ratio: Between 1 horizontal in 16 vertical and 1 horizontal to 6 vertical.
 13. Batter Dimensional Control: Provide integral positive control to maintain consistent batter dimension.
 14. Shear Resistance Mechanism: Manufacturer's standard.
 15. Moisture Absorption: 8 percent, maximum.
 16. Freeze-Thaw Resistance: Maximum of 1 percent or less weight loss after 100 cycles for each of 5 specimens or maximum of 1.5 percent or less weight loss after 150 cycles for 4 of 5 specimens, when tested in accordance with ASTM C1262.
 17. Compressive Strength, 28 Day: 3000 pounds per square inch (20.7 MPa), minimum in accordance with ASTM C140/C140M.
 18. Concrete Density: 125 pounds per cubic foot (2000 kg per cubic m), minimum, oven dry.
 19. Dimensional Tolerances: Plus/minus 1/16 inch (1.5 mm) from specified dimension.
 21. Appearance: No visible chips, cracks, or other imperfections when viewed from 10 feet (3 m) under diffuse lighting.

- B. Cap Units: Portland cement concrete machine-formed solid blocks, matching segmental retaining wall units, complying with ASTM C1372, with abutting edges saw cut or formed to provide tight fitting, flush end-to-end joints.
 - 1. Height: 4 inches (102 mm), minimum.
 - 2. Width: Same as wall units.
 - 3. Depth: To fully cover wall units.
 - 4. Masonry Adhesive: To secure cap units as top course of wall.
 - a. Expected Life Span: 30 years.
 - b. Provide adhesive conforming to ASTM C920, Type S, Grade NS, Class 25, and as approved by unit manufacturer.
- C. Shear Connectors: Connection method to withstand design stresses and prevent movement of segmental retaining wall units, and to hold soil reinforcement in proper design position during grid pre-tensioning and backfilling.
 - 1. Flexural Strength: 128,000 pounds per square inch (882 MPa), minimum, determined in accordance with ASTM D6638.
 - 2. Short Beam Shear: 6,400 pounds per square inch (44 MPa), minimum, determined in accordance with ASTM D6638.
 - 3. Maintain strength over design temperature range of minus 10 degrees F (23 degrees C) to plus 100 degrees F (38 degrees C).
 - 4. Provide a minimum factor of safety of 1.5.
- D. Soil Reinforcement: Polymeric geosynthetic specifically fabricated to interlock with surrounding soil, rock, or earth for use as reinforcement, dimensionally stable and able to retain geometry under manufacture, transport, and installation.
 - 1. Polymeric Material: 100 percent virgin resin with maximum of 5 percent in-plant regrind material; polypropylene, polyethylene, or polyester.
 - a. Polyethylene and Polypropylene: Stabilized with long term antioxidants.
 - b. Polyester: Minimum molecular weight of 25,000 and carboxyl end group number less than 30.
 - 2. Construction: Woven.
 - 3. Permittivity: 0.5 per second, minimum, when tested in accordance with ASTM D4491.
 - 4. UV Resistance: 70 percent after 500 hours, when tested in accordance with ASTM D4355/D4355M.
 - 5. Durability: Comply with minimum requirements of AASHTO M 288 Class 1; minimum mass of 8 ounces per square yard (270 g/sq m).
 - 6. Source Quality Control: Test each 40,000 square feet (3,700 sq m) of production, per lot or per day, for compliance with specified design properties.
- E. Drainage Filter: Geosynthetic textile.
 - 1. Tensile Strength (Grab) - Woven: 250 pounds (1100 N), when tested in accordance with ASTM D4632/D4632M.
 - 2. Tensile Strength (Grab) - Non-Woven: 160 pounds (700 N), when tested in accordance with ASTM D4632/D4632M.
 - 3. Apparent Opening Size: 70 to 100 U.S. Sieve size (150 to 212 micrometer), when tested in accordance with ASTM D4751.
 - 4. Permittivity: 0.5 per second, minimum, when tested in accordance with ASTM D4491.
 - 5. Durability: Comply with minimum requirements of AASHTO M 288 Class 1; minimum mass of 8 ounces per square yard (270 g/sq m).
- F. Aggregate for Leveling Pad: Compacted sand, gravel, or crushed rock complying with one of the following:
 - 1. Meeting requirements of CA6 100% Crushed.
 - 2. Do not use pea gravel.
- G. Concrete for Leveling Pad: Unreinforced concrete with compressive strength of 3,000 pounds per square inch (20 MPa).

- H. Drainage Fill: Clean, freely draining aggregate placed within, between, or immediately behind segmental retaining wall units; do not use pea gravel; use one of the following:
 - 1. Aggregate as approved by Architect.
 - 2. Aggregate meeting requirements of ASTM D448, Size No. 57.
 - 3. Crushed stone or coarse gravel, 3/8 inch (10 mm); no more than 5 percent passing No. 200 sieve.
 - 4. Crushed stone or coarse gravel, meeting requirements of ASTM D7928.
 - a. Sieve Size 1 inch (25 mm): 100 percent passing.
 - b. Sieve Size 3/4 inch (19 mm): 75 to 100 percent passing.
 - c. Sieve Size No. 4: 0 to 60 percent passing.
 - d. Sieve Size No. 40: 0 to 50 percent passing.
 - e. Sieve Size No. 200: 0 to 5 percent passing.
- I. Reinforced Backfill: Compacted soil placed behind drainage fill within reinforced soil mass; do not use heavy clay or organic soils; comply with one of the following:
 - 1. Use site-excavated or other soil approved by Architect.
 - 2. Granular soil with less than 35 percent passing No. 200 sieve per ASTM D7928.
 - 3. Inorganic ASTM D2487 soil types GP, GW, SP, or SM, free of debris.
 - a. Maximum Size: 3/4 inch (19 mm), unless approved by Design Engineer, and design strength reduced to account for additional installation damage.
 - b. Plasticity of Fines: Less than 10. Liquid Limit: Less than 40, when tested in accordance with ASTM D4318.
 - c. Maximum Dry Unit Weight: Greater than or equal to 100 pounds per cubic foot (16 kg/cm) per ASTM D698.
 - d. Internal Angle of Friction: Equal to 30 degrees per ASTM D2166/D2166M.
 - e. Sieve Size 4 inches (102 mm): 75 to 100 percent passing.
 - f. Sieve Size 1 inch (25 mm): 75 to 100 percent passing.
 - g. Sieve Size No. 4: 20 to 100 percent passing.
 - h. Sieve Size No. 40: 0 to 60 percent passing.
 - i. Sieve Size No. 200: 0 to 35 percent passing.
- J. Drainage Pipe: 4 inch (100 mm) Perforated schedule 40 PVC, complying with ASTM D3034; or corrugated HDPE complying with ASTM F405; with geotextile filter wrap.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify location of existing structures and utilities prior to excavation.
- B. Protect adjacent structures from the effects of excavation.
- C. Verify that layout dimensions are correct and substrate is in proper condition for installation.
- D. Notify Architect of unsatisfactory conditions.
- E. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Sitework:
 - 1. Remove unwanted trees, bushes, and debris as specified in Section 02230.
- B. Excavation:
 - 1. Excavate to lines and grades indicated on drawings.
 - 2. Do not disturb embankment or foundation beyond lines. Minimize over-excavation; fill over-excavated areas with compacted reinforced backfill or leveling pad material at Contractor's expense.
 - 3. After excavation, and prior to placement of leveling materials, Geotechnical Engineer will examine bearing soil surface to verify strength meets or exceeds design requirements and assumptions.
 - 4. Replace unsuitable bearing soil as directed by Architect.
 - 5. Provide means of controlling surface water away from excavation during construction.

6. Perform rough and finish grading as specified in Section 31 2200.
- C. Leveling Pad:
1. Depth: As specified by manufacturer.
 2. Width: 6 inches (152 mm) minimum extension beyond front and back faces of units.
 3. Location: Top of pad at 1 inch (25 mm) below grade for each 8 inches (200 mm) that wall extends above grade.
 4. Compact aggregate to lines and grades on drawings, in lifts 6 inches (152 mm) thick, maximum.
 5. Compact aggregate to a minimum of 90 percent modified Proctor density, when determined in accordance with ASTM D1557.
 6. Use only hand-operated compaction equipment within 36 inches (1 m) of back of wall.
- D. Verify level grade before proceeding.
- E. Install drainage collection pipe with a continuous fall in the direction of flow. Cap open ends as necessary to prevent soil and debris from entering.

3.04 INSTALLATION

- A. Install in accordance with drawings, manufacturer instructions, and applicable codes and regulations.
- B. Segmental Retaining Wall Units:
1. Place first course of units on leveling pad; check alignment and level. Check for full contact with base and for stability.
 2. Place units side by side for full length of wall, aligning back face of straight walls using string line or offset from base line and back face of curved walls using flexible pipe or other method recommended by manufacturer.
 3. Do not leave gaps between units.
 4. Lay out corners and curves in accordance with manufacturer's instructions. Do not leave gaps to produce wall batter or curvature.
 5. Cut blocks with saw; do not split units.
 6. Sweep excess material from tops of units before laying succeeding courses.
 7. Place a maximum of 2 succeeding courses above level backfill. Check for proper alignment and batter.
 8. Where top of wall changes elevation, step units to match grade or turn top course into embankment.
 9. Where bottom of wall changes elevation, step base leveling pad and extend lowest course a minimum of two units into slope.
 10. Install shear connectors per manufacturer recommendations.
- C. Soil Reinforcement: Install each layer on fully compacted fill.
1. Orient soil reinforcement material with highest strength axis perpendicular to wall alignment.
 2. Attach to top of wall units and extend horizontally, full length, over compacted backfill slightly sloping downward away from wall.
 3. Install in one piece lengths with 100 percent coverage in each layer at each level. Do not splice or leave gaps between panels or ends of pieces.
 4. Pull taut and remove slack prior to backfill placement.
- D. Drainage Fill: Place drainage fill in, between, and behind units.
1. Compact to lines and grades on drawings, in lifts 6 inches (152 mm) thick, maximum; decrease lift thickness where necessary to achieve required density.
 2. Extend drainage fill 6 inches (150 mm) beyond back face of units.
 3. Base of drainage fill elevation shall not exceed two courses or 16 inches (400 mm) from base of wall units.
- E. Backfill: Place, spread, and compact backfill from behind drainage fill to undisturbed soil while minimizing the development of slack in the soil reinforcement.

1. Use only lightweight hand-operated compaction equipment within 3 feet (900 mm) from back wall face, or one half of wall height, whichever is greater.
 2. Place backfill in lifts of maximum 6 inches (150 mm) to 8 inches (200 mm) loose thickness where hand compaction is used and 8 inches (200 mm) to 10 inches (250 mm) where heavy compaction equipment is used.
 3. Compact backfill to 95 percent maximum density and upper 2 feet (600 mm) of backfill to 98 percent maximum density, standard Proctor, as determined in accordance with ASTM D698, or as recommended by Geotechnical Engineer.
 4. Moisture content of backfill prior to and during compaction to be within plus or minus 2 percentage points dry of optimum and uniform throughout each layer.
 5. Do not operate tracked construction equipment directly upon soil reinforcement. Maintain a minimum fill thickness of 6 inches (150 mm) for operation of tracked vehicles over soil reinforcement. Minimize turning of tracked vehicles while over soil reinforcement.
 6. Operate wheeled equipment at speeds less than 10 miles per hour (16 kph) over soil reinforcement.
 7. Prevent contamination of the filter fabric, unit fill, blanket drains, chimney drains, and/or drainage composite from poor drainage materials such as fine grained silt and clay.
- F. Cap Units: Install and top two courses of units with masonry adhesive.
1. Verify in-place top of wall elevation prior to installation of cap units and adjust accordingly.
 2. Clear cap units and top course of segmental retaining wall units of debris and standing water before applying adhesive.
 3. Apply masonry adhesive to top surface of top unit and place cap into position over projecting pins. Protect wall face from masonry adhesive.
- G. Site Drainage:
1. At end of each day:
 - a. Grade backfill a minimum of 2 percent away from wall to prevent runoff from adjacent areas from entering wall site and to prevent ponding at the wall.
 2. At completion, if other work adjacent to wall is not to be done immediately (paving, landscaping, etc.), grade top of backfill and provide temporary drainage to prevent water runoff toward the wall.

3.05 TOLERANCES

- A. Top of Wall:
1. Plan Location: Maximum of plus/minus 1 inch (25 mm) from plan location.
 2. Elevation: Maximum of plus/minus 1-1/2 inch (38 mm) from elevations shown on drawings.
- B. Face of Wall Flatness: Measured as deviation from a straight edge.
1. In the Vertical Dimension: Plus/minus 1-1/4 inch per 10 foot (31.75 mm in 3 m) section.
 2. In the Horizontal Dimension of Straight Walls: Plus/minus 1-1/2 inch per 10 foot (37.5 mm in 3 m) section.
- C. Overall Wall Batter: Within 2 degrees of design, measured from the vertical.
- D. Gap Between Adjacent Units: 1/8 inch (3 mm), maximum.

3.06 FIELD QUALITY CONTROL

- A. See Section 01400 - Quality Requirements, for additional requirements.
- B. Provide manufacturer's field representative to observe and inspect concrete units.
- C. Observe and inspect:
1. Concrete units: For correct type, for quality installation with courses that are level and follow the designed batter ratio.
 2. Soil backfill: For correct type, for specified compaction with level grading prior to reinforcement installation.
 3. Soil reinforcement: For correct type, for solid connection to concrete units, and for smooth and taut installation.

- 4. Field location in plan and elevation.
- D. Soil Tests: For every new soil type and/or for every 2,000 cubic yard per running foot (1,500 cm/m) perform Atterberg Limit, Sieve Analysis, and Proctor Compaction tests. Perform additional testing per project Architect.
- E. Owner will engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction. Contractor will secure necessary construction control testing during construction.
- F. Correct work found deficient and not in accordance with drawings and specifications.

3.07 CLEANING

- A. Clean wall face to remove debris and stains.
- B. Leave adjacent paved areas broom clean.
- C. See Section 01 7419 - Construction Waste Management and Disposal, for additional requirements.

3.08 PROTECTION

- A. Prevent damage to wall and earthwork by subsequent construction and uncontrolled runoff until substantial completion; repair damage due to failure to protect wall or earthwork.
- B. Do not operate equipment with wheel loads in excess of 150 pounds per square foot (1000 kPa) live load within 10 feet (3 m) from the wall face.
- C. Do not place temporary soil or fill stockpiles adjacent to wall.

3.09 MAINTENANCE

- A. See Section 01700 - Closeout Procedures, for additional requirements relating to maintenance service.
- B. Provide a separate maintenance contract for specified maintenance service.
- C. Annually clear any debris from the heel and toe drains that may cause blockage or damage.
- D. Annually inspect the top, ends, and bottom of the segmental retaining wall for signs of erosion. Report any deflection or movement to a qualified Architect.
- E. Weekly mow landscaped areas preventing plant or tree growth.

END OF SECTION

SECTION 02920
LANDSCAPING RESTORATION

PART 1 – GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Topsoil Placement/Fine Grading
 - 2. Seeding/Hydromulch
 - 3. Fertilizer
 - 4. Mulch
 - 5. Erosion Control Blanket

1.2 SUBMITTALS

- A. Product Data and Certification: For each type of product indicated below. Submit to engineer prior to restoration work.
 - 1. Topsoil
 - 2. Seed
 - 3. Fertilizer
 - 4. Mulch
 - 5. Erosion Control Blanket
- B. Submit written instructions recommending procedures for maintenance of seeded areas after completion of job to Owner as part of the final inspection and acceptance. Instructions shall detail general requirements for maintenance of all seeded areas including, but not limited to, weeding, watering, mowing, fertilizing, herbicide applications, etc.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver packaged materials in original sealed, labeled, and undamaged containers.
- B. Deliver, handle and store all materials according to product recommendations and protect from loss, damage and deterioration.
- C. Materials not meeting these requirements will be rejected.

1.5 PROJECT CONDITIONS

- A. Planting Restrictions: Plant during one of the following periods.
 - 1. Spring Planting: May 15th through June 1st
 - 2. Fall Planting: August 1st to September 15th

- B. Seeding shall only be performed when weather and soil conditions are suitable for planting the material specified in accordance with locally accepted practice.
- C. Planting season may be extended only with the written permission of the Owners representative.

PART 2 – PRODUCTS

2.1 TOPSOIL

- A. Topsoil:
 - 1. ASTM D 5268, pH range of 5.5 to 7, a minimum of 6% organic material content; free of stones 1 inch or larger in any dimension and other extraneous undesirable materials harmful to plant growth. Contractor is responsible for testing topsoil and submitting test results to Engineer for review and approval prior to use and placement.
 - 2. Reuse surface soil stockpiled on-site, if available and suitable.
 - 3. Verify suitability of stockpiled surface soil to produce topsoil.
 - 4. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
 - 5. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient.
 - 6. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from bogs or marshes.

2.2 SEED

- A. Seed shall be fresh, clean, of the previous year's crop with 0.5% or less weed seed, and 1.75% or less crop seed, by weight. Seed shall be dry and free of mold and noxious weed seed. Seed shall meet the following requirements:
 - 1. Turf Seed Mix: Arthur Clesen's Premium Mix
4.5 to 7.5 lb/1,000 sq. ft.
 - 30% Armada Kentucky Bluegrass
 - 25% America Kentucky Bluegrass
 - 25% Mercury Kentucky Bluegrass
 - 10% Seville 3 Perennial Ryegrass
 - 10% Cutter Perennial Ryegrass

2.3 FERTILIZER

- A. Type A
6-24-24 Clesen Starter as available from ACI or approved equal.
- B. Type C
12-26-12 Clesen with 50% Nitroform with minor elements .02% B, .05% Cu, 4.0% S, 1.0% Fe, .1% Mn, .006% Mo, as available from ACI or approved equal.
- C. Type D

10-20-30 Nutriculture soluble fertilizer as available from ACI or approved equal.

2.4 HYDROMULCH

- A. ENVIROBLEND all recycled fiber. 70% wood and 30% paper as available from ACI or approved equal.

2.5 TACKLIFIER

- A. CONTACT 10 by Conwed organic tackifier as available from ACI or approved equal.

2.6 EROSION CONTROL BLANKETS

- A. Erosion control blankets shall be biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended biodegradable staples of a minimum length of 6 inches. Erosion Control Blanket shall be in accordance with Article 251.04 of the IDOT SSRBC.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 LAWN PREPARATION

- A. Limit lawn subgrade preparation to areas to be planted.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
 - 1. Apply fertilizer directly to subgrade before loosening.
 - 2. Spread topsoil to at least a depth of 4 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
- C. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus ½ inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

- D. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- E. Before planting, restore areas if eroded or otherwise disturbed after finish grading.

3.4 TWO STEP APPLICATION FOR SLOPES 4:1 AND STEEPER

- A. Seed shall be incorporated to provide the specified rate of seed coverage per 1,000 square feet (or 1 acre) for the specified seed mix.
- B. Coverage shall be the responsibility of the Landscape Contractor and reapplication to areas not providing acceptable coverage shall be at no cost to the Owner.
- C. The ENVIROBLEND hydromulch shall be applied at a rate of 1,800 lbs per acre of lawn area.
- D. The Type D fertilizer shall be applied at a rate to equal 1/2 lbs N per 1,000 sf of lawn area.
- E. Upon the fine graded lawn area, the thoroughly combined mixture of seed, fertilizer, and mulch shall be spread by means of a stream or spray of water under pressure operated from an approved type of machine described as a "hydroseeder". The selected seed mix, water, fertilizer, mulch and plaster shall be placed into a tank provided within the machine, in sufficient quantities to provide uniform distribution of seed at the given rate of application. During the process the contents of the tank shall be kept stirred or agitated to provide uniform distribution of the seed.
- F. Mix and apply AIRTROL for erosion control per manufacturer specifications. Slopes greater than 4 to 1 at the bottom of swales shall be stabilized with erosion control blanket material as specified. Secure blanket with staples 3' o.c.

3.5 ONE STEP APPLICATION FOR SLOPES LESS THAN 4:1

- A. Seed shall be incorporated to provide the specified rate of seed coverage per 1,000 square feet (or 1 acre) for the specified seed mix.
- B. Coverage shall be the responsibility of the Landscape Contractor and reapplication to areas not providing acceptable coverage shall be at no cost to the Owner.
- C. The ENVIROBLEND hydromulch shall be applied at a rate of 1,800 lbs per acre of lawn area.
- D. The CONTACK 10 tackifier shall be applied at a rate to equal 40 lbs per acre of lawn area.
- E. The Type D fertilizer shall be applied at a rate to equal 1/2 lbs N per 1,000 sf of lawn area.
- F. Upon the fine graded lawn area, the thoroughly combined mixture of seed, fertilizer, mulch, and tackifier shall be spread by means of a stream or spray of water under pressure operated from an approved type of machine designed for that purpose. The selected seed mix, water, fertilizer, mulch and tackifier shall be placed into a tank provided within the machine, in sufficient quantities to give a uniform distribution of seed at the application rate indicated. During the process the contents of the tank shall be kept stirred or agitated to provide uniform distribution of the seed.

3.6 SATISFACTORY LAWNS

- A. Lawn installations shall meet the following criteria as determined by Engineer:

1. Satisfactory Seeded Lawn: At end of warranty period, a live, healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities.

3.7 LAWN RENOVATION

- A. Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles at no additional cost to Owner.
 1. Reestablish lawn where settlement or washouts occur or where minor regrading is required.
- B. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury in soil.
- C. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.
- D. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- E. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- F. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.
- G. Apply soil amendments and initial fertilizers required for establishing new lawns and mix thoroughly into top 4 inches of existing soil. Provide new planting soil to fill low spots and meet finish grades.
- H. Apply seed and protect with straw mulch as required for new lawns.
- I. Water newly planted areas and keep moist until new lawn is established.

3.8 CLEANUP AND PROTECTION

- A. Promptly remove excess materials, equipment, hydraulic slurry, soil and debris, created by lawn work, from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after lawn is established.
- C. Remove non-degradable erosion-control measures after grass establishment period. Remove any non-degradable staples used to secure erosion control blanket.

3.9 LAWN MAINTENANCE

- A. Begin maintenance immediately after each area is planted and continues until acceptable lawn is established, but for not less than the following periods:
 1. Seeded Lawns: Three (3) weeks or two (2) mowings, whichever occurs first.
- B. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth lawn.

1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.
- C. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches.
1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 2. Water lawn at a minimum rate of 1 inch per week.
- D. Lawn Post-fertilization: Apply fertilization after initial mowing and when grass is dry.
1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1,000 square feet to lawn area.

3.10 WARRANTY

- A. The warranty is to guarantee completed seeding areas for a maximum period of twenty-four months.
- B. During the warranty period, correct and reseed any defects in the seeded areas and grass stand, such as weedy areas, eroded areas, and bare spots. All repair work must be accepted by Engineer.
- C. Replace or repair to original condition, all damages to property resulting from the seeding operation or from the remedying of defects, at the Contractor's expense.
- D. Replacement costs are the Contractor's responsibility, except for those resulting from loss or damage due to occupancy of the project in any part, vandalism, civil disobedience, acts of neglect on the part of others, physical damage by animals, vehicles, fire, or losses due to curtailment of water by local authority, or by "Acts of God".

END OF SECTION 02920

SECTION 02923
LANDSCAPE GRADING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. This part of the Specifications includes all labor, materials, equipment, and supervision required to accomplish the landscape grading for plant beds (tree, shrub, ornamental grass, herbaceous perennial, groundcover and annual beds), and lawn areas.
2. The material and work specified in this section includes: topsoil, amended topsoil, topsoil and amended topsoil placement, and finish grading.

1.2 MEASUREMENT AND PAYMENT – TOPSOIL AND FINISH GRADE

- A. The Topsoil and Finish Grade for seeded lawn areas as indicated on the plans, complete-in-place and accepted, will be measured as a unit cubic yard quantity for all work necessary.
- B. The Topsoil and Finish Grade for seeded lawn areas measured as provided above will be paid for at the contract cubic yard price bid, which shall be full compensation for furnishing all equipment, materials, and all other work necessary or incidental to the construction of the complete Topsoil and Finish Grade for seeded lawn areas and for all equipment, tools, labor, and incidentals necessary to complete the work.

1.3 MEASUREMENT AND PAYMENT – AMENDED TOPSOIL AND FINISH GRADE

- A. The Amended Topsoil and Finish Grade for plant beds (tree, shrub, ornamental grass, herbaceous perennial, groundcover and annual beds) as indicated on the plans, complete-in-place and accepted, will be measured as a unit cubic yard quantity for all work necessary.
- B. The Amended Topsoil and Finish Grade for plant beds (tree, shrub, ornamental grass, herbaceous perennial, groundcover and annual beds) measured as provided above will be paid for at the contract cubic yard price bid, which shall be full compensation for furnishing all equipment, materials, and all other work necessary or incidental to the construction of the complete Amended Topsoil and Finish Grade for plant beds (tree, shrub, ornamental grass, herbaceous perennial, groundcover and annual beds) and for all equipment, tools, labor, and incidentals necessary to complete the work.

1.4 QUALITY ASSURANCE

- A. Codes and Standards: Perform work in accordance with applicable requirements of local and state codes and ordinances.

PART 2 - PRODUCTS

2.1 TOPSOIL

- A. On-site topsoil shall be used if available and suitable per the specifications, otherwise it shall be imported.
- B. Stockpiled topsoil should be pliable loam, typical of cultivated topsoils of the locality. Secure from naturally well drained areas. Use satisfactory soil materials with highly organic content capable of sustaining turf grass growth.
- C. Stockpiled topsoil shall be free of admixture of subsoil, free from clay lumps, stone, or other debris greater than 1" in diameter. Topsoil to have pH value of minimum 5.5 and maximum 7.0. Contractor is responsible for testing topsoil and submitting test results to Engineer for review and approval prior to use and placement.

2.2 AMENDED TOPSOIL MATERIALS

- A. Topsoil as specified above.
- B. Organic matter: A product of peat moss, compost, or locally available organic waste. Organic matter should be free from debris, weed seeds, and insects or diseases which may be harmful to the intended planting.
- C. Sand: Concrete sand, having a fineness modulus (FM) between 1.8 and 2.5.

PART 3 - EXECUTION

3.1 SEED AREA PREPARATION

- A. Loosen surface of subgrade to minimum two inch (2") depth to ensure a positive bond between subgrade and topsoil.
- B. Do not place finish topsoil until after clean-up and removal of construction debris, trash, surplus materials, and equipment from project site.
- C. Spread topsoil to uniform four inch (4") settled depth.
- D. Where topsoil is spread, use a cultipacker, pulverizer, or similar tool to pulverize the soil and eliminate all lumps. Do not compact topsoil.

3.2 PLANT BED PREPARATION – IN PLACE MIXING OF AMENDED TOPSOIL

- A. Loosen surface of subgrade to minimum two inch (2") depth to insure a positive bond between subgrade and topsoil.
- B. Do not place finish topsoil until after clean-up and removal of construction debris, trash, surplus materials, and equipment from project site.
- C. In plant beds (tree, shrub, ornamental grass, herbaceous perennial, groundcover and annual beds), place and spread topsoil to a uniform depth as specified in the planting details.

- D. Where topsoil is spread, use a cultipacker, pulverizer, or similar tool to pulverize the soil and eliminate all lumps. Do not compact topsoil.
- E. On a clean topsoil surface, add one part organic matter and one part sand for every two parts of topsoil and till the amendments to a depth as specified in the planting details.
- F. Provide a settled depth of amended soil in all plant beds per the planting details.
- G. Finish grade plant bed areas as shown on the Drawings.

3.3 FINISH GRADING

- A. Prepare finish grade for planting, seeding with only light raking or scarifying required.
- B. Round finished surfaces at abrupt changes in slope.
- C. Should spot elevations for finished grades conflict with finished contours, the spot elevations shall govern.
- D. Finish grades to uniform levels or slopes between points where levels are given or between such point and existing grades.
- E. Positively drain all lawn areas to designated surface water collection points, streets, and/or waterways.
- F. Repair irregularities in lawn surface drainage at no cost to Owner.
- G. Protect paving, sidewalks, utilities, and plants during finish grading; repair or replace any items damaged by construction operations at no cost to Owner.
- H. After placement, maintain surfaces to indicated finished grades; deposit additional topsoil or amended topsoil to repair settlement or erosion up to the date of final acceptance. Scarify surfaces upon which additional topsoil is to be deposited. Additional quantities of topsoil and/or amended topsoil to correct settlement or erosion have not been accounted for, but are incidental to the bid item.

3.4 MAINTENANCE

- A. Protection of graded areas:
 - 1. Protect newly graded areas from traffic and erosion.
 - 2. Keep free of trash and debris.
 - 3. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.
 - 4. Keep public streets clean from soil, soil tracking, and debris at all times.
- B. Reconditioning Compacted Areas: Where completed graded areas are disturbed by subsequent construction operations, erosion or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction at no cost to the Owner.
- C. Settling: Where settling is measurable or observable during general project warranty period, add topsoil or amended topsoil, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration at no cost to the Owner.

3.5 DISPOSAL OF EXCESS AND WASTE MATERIALS

- A. Remove waste materials, including unacceptable excavated material, trash, and debris from the job site.

END OF SECTION 02923

SECTION 02925
PLANT MATERIAL

PART 1 - GENERAL

1.1 SCOPE OF WORK

- A. Furnish and install all plant material, soil amendments, and incidental products.
- B. Guarantee and maintenance of plant material.

1.2 DEFINITIONS

- A. AAN: American Association of Nurserymen

1.3 QUALITY ASSURANCE

- A. Contractor Qualifications: Minimum of three years' experience on projects of similar characteristics and size.
- B. Reference Standards
 - 1. American Joint Committee of Horticultural Nomenclature: Standardized Plant Names, Second Edition, 1942.
 - 2. American Nursery and Landscape Association (ANLA). American Standard for Nursery Stock, Latest Edition.
- C. Substitution
 - 1. Install substitutions only upon written approval of the Owner.
 - 2. Submit substitutions possessing same characteristics as plant material indicated.
 - 3. Do not substitute plants of less cost than plant indicated.
 - 4. Where larger plants are substituted by Contractor, substitute plants of greater value without any additional cost to Owner.
- D. Quality Control
 - 1. Contractor shall be responsible for all material shown on plans. Submit documentation to the Owner with bid that all plant material is available. Any and all substitutions due to unavailability must be requested in writing and submitted with bid. All plants shall be subject to inspection and approval by the Owner at place of growth or upon delivery to the site for conformity to the specifications. Such approval shall not impair the right of inspection and rejection during progress of the work.
 - 2. The Contractor shall submit specifications of any item being used on-site upon the request of the Owner.
 - 3. At least one plant of each species delivered to the site will have an identification tag from the supply nursery showing common and botanical plant names. Do not remove tag until after final inspection.
 - 4. One-sided branching plants from tightly planted nursery rows will be rejected.
 - 5. All plants shall be normal specimens without objectionable deformities, voids, and open spaces, with well-developed branch and root systems; true to height, shape, and character of growth of the species or varieties. Plants shall show appearance of good health and vigor.
 - 6. All plants shall be free of injurious insects, insect eggs, bores, and all forms of infestation, plant diseases, moldy or dried roots, or damage to trunk, bark, branches, leaders or root

systems, or cut-leaders. All plants shall be free of defects, disfiguring knots, sunscald injuries, and frost cracks. All plants to be free of rodent damage to bark and buds.

7. A planting list of all plants including a schedule with sizes, quantities, and other requirements is shown on the plans. In the event that quantity requirements or material omissions occur in the planting material list, the planting plan shall govern.
8. All plant materials designated in the planting schedule as matched shall be of uniform size, color, branching height, form, etc. Plants which do not match will be rejected.
9. Landscape work for this project shall be subcontracted to, or completed by a single landscape firm.

1.4 SUBMITTALS

A. Certificates

1. Submit manufacturer's certification of the inoculants, root stimulator, fertilizers, and/or soil amendment analysis.
2. File certificates with Owner prior to material acceptance.

B. Maintenance Instructions: Submit written maintenance schedule for watering and maintaining plant material after completion of job to Owner as part of the final inspection and acceptance. Instructions shall detail general requirements for maintenance of all plant material on the project including, but not limited to, weeding, watering, pruning, fertilizing, pesticide and herbicide applications, mowing, etc.

C. Provide certification to Owner's Representative stating that container grown material has been grown in the container for not less than one year.

D. Upon Owner's request, the Contractor will provide Material Certifications for all materials.

E. Contractor shall submit a sample of the mulch proposed for this project for approval prior to installation.

F. Contractor shall submit a sample of the staking straps and the staking design proposed for this project.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Preparation for Delivery

1. Balled and Burlapped (BB) Plants

- a. Dig and prepare for shipment in manner that will not damage roots, branches, shape, and future development after planting.
- b. Ball with firm, natural ball of soil.
- c. Wrap ball firmly with burlap.
- d. Ball size and ratios.
 1. Conform to AAN standard sizes and plant list.
 2. If conflict occurs, notify the Owner.
- e. Plant root systems of balled and burlapped plant material shall be protected with wet straw, moss, or other suitable material which will assure arrival at destination, and during temporary storage with root systems in a moist, healthy condition. Bare root plant material is not acceptable for this project.

2. Pack plant material to protect against climatic, seasonal, and breakage injuries during transit.
3. Securely cover plant tops with tarpaulin or canvas to minimize wind-whipping and drying. Use anti-desiccant only upon approval of Owner.
4. Pack and ventilate to prevent sweating of plants during transit by rail. Give special attention to insure prompt delivery and careful handling to point of delivery at planting job site.

B. Delivery

1. Deliver fertilizer and soil amendments to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trademark and conformance to State law.
2. The Contractor shall furnish the Owner with two (2) copies of receipts for all amendments specified herein.
3. Deliver all plants with legible identification labels.
4. Protect plant material during delivery to prevent damage to root ball or desiccation of leaves.
5. The Contractor shall notify the Owner ten (10) days in advance of delivery of all plant materials and shall submit an itemized list of the plants in each delivery.

C. Storage

1. If planting is delayed more than 6 hours following the arrival of plant material at the site, contractor shall heel-in plants and maintain during temporary storage by providing moist straw, moss, or other suitable material to protect root systems, watering, and protection from excessive sun, wind, and inclement weather conditions; providing a healthy vigorous plant when planted.
2. Store plant material in an area which is shaded and protected from the weather.
3. Maintain and protect plant material not to be planted immediately upon delivery in a healthy, vigorous condition.
4. Erect temporary fence and store material inside in manner approved by Owner.

D. Handling

1. The Contractor is cautioned to exercise care in handling, loading, unloading and storing of plant materials. Plant materials that have been damaged in any way will be discarded and if installed, shall be replaced with undamaged materials at the Contractor's expense.
2. Do not drop plants.
3. Do not pick up container or balled plants by stem or trunks.
4. Lift and handle balled plants from bottom of ball.

1.6 JOB CONDITIONS

- A. Protection: Before excavations are made, take precautionary measures to protect lawn areas driven over by vehicles and where soil is temporarily stacked.
- B. Scheduling: Perform actual planting only when weather and soil conditions are suitable in accordance with locally accepted practice.

1.7 SAMPLES AND TEST

- A. Owner reserves the right to take and analyze samples of materials for conformity to specifications at any time.

- B. Contractor shall furnish samples upon request by Owner. Rejected materials shall be immediately removed from the site at Contractor's expense. Cost of testing of materials not meeting specifications shall be paid by Contractor.

1.8 GUARANTEE AND MAINTENANCE

A. Final Acceptance

- 1. Any plant required under this contract that is dead, or injured, diseased, or not true to its name or size as determined by the Owner shall be immediately removed from the site and replaced at no additional cost to the Owner.

B. Guarantee and Replacement

- 1. Guarantee all plant materials to be in a healthy, vigorous and attractive growing condition for a period of 1 year for all plant material. Guarantee shall begin immediately upon final acceptance by the Owner.
- 2. During the guarantee period, replace plants which die, become diseased or unhealthy, or are otherwise found to be in a poor condition, as determined by the Owner, at no additional expense to the Owner.
- 3. The guarantee will not apply to damage or injury to plant materials caused by vandalism, vehicles and storms.
- 4. The warranty period for all plants shall begin upon date of final acceptance for completed installations.

C. Maintenance Period

- 1. Maintain all planting areas until receipt of written final acceptance by the Owner.
- 2. All replacement of plant material during maintenance and guarantee period shall be with original size and species as shown on the plans.
- 3. Repair all damages to plants and/or lawns at no additional expense to the Owner.
- 4. Maintenance shall consist of but not be limited to:
 - a. Weeding.
 - b. Watering.
 - c. Pruning (as directed by the Owner).
 - d. Spraying.
 - e. Fertilizing.
- 5. Water at the minimum rate of 1 inch per week or as needed to maintain plant health.
- 6. Re-set settled plants to proper grades and position. Restore planting saucer and mulch; adding planting soil and mulch as may be required.

- D. Final Inspection: At this inspection, all plants must be in a healthy growing condition, weed free, pruning complete and staking and guying secure. Acceptance shall follow upon meeting these requirements.

1.9 SITE OR FIELD VISITS BY THE OWNER'S REPRESENTATIVE

- A. The Owner's representative or landscape architect will visit the site once to examine plant materials for type, size and character specified. Staked locations of the plant material will be inspected and approved prior to plan installation. The landscape architect will also visit the site once to examine installed plant materials.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Plant Material (See Plans for Type and Size)

1. All plants shall have a normal habit of growth and shall be sound, healthy, vigorous and free of insect infestations, plant diseases, sunscalds, windburn, knots, injuries, fresh abrasions of the bark, excessive abrasions, or other objectionable disfigurements. Tree trunks shall be sturdy and have well "hardened" systems and vigorous and fibrous root systems which are not root or pot-bound. In the event of disagreement as to condition of root system, the root conditions of the plants furnished by the Contractor in containers will be determined by removal of earth from the roots of not less than two plants nor more than two percent of the total number of plants of each species or variety. Where container-grown plants are from several sources, the roots of not less than two plants of each species or variety from each source will be inspected. In case the sample plants inspected are found to be defective, the Owner reserves the right to reject the entire lot or lots of plants represented by the defective samples. The Owner is the sole judge as to acceptability. Any plants rendered unsuitable for planting because of this inspection will be considered as samples and will be provided at the expense of the Contractor.
2. The size and shape of the plants will correspond with that normally expected for species and variety of commercially available nursery stock or as specified on plans. The overall shape and the minimum acceptable size of all plants measured before pruning with the branches in normal position shall conform to the AAN Standards. Plants larger in size than specified may be used with the approval of the Owner, but the use of larger plants will cause no change in contract price. If the use of larger plants is approved, the ball of earth or spread of roots for each plant will be increased proportionately.
3. All plants not conforming to the requirements herein specified shall be considered defective and such plants, whether in place or not, shall be marked as rejected and immediately removed from the site and replaced with new plants at the Contractor's expense.
4. Pruning: Trees or plant materials shall be pruned or trimmed prior to delivery. Any alteration of their shape shall be conducted only with the approval of the Owner. In no case will the removal of branch leaders (TIPS) be permitted.
5. Plant material shall be true to botanical and common name and variety.
6. Nursery Grown and Collected Stock.
 - a. All plant material shall be nursery grown stock except as noted on the drawings or as approved in writing by the Owner.
 - b. Grown under climatic conditions similar to those in locality of project.
 - c. Container-grown stock in vigorous, healthy condition, not root-bound or with root system hardened off.
 - d. Use only liner stock plant material which is well established in removable containers or formed homogeneous soil sections.
 - e. If required, provide proof that material was nursery grown. All rejected stock shall be replaced at Contractor's expense.
7. Trees
 - a. Single straight trunks unless indicated otherwise.
 - b. Trees with weak, thin trunks not capable of support will not be accepted.
 - c. Tree caliper for trees 4" caliper or less shall be measured 6" above ground. Trees larger than 4" caliper will be measured 1'-0" above ground.
8. Method Options
 - a. Balled and burlapped in lieu of container-grown.

B. Commercial Fertilizer

1. Uniform composition.
2. Pelletized.
3. Containing following minimum percentage of plant food by weight:

- a. Available Nitrogen: 10% or 12%
 - b. Available Phosphoric Acid: 10% or 12%
 - c. Available Potash: 10% or 12%
- C. Sharp Sand: Clean, washed sand, fine to coarse sizes, free of clay lumps or other objectionable materials.
- D. Water: Water shall be free of substances harmful to plant growth. Contractor to provide water, equipment, methods of transportation, water tanker, hoses, sprinklers, and the application of water.
- E. Pre-Emergence Herbicide: EPTAM or an approved equal.
- F. Guying and Staking Materials: Refer to Drawings.
- G. Mulch: Twice-shredded hardwood mulch graded to ¼ inch to ½ diameter free of insects, debris, trash, weeds, seeds, and other noxious materials. Green or freshly chipped or shredded mulch will be rejected.
- H. Peat Moss: Canadian, Dutch or German Sphagnum peat moss. Peat moss shall be delivered in original, unopened and unbroken packages.
- I. Planting Soil
 - 1. Excavated soil from the planting pit, if suitable and similar to topsoil, may be used in preparation of planting soil for backfilling around root system of planted material. Clay, gumbo, gravel, contaminated soils, or other soil injurious to plants is not acceptable. Unacceptable soil excavated from the planting pits shall be disposed of off-site.
 - 2. If soil excavated from planting pits is insufficient or unacceptable, Contractor shall supply planting soil suitable for backfill. Soil shall be black, free of weed seed, mildly acidic, and fertile. Soil should be free of rocks, wood material, and trash.
 - 3. See Specification 02923 for Amended Soil specifications.
 - 4. Do not use frozen or muddy mixtures for backfilling.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Contractor shall verify that established grades are correct and determine locations of all utilities prior to beginning planting.
- B. Contractor shall see that all planting areas are free of all weed and foreign material prior to beginning planting.
- C. Contractor shall inspect plant material for injury, insect infestation, and improper size and shape.
- D. Contractor shall not begin planting until deficiencies are corrected, or plants replaced. To begin work indicates acceptance of site conditions.

3.2 PLANT LOCATIONS AND MEASUREMENTS

- A. Stake locations of plant material.

- B. Notify Owner of discrepancies between plants indicated on the plans and the actual conditions prior to planting.
- C. Plant locations will be approved by Owner prior to planting.

3.3 FINAL GRADES

- A. Minor modification to grade may be required to establish the final grade.
- B. Fine grading shall insure proper drainage of the site as determined by the Landscape Architect.
- C. All erosion scars shall be filled and compacted prior to planting installation.
- D. Disposal of any unacceptable or excess soil shall be done at location approved by Owner at the expense of the Contractor.

3.4 EXCAVATION FOR PLANTING

- A. Pits
 - 1. Shape
 - a. Vertical scarified sides and crowned bottom as shown on drawings.
 - b. Plant pits to be circular.
 - 2. Size for Trees: 2 times the width of the root ball and 6" deeper than root ball.
- B. Obstructions Below Ground
 - 1. Remove rock or underground obstructions to depth of 6" below bottom of plant ball or root, measured when plant is properly set at the required grade.
 - 2. If underground obstructions cannot be removed, notify Owner for new instructions.
 - 3. Avoid damaging underground utility lines.
 - 4. Repair damage to existing utilities at no additional expense to Owner.
- C. Disposal of Excess Soil
 - 1. Use acceptable excess excavated topsoil for filling holes, pits, eroded areas as directed by the Owner.
 - 2. Dispose of unacceptable or unused excess soil at an off-site location as directed by the Owner at the expense of the Contractor.

3.5 SOIL PREPARATION

- A. Prepared Backfill for plants. Planting mixture for plants shall consist of the following materials:
 - 1. Topsoil - 2 parts
 - 2. Peat Moss - 1 part
 - 3. Sharp sand - 1 part

3.6 PLANTING INSTALLATION

- A. General
 - 1. Actual planting shall be performed during those periods when weather and soil conditions are suitable and in accordance with locally accepted practice, or as approved by the Owner. Allowable planting dates are as follows:
 - a. Evergreen Plants: September 1 to October 15 and prior to June 1, but not after candles

- exceed 1 inch.
 - b. Deciduous Plants (Balled and Burlapped and Container): August 15 to November 15 and in the spring prior to June 1.
 - c. Weather Restrictions: Planting may be conducted under unseasonable conditions, except in weather below 32°F or above 90°F. No variance from plant warranty or other requirements will be given for plants installed outside the specified periods.
2. Only as many plants as can be planted and watered on that same day shall be distributed in a planting area.
 3. If container grown plants are accepted, they shall be opened and plants shall be removed in such a manner that the ball of earth surrounding the roots is not broken and they shall be planted and watered as herein specified immediately after removal from the containers. Containers shall not be opened prior to placing the plants in the planting area.
 4. Set plants in pits at level shown on the details.
 5. Set plants plumb and rigidly braced in position until planting mixture has been tamped solidly around plant ball.
 6. Thoroughly settle plant by watering and tamping planting mixture.
 7. Thoroughly water plants.
 8. Stake and guy all trees according to the details.
- B. Balled Plants
1. Place in pit on planting mixture that has been hand-tamped.
 2. Place with burlap intact so location of root ball is approximately 2" above surrounding finish grade.
 3. Remove binding at top of ball and lay top third of burlap back.
 4. Remove any wire and twine from upper 1½ of root ball.
 5. Do not pull wrapping from under ball.
 6. Do not plant if ball is cracked or broken before or during planting process or if stem is loose.
 7. Backfill with planting mixture.
- C. Container-Grown Plants
1. Cut cans on two sides with an acceptable can cutter.
 2. Do not injure root ball.
 3. Carefully remove plants without injury or damage to root balls.
 4. After removing plant, superficially cut edge roots with knife on three sides.
 5. Place in pit on planting mixture that has been hand-tamped prior to placing plant.
 6. Backfill with planting mixture.
- D. Mulching
1. Mulch shall consist of premium finely shredded or processed hardwood bark graded to ¼ inch to ½ inch diameter and maximum of 3 inches in length. Green or freshly chipped or shredded mulch will be rejected. Mulch to be free of weeds, weed seed, chaff, diseases, or other foreign material.
 2. Cover watering basins or planting beds evenly with a layer of mulch a minimum of 3" deep, after settlement.
 3. Water immediately after mulching.
 4. Clear mulch away from direct contact with tree and shrub trunks.
 5. Rake mulch to a smooth finish.
- E. Pruning
1. Prune minimum necessary to remove injured twigs and branches, deadwood, suckers.
 2. Pruning shall not exceed 1/3 branching structure.
 3. Make cuts flush leaving no stubs.

- F. Staking and Guying: Staking of all trees shall be completed immediately after planting as indicated in details. Staking shall be removed at the end of the 1-year warranty period by the contractor.
- G. Controlled Release Fertilizer: Provide controlled release fertilizer tablets in accordance with the manufacturer's instructions at the following rates:
 - 1. Trees - 1 tablet per 112" of trunk caliper, measured 1 ft. above the top of root ball.
- H. Watering
 - 1. Water as required when soil moisture is below optimum level for best plant growth.
 - 2. Coordinate watering with Owner and recommend watering schedule.

3.7 CLEANUP

- A. After planting operations have been completed, remove all trash, excess soil, empty plant containers and rubbish from the property. All scars, ruts or other marks in the ground caused by this work shall be repaired and the ground left in a neat and orderly condition throughout the site. Contractor shall pick up all trash resulting from this work daily. All trash shall be completely removed from the site to an approved location.
- B. The Contractor shall wash down all paved areas, leaving the premises in a clean condition.

3.8 WARRANTY INSPECTION

- A. Inspection of plants will be made by the Owner or Landscape Architect at the expiration of the one-year warranty period, and following a written request by the Contractor. Contractor shall request inspection a minimum of 7 days prior to proposed inspection date.
- B. All plants that are missing or not in a live, healthy growing condition shall be removed from the site by the Contractor. Missing and rejected plant material shall be replaced by the contractor once after the warranty period at no expense to the Owner and as soon as possible during the specified planting season.
- C. Upon notice from the Owner or Landscape Architect, the removal from site of rejected plants and the replacement of plant material of the same species and size and installed as originally specified shall be completed by the Contractor with no additional compensation.
- D. All replacement plants shall be inspected by the Owner or Landscape Architect prior to planting.
- E. Maintain replacement plants as specified for original plants until accepted by the Owner or Landscape Architect. Contractor shall notify the Owner or Landscape Architect when all replacements and repairs are complete, and schedule the inspection 7 days prior to the proposed inspection date.

END OF SECTION 02925

DIVISION 26
ELECTRICAL

SECTION 26 05 00
BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Requirements applicable to all Division 26 Sections. Also refer to Division 1 - General Requirements.
- B. All materials and installation methods shall conform to the applicable standards, guidelines and codes referenced herein and within each specification section.

1.2 REFERENCES

- A. NFPA 70 - National Electrical Code (NEC)

1.3 SCOPE OF WORK

- A. This Specification and the associated drawings govern furnishing, installing, testing and placing into satisfactory operation the Electrical Systems.
- B. The Contractor shall furnish and install all new materials as indicated on the drawings, and/or in these specifications, and all items required to make his portion of the Electrical Work a finished and working system.
- C. Description of Systems shall be as follows:
 - 1. Electrical power system to and including site lighting, conduit, wiring, controls, etc.
 - 2. Removal work and/or relocation and reuse of existing systems and equipment.

1.4 WORK SEQUENCE

- A. All work that will produce excessive noise or interference with normal building operations, as determined by the Owner, shall be scheduled with the Owner. It may be necessary to schedule such work during unoccupied hours. The Owner reserves the right to determine when restricted construction hours are required.

1.5 QUALITY ASSURANCE

- A. Contractor's Responsibility Prior to Submitting Pricing/Bid Data:
 - 1. The Contractor is responsible for constructing complete and operating systems. The Contractor acknowledges and understands that the Contract Documents are a two-dimensional representation of a three-dimensional object, subject to human interpretation. This representation may include imperfect data, interpreted codes, utility guides, three-dimensional conflicts, and required field coordination items. Such deficiencies can be corrected when identified prior to ordering material and starting installation. The Contractor agrees to carefully study and compare the individual Contract Documents and report at once in writing to the Architect/Engineer any deficiencies the Contractor may discover. The Contractor further agrees to require each subcontractor to likewise study the documents and report at once any deficiencies discovered.

2. The Contractor shall resolve all reported deficiencies with the Architect/Engineer prior to awarding any subcontracts, ordering material, or starting any work with the Contractor's own employees. Any work performed prior to receipt of instructions from the Architect/Engineer will be done at the Contractor's risk.

B. Qualifications:

1. Only products of reputable manufacturers as determined by the Architect/Engineer are acceptable.
2. All Contractors and subcontractors shall employ only workmen who are skilled in their trades. At all times, the number of apprentices at the job site shall be less than or equal to the number of journeymen at the job site.

C. Compliance with Codes, Laws, Ordinances:

1. Conform to all requirements of the Illinois Community College Board and all other Codes, Laws, Ordinances and other regulations having jurisdiction.
2. If there is a discrepancy between the codes and regulations and these specifications, the Architect/Engineer shall determine the method or equipment used.
3. If the Contractor notes, at the time of bidding, any parts of the drawings or specifications that do not comply with the codes or regulations, he shall inform the Architect/Engineer in writing, requesting a clarification. If there is insufficient time for this procedure, he shall submit with his proposal a separate price to make the system comply with the codes and regulations.
4. All changes to the system made after the letting of the contract to comply with codes or the requirements of the Inspector, shall be made by the Contractor without cost to the Owner.
5. If there is a discrepancy between manufacturer's recommendations and these specifications, the manufacturer's recommendations shall govern.

D. Permits, Fees, Taxes, Inspections:

1. Procure all applicable permits and licenses.
2. Abide by all laws, regulations, ordinances, and other rules of the State or Political Subdivision where the work is done, or as required by any duly constituted public authority.
3. Pay all charges for permits or licenses.
4. Pay all fees and taxes imposed by State, Municipal, and other regulatory bodies.
5. Pay all charges arising out of required inspections by an authorized body.
6. Pay all charges arising out of required contract document reviews associated with the project and as initiated by the Owner or authorized agency/consultant.
7. Where applicable, all fixtures, equipment and materials shall be listed by Underwriter's Laboratories, Inc. or a nationally recognized testing organization.

E. Examination of Drawings:

1. The drawings for the electrical work are completely diagrammatic, intended to convey the scope of the work and to indicate the general arrangements and locations of equipment, outlets, etc., and the approximate sizes of equipment.
2. Contractor shall determine the exact locations of equipment and rough-ins, and the exact routing of raceways to best fit the layout of the job. Conduit entry points for electrical equipment including, but not limited to, panelboards, switchboards, switchgear and unit substations, shall be determined by the Contractor unless noted in the contract documents.
3. Scaling of the drawings will not be sufficient or accurate for determining these locations.
4. Where job conditions require reasonable changes in arrangements and locations, such changes shall be made by the Contractor at no additional cost to the Owner.
5. Because of the scale of the drawings, certain basic items, such as junction boxes, pull boxes, conduit fittings, etc., may not be shown, but where required by other sections of the specifications or required for proper installation of the work, such items shall be furnished and installed.
6. If an item is either shown on the drawings or called for in the specifications, it shall be included in this contract.
7. The Contractor shall determine quantities and quality of material and equipment required from the documents. Where discrepancies arise between drawings, schedules and/or specifications, the greater and better-quality number shall govern.
8. Where used in electrical documents the word "furnish" shall mean supply for use, the word "install" shall mean connect up complete and ready for operation, and the word "provide" shall mean to supply for use and connect up complete and ready for operation.
9. Any item listed as furnished shall also be installed unless otherwise noted.
10. Any item listed as installed shall also be furnished unless otherwise noted.

F. Electronic Media/Files:

1. Construction drawings for this project have been prepared utilizing Revit.
2. Contractors and Subcontractors may request electronic media files of the contract drawings and/or copies of the specifications. Specifications will be provided in PDF format.
3. Upon request for electronic media, the Contractor shall complete and return a signed "Electronic File Transmittal" form provided by IMEG.
4. If the information requested includes floor plans prepared by others, the Contractor will be responsible for obtaining approval from the appropriate Design Professional for use of that part of the document.

5. The electronic contract documents can be used for preparation of shop drawings and as-built drawings only. The information may not be used in whole or in part for any other project.
6. The drawings prepared by IMEG for bidding purposes may not be used directly for ductwork layout drawings or coordination drawings.
7. The use of these CAD documents by the Contractor does not relieve them from their responsibility for coordination of work with other trades and verification of space available for the installation.
8. The information is provided to expedite the project and assist the Contractor with no guarantee by IMEG as to the accuracy or correctness of the information provided. IMEG accepts no responsibility or liability for the Contractor's use of these documents.

G. Field Measurements:

1. Verify all pertinent dimensions at the job site before ordering any conduit, conductors, wireways, bus duct, fittings, etc.

1.6 SUBMITTALS

A. Submittals shall be required for the following items, and for additional items where required elsewhere in the specifications or on the drawings.

1. Submittals list:

| Referenced Specification Section | Submittal Item |
|---|-------------------------|
| 26 09 33 | Lighting Control System |
| 26 28 21 | Contactors |
| 26 51 00 | Lighting |

B. General Submittal Procedures: In addition to the provisions of Division 1, the following are required:

1. Transmittal: Each transmittal shall include the following:
 - a. Date
 - b. Project title and number
 - c. Contractor's name and address
 - d. Division of work (e.g., electrical, plumbing, heating, ventilating, etc.)
 - e. Description of items submitted and relevant specification number
 - f. Notations of deviations from the contract documents
 - g. Other pertinent data
2. Submittal Cover Sheet: Each submittal shall include a cover sheet containing:
 - a. Date
 - b. Project title and number
 - c. Architect/Engineer
 - d. Contractor and subcontractors' names and addresses
 - e. Supplier and manufacturer's names and addresses

- f. Division of work (e.g., electrical, plumbing, heating, ventilating, etc.)
 - g. Description of item submitted (using project nomenclature) and relevant specification number
 - h. Notations of deviations from the contract documents
 - i. Other pertinent data
 - j. Provide space for Contractor's review stamps
3. Composition:
- a. Submittals shall be submitted using specification sections and the project nomenclature for each item.
 - b. Individual submittal packages shall be prepared for items in each specification section. All items within a single specification section shall be packaged together where possible. An individual submittal may contain items from multiple specifications sections if the items are intimately linked (e.g., pumps and motors).
 - c. All sets shall contain an index of the items enclosed with a general topic description on the cover.
4. Content: Submittals shall include all fabrication, erection, layout, and setting drawings; manufacturers' standard drawings; schedules; descriptive literature, catalogs and brochures; performance and test data; wiring and control diagrams; dimensions; shipping and operating weights; shipping splits; service clearances; and all other drawings and descriptive data of materials of construction as may be required to show that the materials, equipment or systems and the location thereof conform to the requirements of the contract documents.
5. Contractor's Approval Stamp:
- a. The Contractor shall thoroughly review and approve all shop drawings before submitting them to the Architect/Engineer. The Contractor shall stamp, date and sign each submittal certifying it has been reviewed.
 - b. Unstamped submittals will be rejected.
 - c. The Contractor's review shall include, but not be limited to, verification of the following:
 - 1) Only approved manufacturers are used.
 - 2) Addenda items have been incorporated.
 - 3) Catalog numbers and options match those specified.
 - 4) Performance data matches that specified.
 - 5) Electrical characteristics and loads match those specified.
 - 6) Equipment connection locations, sizes, capacities, etc. have been coordinated with other affected trades.
 - 7) Dimensions and service clearances are suitable for the intended location.
 - 8) Equipment dimensions are coordinated with support steel, housekeeping pads, openings, etc.
 - 9) Constructability issues are resolved (e.g., weights and dimensions are suitable for getting the item into the building and into place, sinks fit into countertops, etc.).

- d. The Contractor shall review, stamp and approve all subcontractors' submittals as described above.
 - e. **The Contractor's approval stamp is required on all submittals. Approval will indicate the Contractor's review of all material and a complete understanding of exactly what is to be furnished. Contractor shall clearly mark all deviations from the contract documents on all submittals. If deviations are not marked by the Contractor, then the item shall be required to meet all drawing and specification requirements.**
 - 6. Submittal Identification and Markings:
 - a. The Contractor shall clearly mark each item with the same nomenclature applied on the drawings or in the specifications.
 - b. The Contractor shall clearly indicate the size, finish, material, etc.
 - c. Where more than one model is shown on a manufacturer's sheet, the Contractor shall clearly indicate exactly which item and which data is intended.
 - d. All marks and identifications on the submittals shall be unambiguous.
 - 7. Schedule submittals to expedite the project. Coordinate submission of related items.
 - 8. Identify variations from the contract documents and product or system limitations that may be detrimental to the successful performance of the completed work.
 - 9. Reproduction of contract documents alone is not acceptable for submittals.
 - 10. Incomplete submittals will be rejected without review. Partial submittals will only be reviewed with prior approval from the Architect/Engineer.
 - 11. Submittals not required by the contract documents may be returned without review.
 - 12. The Architect/Engineer's responsibility shall be to review one set of shop drawing submittals for each product. If the first submittal is incomplete or does not comply with the drawings and/or specifications, the Contractor shall be responsible to bear the cost for the Architect/Engineer to recheck and handle the additional shop drawing submittals.
 - 13. Submittals shall be reviewed and approved by the Architect/Engineer **before** releasing any equipment for manufacture or shipment.
 - 14. Contractor's responsibility for errors, omissions or deviation from the contract documents in submittals is not relieved by the Architect/Engineer's approval.
- C. Electronic Submittal Procedures:
- 1. Distribution: Email submittals as attachments to all parties designated by the Architect/Engineer, unless a web-based submittal program is used.
 - 2. Transmittals: Each submittal shall include an individual electronic letter of transmittal.

3. Format: Electronic submittals shall be in PDF format only. Scanned copies, in PDF format, of paper originals are acceptable. Submittals that are not legible will be rejected. Do not set any permission restrictions on files; protected, locked, or secured documents will be rejected.
4. File Names: Electronic submittal file names shall include the relevant specification section number followed by a description of the item submitted, as follows. Where possible, include the transmittal as the first page of the PDF instead of using multiple electronic files.
 - a. Submittal file name: 26 XX XX.description.YYYYMMDD
 - b. Transmittal file name: 26 XX XX.description.YYYYMMDD
5. File Size: Electronic file size shall be limited to a maximum of 4MB. Larger files shall be transmitted via a pre-approved method.

1.7 SCHEDULE OF VALUES

- A. Refer to the provisions of Division 1.

1.8 CHANGE ORDERS

- A. A detailed material and labor takeoff shall be prepared for each change order, along with labor rates and markup percentages. Change orders with inadequate breakdown will be rejected.
- B. Change order work shall not proceed until authorized.

1.9 PRODUCT DELIVERY, STORAGE, HANDLING AND MAINTENANCE

- A. Exercise care in transporting and handling to avoid damage to materials. Store materials on the site to prevent damage.
- B. Keep all materials clean, dry and free from damaging environments.
- C. Coordinate the installation of heavy and large equipment with the General Contractor and/or Owner. If the Electrical Contractor does not have prior documented experience in rigging and lifting similar equipment, he/she shall contract with a qualified lifting and rigging service that has similar documented experience. Follow all equipment lifting and support guidelines for handling and moving.
- D. Contractor is responsible for moving equipment into the building and/or site. Contractor shall review site prior to bid for path locations and any required building modifications to allow movement of equipment. Contractor shall coordinate his/her work with other trades.

1.10 WARRANTY

- A. Provide one-year warranty for all fixtures, equipment, materials, and workmanship.
- B. The warranty period for all work in this specification Division shall commence on the date of Substantial Completion or successful system performance whichever occurs later. The warranty may also commence if a whole or partial system or any separate piece of equipment or component is put into use for the benefit of any party other than the installing contractor with prior written authorization of the Owner. In this instance, the warranty period shall

commence on the date when such whole system, partial system or separate piece of equipment or component is placed in operation and accepted in writing by the Owner.

- C. Warranty requirements extend to correction, without cost to the Owner, of all work found to be defective or nonconforming to the contract documents. The Contractor shall bear the cost of correcting all damage due to defects or nonconformance with contract documents excluding repairs required as a result of improper maintenance or operation, or of normal wear as determined by the Architect/Engineer.

1.11 INSURANCE

- A. This Contractor shall maintain insurance coverage as set forth in Division 1 of these specifications.

1.12 MATERIAL SUBSTITUTION

- A. Where several manufacturers' names are given, the manufacturer for which a catalog number is given is the basis of design and establishes the quality required.
- B. Equivalent equipment manufactured by the other named manufacturers may be used. Contractor shall ensure that all items submitted by these other manufacturers meet all requirements of the drawings and specifications, and fit in the allocated space. The Architect/Engineer shall make the final determination of whether a product is equivalent.
- C. Any material, article or equipment of other unnamed manufacturers which will adequately perform the services and duties imposed by the design and is of a quality equal to or better than the material, article or equipment identified by the drawings and specifications may be used if approval is secured in writing from the Architect/Engineer via addendum. The Contractor assumes all costs incurred as a result of using the offered material, article or equipment, on his part or on the part of other Contractors whose work is affected.
- D. Voluntary add or deduct prices for alternate materials may be listed on the bid form. These items will not be used in determining the low bidder. This Contractor assumes all costs incurred as a result of using the offered material or equipment on his part or on the part of other Contractors whose work is affected.
- E. All material substitutions requested after the final addendum must be listed as voluntary changes on the bid form.

PART 2 - PRODUCTS

2.1 GENERAL

- A. All items of material having a similar function (e.g., safety switches, panelboards, switchboards, contactors, motor starters, dry type transformers) shall be of the same manufacturer unless specifically stated otherwise on drawings or elsewhere in specifications.

PART 3 - EXECUTION

3.1 JOBSITE SAFETY

- A. Neither the professional activities of the Architect/Engineer, nor the presence of the Architect/Engineer or his or her employees and subconsultants at a construction site, shall

relieve the Contractor and any other entity of their obligations, duties and responsibilities including, but not limited to, construction means, methods, sequence, techniques or procedures necessary for performing, superintending or coordinating all portions of the work of construction in accordance with the contract documents and any health or safety precautions required by any regulatory agencies. The Architect/Engineer and his or her personnel have no authority to exercise any control over any construction contractor or other entity or their employees in connection with their work or any health or safety precautions. The Contractor is solely responsible for jobsite safety. The Architect/Engineer and the Architect/Engineer's consultants shall be indemnified and shall be made additional insureds under the Contractor's general liability insurance policy.

3.2 EXCAVATION, FILL, BACKFILL, COMPACTION

A. General:

1. Prior to the commencement of any excavation or digging, the Contractor shall verify all underground utilities with the regional utility locator. Provide prior notice to the locator before excavations. Contact information for most regional utility locaters can be found by calling 811.
2. The Contractor shall do all excavating, filling, backfilling, compacting, and restoration in connection with his work.

B. Excavation:

1. Make all excavations to accurate, solid, undisturbed earth, and to proper dimensions.
2. If excavations are carried in error below indicated levels, concrete of same strength as specified for the foundations or thoroughly compacted sand-gravel fill, as determined by the Architect/Engineer shall be placed in such excess excavations under the foundation. Place thoroughly compacted, clean, stable fill in excess excavations under slabs on grade, at the Contractor's expense.
3. Trim bottom and sides of excavations to grades required for foundations.
4. Protect excavations against frost and freezing.
5. Take care in excavating not to damage surrounding structures, equipment or buried pipe. Do not undermine footing or foundation.
6. Perform all trenching in a manner to prevent cave-ins and risk to workmen.
7. Where original surface is pavement or concrete, the surface shall be saw cut to provide clean edges and assist in the surface restoration.
8. If satisfactory bearing soil is not found at the indicated levels, immediately notify the Architect/Engineer or their representative, and do no further work until the Architect/Engineer or their representative gives further instructions.
9. Excavation shall be performed in all ground conditions, including rock, if encountered. Bidders shall visit the premises and determine the soil conditions by actual observations, borings, or other means. The cost of all such inspections, borings, etc., shall be borne by the bidder.

10. If a trench is excavated in rock, a compacted bed with a depth of 3" (minimum) of sand and gravel shall be used to support the conduit unless masonry cradles or encasements are used.
11. Mechanical excavation of the trench to line and grade of the conduit or to the bottom level of masonry cradles or encasements is permitted, unless otherwise indicated on the electrical drawings.
12. Mechanical excavation of the trench to line and grade where direct burial cables are to be installed is permitted provided the excavation is made to a depth to permit installation of the cable on a fine sand bed at least 3 inches deep.

C. Dewatering:

1. Furnish, install, operate and remove all dewatering pumps and pipes needed to keep trenches and pits free of water.

D. Underground Obstructions:

1. Known underground piping, conduit, feeders, foundations, and other obstructions in the vicinity of construction are shown on the drawings. Review all Bid Documents for all trades on the project to determine obstructions indicated. Take great care in making installations near underground obstructions.
2. If objects not shown on the drawings are encountered, remove, relocate, or perform extra work as directed by the Architect/Engineer.

E. Fill and Backfilling:

1. No rubbish or waste material is permitted for fill or backfill.
2. Furnish all necessary sand for backfilling.
3. Dispose of the excess excavated earth as directed.
4. Backfill materials shall be suitable for required compaction, clean and free of perishable materials, frozen earth, debris, earth with a high void content, and stones greater than 4 inches in diameter. Water is not permitted to rise in unbackfilled trenches.
5. Backfill all trenches and excavations immediately after installing of conduit, or removing forms, unless other protection is directed.
6. Around piers and isolated foundations and structures, backfill and fill shall be placed and consolidated simultaneously on all sides to prevent wedge action and displacement. Spread fill and backfill materials in 6" uniform horizontal layers with each layer compacted separately to required density.
7. For conduits that are not concrete encased, lay all conduits on a compacted bed of sand at least 3" deep. Backfill around conduits with sand, in 6" layers and compact each layer.
8. Conduits that are concrete encased or in a ductbank, conduit spacers, and cradles shall be installed on a bed of compacted CA-6 gravel. Refer to conduit section for backfilling and ductbank requirements.

9. Backfill with sand up to grade for all conduits under slabs or paved areas. All other conduits shall have sand backfill to 6" above the top of the conduit.
10. Place all backfill above the sand in uniform layers not exceeding 6" deep. Place then carefully and uniformly tamp each layer to eliminate lateral or vertical displacement.
11. Where the fill and backfill will ultimately be under a building, floor or paving, each layer of fill shall be compacted to 95% of the maximum density as determined by AASHTO Designation T-99 or ASTM Designation D-698. Moisture content of soil at time of compaction shall not exceed plus or minus 2% of optimum moisture content as determined by AASHTO T-99 or ASTM D-698 test.
12. After backfilling of trenches, no superficial loads shall be placed on the exposed surface of the backfill until a period of 48 hours has elapsed.

F. Surface Restoration:

1. Where trenches are cut through graded, planted or landscaped areas, the areas shall be restored to the original condition. Replace all planting and landscaping features removed or damaged to its original condition. At least 6" of topsoil shall be applied where disturbed areas are to be seeded or sodded. All lawn areas shall be sodded unless seeding is called out in the drawings or specifications.
2. Concrete or asphalt type pavement, seal coat, rock, gravel or earth surfaces removed or damaged shall be replaced with comparable materials and restored to original condition. Broken edges shall be saw cut and repaired as directed by Architect/Engineer.

3.3 ARCHITECT/ENGINEER OBSERVATION OF WORK

- A. The Architect/Engineer will review the installation and provide a written report noting deficiencies requiring correction. The contractor's schedule shall account for these reviews and show them as line items in the approved schedule.

3.4 PROJECT CLOSEOUT

- A. The following paragraphs supplement the requirements of Division 1.

B. Final Jobsite Observation:

1. To prevent the Final Jobsite Observation from occurring too early, the Contractor shall review the completion status of the project and certify that the job is ready for the final jobsite observation.
2. It is understood that if the Architect/Engineer finds the job not ready for the final observation and additional trips and observations are required to bring the project to completion, the cost of the additional time and expenses incurred by the Architect/Engineer will be deducted from the Contractor's final payment.

- C. The following must be submitted before Architect/Engineer recommends final payment:

1. Operation and maintenance manuals with copies of approved shop drawings.
2. Record documents including reproducible drawings and specifications.

3. A report documenting the instructions given to the Owner's representatives complete with the number of hours spent in the instruction. The report shall bear the signature of an authorized agent of this Contractor and shall be signed by the Owner's representatives.

D. Circuit Directories:

1. Provide custom typed circuit directory for each branch circuit panelboard. Provide updated custom typed circuit directory for each existing branch circuit panelboard with new or revised circuits per the scope of work. Label shall include equipment name or final approved room name, room number, and load type for each circuit (examples: SUMP SP-1 or ROOM 101 RECEPT). Revise directory to reflect circuit changes required to balance phase loads. Printed copies of the bid document panel schedules are not acceptable as circuit directories.

3.5 OPERATION AND MAINTENANCE MANUALS

A. General:

1. Provide an electronic copy of the O&M manuals as described below for Architect/Engineer's review and approval. The electronic copy shall be corrected as required to address the Architect/Engineer's comments. Once corrected, electronic copies and paper copies shall be distributed as directed by the Architect/Engineer.
2. Approved O&M manuals shall be completed and in the Owner's possession prior to Owner's acceptance and at least 10 days prior to instruction of operating personnel.

B. Electronic Submittal Procedures:

1. Distribution: Email the O&M manual as attachments to all parties designated by the Architect/Engineer.
2. Transmittals: Each submittal shall include an individual electronic letter of transmittal.
3. Format: Electronic submittals shall be in PDF format only. Scanned copies, in PDF format, of paper originals are acceptable. Submittals that are not legible will be rejected. Do not set any permission restrictions on files; protected, locked, or secured documents will be rejected.
4. File Names: Electronic submittal file names shall include the relevant specification section number followed by a description of the item submitted, as follows. Where possible, include the transmittal as the first page of the PDF instead of using multiple electronic files.
 - a. O&M file name: O&M.div26.contractor.YYYYMMDD
 - b. Transmittal file name: O&Mtransmittal.div26.contractor.YYYYMMDD
5. File Size: Electronic file size shall be limited to a maximum of 4MB. Larger files shall be divided into files that are clearly labeled as "1 of 2", "2 of 2", etc.
6. Provide the Owner with an approved copy of the O&M manual on compact discs (CD), digital video discs (DVD), or flash drives with a permanently affixed label, printed with the title "Operation and Maintenance Instructions", title of the project and subject matter of disc/flash drive when multiple disc/flash drives are required.

7. All text shall be searchable.
8. Bookmarks shall be used, dividing information first by specification section, then systems, major equipment and finally individual items. All bookmark titles shall include the nomenclature used in the construction documents and shall be an active link to the first page of the section being referenced.

C. Paper Copy Submittal Procedures:

1. Once the electronic version of the manuals has been approved by the Architect/Engineer, three paper copies of the O&M manual shall be provided to the Owner. The content of the paper copies shall be identical to the corrected electronic copy.
2. Binder Requirements: The Contractor shall submit O&M manuals in heavy duty, locking three ring binders. Incorporate clear vinyl sheet sleeves on the front cover and spine for slip-in labeling. "Peel and stick" labels are **not** acceptable. Sheet lifters shall be supplied at the front of each notebook. The three-ring binders shall be 1/2"12mm thicker than initial material to allow for future inserts. If more than one notebook is required, label in consecutive order. For example; 1 of 2, 2 of 2. No other form of binding is acceptable.
3. Binder Labels: Label the front and spine of each binder with "Operation and Maintenance Instructions", title of project, and subject matter.
4. Index Tabs: Divide information by specification section, major equipment, or systems using index tabs. All tab titling shall be clearly printed under reinforced plastic tabs. All equipment shall be labeled to match the identification in the construction documents.

D. Operation and Maintenance Instructions shall include:

1. Title Page: Include title page with project title, Architect, Engineer, Contractor, all subcontractors, and major equipment suppliers, with addresses, telephone numbers, website addresses, email addresses and point of contacts. Website URLs and email addresses shall be active links in the electronic submittal.
2. Table of Contents: Include a table of contents describing specification section, systems, major equipment, and individual items.
3. Copies of all final approved shop drawings and submittals. Include Architect's/Engineer's shop drawing review comments. Insert the individual shop drawing directly after the Operation and Maintenance information for the item(s) in the review form.
4. Copies of all factory inspections and/or equipment startup reports.
5. Copies of warranties.
6. Schematic wiring diagrams of the equipment that have been updated for field conditions. Field wiring shall have label numbers to match drawings.
7. Dimensional drawings of equipment.
8. Detailed parts lists with lists of suppliers.

9. Operating procedures for each system.
10. Maintenance schedule and procedures. Include a chart listing maintenance requirements and frequency.
11. Repair procedures for major components.
12. Replacement parts and service material requirements for each system and the frequency of service required.
13. Instruction books, cards, and manuals furnished with the equipment.
14. Include record drawings of the one-line diagrams for each major system. The graphic for each piece of equipment shown on the one-line diagram shall be an active link to its associated Operation & Maintenance data.
15. Copies of all panel schedules in electronic Microsoft Excel spreadsheet (.xlsx) file. Each panelboard shall be a separate tab in the workbook.

3.6 INSTRUCTING THE OWNER'S REPRESENTATIVE

- A. Adequately instruct the Owner's designated representatives in the maintenance, care, and operation of the complete systems installed under this contract.
- B. Provide verbal and written instructions to the Owner's representatives in the care, maintenance, and operation of the equipment and systems.
- C. The instructions shall include:
 1. Maintenance of equipment.
 2. Start-up procedures for all major equipment.
 3. Description of emergency system operation.
- D. Notify the Architect/Engineer of the time and place for the verbal instructions to the Owner's representative so his representative can be present if desired.
- E. Minimum hours of instruction time for each item and/or system shall be as indicated in each individual specification section.
- F. Operating Instructions:
 1. Contractor is responsible for all instructions to the Owner's representatives for the electrical and specialized systems.
 2. If the Contractor does not have staff that can adequately provide the required instructions, he shall include in his bid an adequate amount to reimburse the Owner for the Architect/Engineer to perform these services.

3.7 RECORD DOCUMENTS

- A. The following paragraphs supplement the requirements of Division 1.
- B. Maintain at the job site a separate and complete set of electrical drawings and specifications with all changes made to the systems clearly and permanently marked in complete detail.

- C. Mark drawings and specifications to indicate approved substitutions; Change Orders, and actual equipment and materials used. All Change Orders, RFI responses, Clarifications and other supplemental instructions shall be marked on the documents. Record documents that merely reference the existence of the above items are not acceptable. Should this Contractor fail to complete Record Documents as required by this contract, this Contractor shall reimburse Architect/Engineer for all costs to develop record documents that comply with this requirement. Reimbursement shall be made at the Architect/Engineer's hourly rates in effect at the time of work.
- D. Record changes daily and keep the marked drawings available for the Architect/Engineer's examination at any normal work time.
- E. Upon completing the job, and before final payment is made, give the marked-up drawings to the Architect/Engineer.
- F. Record actual routing of conduits exceeding 2 inches.

3.8 PAINTING

- A. Paint all equipment that is marred or damaged prior to the Owner's acceptance. Paint and color shall match original equipment paint and shall be obtained from the equipment supplier if available. All equipment shall have a finished coat of paint applied unless specifically allowed to be provided with a prime coat only.
- B. After surfaces have been thoroughly cleaned and are free of oil, dirt or other foreign matter, paint all raceway and equipment with the following:
 - 1. Bare Metal Surfaces - Apply one coat of metal primer suitable for the metal being painted. Finish with two coats of Alkyd base enamel paint.
 - 2. Plastic Surfaces - Paint plastic surfaces with two coats of semi-gloss acrylic latex paint.

3.9 ADJUST AND CLEAN

- A. Thoroughly clean all equipment and systems prior to the Owner's final acceptance of the project.
- B. Clean all foreign paint, grease, oil, dirt, labels, stickers, etc. from all equipment.
- C. Remove all rubbish, debris, etc., accumulated during construction from the premises.

3.10 SYSTEM STARTING AND ADJUSTING

- A. The electrical systems shall be complete and operating. System startup, testing, adjusting, and balancing to obtain satisfactory system performance is the responsibility of the Contractor. This includes all calibration and adjustment of electrical controls, balancing of loads, troubleshooting and verification of software, and final adjustments that may be needed.
- B. Complete all manufacturer-recommended startup procedures and checklists to verify proper equipment operation and does not pose a danger to personnel or property.
- C. All operating conditions and control sequences shall be tested during the start-up period. Testing all interlocks, safety shut-downs, controls, and alarms.

- D. The Contractor, subcontractors, and equipment suppliers shall have skilled technicians to ensure that all systems perform properly. If the Architect/Engineer is requested to visit the job site for trouble shooting, assisting in start-up, obtaining satisfactory equipment operation, resolving installation and/or workmanship problems, equipment substitution issues or unsatisfactory system performance, including call backs during the warranty period, through no fault of the design; the Contractor shall reimburse the Owner on a time and materials basis for services rendered at the Architect/Engineer's standard hourly rates in effect when the services are requested. The Contractor shall pay the Owner for services required that are product, installation or workmanship related. Payment is due within 30 days after services are rendered.

3.11 FIELD QUALITY CONTROL

A. General:

1. Conduct all tests required during and after construction. Submit test results in NETA format, or equivalent form, that shows the test equipment used, calibration date, tester's name, ambient test conditions, humidity, conductor length, and results corrected to 40°C.
2. Supply necessary instruments, meters, etc., for the tests. Supply competent technicians with training in the proper testing techniques.
3. All cables and wires shall be tested for shorts and grounds following installation and connection to devices. Replace shorted or grounded wires and cables.
4. Any wiring device, electrical apparatus or luminaire, if grounded or shorted on any integral "live" part, shall have all defective parts or materials replaced.
5. Test cable insulation of service and panel feeder conductors for proper insulation values. Tests shall include the cable, all splices, and all terminations. Each conductor shall be tested and shall test free of short circuits and grounds and have an insulation value not less than NEC Standards. Take readings between conductors, and between conductors and ground.
6. If the results obtained in the tests are not satisfactory, make adjustments, replacements, and changes as needed. Then repeat the tests, and make additional tests, as the Architect/Engineer or authority having jurisdiction deems necessary.

END OF SECTION 26 05 00

SECTION 26 05 03
THROUGH PENETRATION FIRESTOPPING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Through-Penetration Firestopping.

1.2 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing products specified in this Section.
- B. Installer: Individuals performing work shall be certified by the manufacturer of the system selected for installation.

1.3 REFERENCES

- A. UL 263 - Fire Tests of Building Construction and Materials.
- B. UL 723 - Surface Burning Characteristics of Building Materials
- C. ANSI/UL 1479 - Fire Tests of Through Penetration Firestops
- D. UL 2079 - Tests for Fire Resistance of Building Joint Systems
- E. UL Fire Resistance Directory Through Penetration Firestop Systems (XHEZ)
- F. Intertek / Warnock Hersey - Directory of Listed Products
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials
- H. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Firestops
- I. The Building Officials and Code Administrators National Building Code
- J. 2015 International Building Code
- K. NFPA 5000 – Building Construction Safety Code

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Store, protect and handle products on site. Accept material on site in factory containers and packing. Inspect for damage. Protect from deterioration or damage due to moisture, temperature changes, contaminants, or other causes. Follow manufacturer's instructions for storage.
- B. Install material prior to expiration of product shelf life.

1.5 PERFORMANCE REQUIREMENTS

- A. General: For penetrations through the following fire-resistance-rated constructions, including both empty openings and openings containing penetrating items, provide through-penetration firestop systems that are produced and installed to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
 - 1. Fire-resistance-rated walls including fire partitions, fire barriers, and smoke barriers.
 - 2. Fire-resistance-rated horizontal assemblies including floors, floor/ceiling assemblies, and ceiling membranes of roof/ceiling assemblies.
- B. Rated Systems: Provide through-penetration firestop systems with the following ratings determined per UL 1479:
 - 1. F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated.

2. T-Rated Systems: For the following conditions, provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings:
 - a. Floor penetrations located outside wall cavities.
 - b. Floor penetrations located outside fire-resistance-rated shaft enclosures.
 - c. Wall penetrations above corridor ceilings which are not part of a fire-resistive assembly.
 - d. Wall penetrations below any ceiling that are larger than 4" diameter or 16 square inches.
- C. For through-penetration firestop systems exposed to light, traffic, moisture, or physical damage, provide products that, after curing, do not deteriorate when exposed to these conditions both during and after construction.
- D. For through-penetration firestop systems exposed to view, provide products with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
- E. For through-penetration firestop systems in air plenums, provide products with flame-spread and smoke-developed indexes of less than 25 and 50, respectively, as determined per ASTM E 84.

1.6 WARRANTY

- A. Provide one year warranty on parts and labor.
- B. Warranty shall cover repair or replacement of firestop systems which fail in joint adhesion, cohesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, general durability, or appear to deteriorate in any manner not clearly specified by the manufacturer as an inherent quality of the material.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Products: Subject to compliance with requirements, provide one of the through-penetration firestop systems indicated for each application that are produced by one of the following manufacturers. All firestopping systems installed shall be provided by a single manufacturer.
 1. 3M; Fire Protection Products Division
 2. Hilti, Inc.
 3. RectorSeal Corporation, Metacaulk
 4. Tremco; Sealant/Weatherproofing Division
 5. Johns-Manville
 6. Specified Technologies Inc. (S.T.I.)
 7. Spec Seal Firestop Products
 8. AD Firebarrier Protection Systems
 9. Wiremold/Legrand: FlameStopper
 10. Dow Corning Corp
 11. Fire Trak Corp
 12. International Protective Coating Corp

2.2 THROUGH PENETRATION FIRESTOP SYSTEMS

- A. Provide materials and systems classified by or listed by Intertek / Warnock Hersey to provide firestopping equal to time rating of construction being penetrated.

- B. All firestopping materials shall be free of asbestos, lead, PCB's, and other materials that would require hazardous waste removal.
- C. Firestopping shall be flexible to allow for normal penetrating item movement due to expansion and contraction.
- D. Provide firestopping systems capable of supporting floor loads where systems are exposed to possible floor loading or traffic.
- E. Provide firestopping systems allowing continuous insulation for all insulated pipes.
- F. Provide firestopping systems classified by UL or listed by Intertek / Warnock Hersey for penetrations through all fire rated construction. Firestopping systems shall be selected from the UL or listed by Intertek / Warnock Hersey Fire Resistance Directory Category XHEZ based on substrate construction and penetrating item size and material and shall fall within the range of numbers listed:

- 1. Combustible Framed Floors and Chase Walls - 1 or 2 Hour Rated
 F Rating = Floor/Wall Rating
 T Rating = Floor/Wall Rating

| <u>Penetrating Item</u> | <u>UL System No.</u> |
|--|----------------------|
| No Penetrating Item | FC 0000-0999* |
| Metallic Pipe or Conduit | FC 1000-1999 |
| Non-Metallic Pipe or Conduit | FC 2000-2999 |
| Electrical Cables | FC 3000-3999 |
| Cable Trays | FC 4000-4999 |
| Insulated Pipes | FC 5000-5999 |
| Bus Duct and Misc. Electrical | FC 6000-6999 |
| Duct without Damper and Misc. Mechanical | FC 7000-7999 |
| Multiple Penetrations | FC 8000-8999 |

- 2. Non-Combustible Framed Walls - 1 or 2 Hour Rated
 F Rating = Wall Rating
 T Rating = 0

| <u>Penetrating Item</u> | <u>UL System No.</u> |
|--|----------------------|
| No Penetrating Item | WL 0000-0999* |
| Metallic Pipe or Conduit | WL 1000-1999 |
| Non-Metallic Pipe or Conduit | WL 2000-2999 |
| Electrical Cables | WL 3000-3999 |
| Cable Trays | WL 4000-4999 |
| Insulated Pipes | WL 5000-5999 |
| Bus Duct and Misc. Electrical | WL 6000-6999 |
| Duct without Damper and Misc. Mechanical | WL 7000-7999 |
| Multiple Penetrations | WL 8000-8999 |

3. Concrete or Masonry Floors and Walls - 1 or 2 Hour Rated
F Rating = Wall/Floor Rating
T Rating (Floors) = Floor Rating

| <u>Penetrating Item</u> | <u>UL System No.</u> |
|--|----------------------|
| No Penetrating Item | CAJ 0000-0999* |
| Metallic Pipe or Conduit | CAJ 1000-1999 |
| Non-Metallic Pipe or Conduit | CAJ 2000-2999 |
| Electrical Cables | CAJ 3000-3999 |
| Cable Trays | CAJ 4000-4999 |
| Insulated Pipes | CAJ 5000-5999 |
| Bus Duct and Misc. Electrical | CAJ 6000-6999 |
| Duct without Damper and Misc. Mechanical | CAJ 7000-7999 |
| Multiple Penetrations | CAJ 8000-8999 |

*Alternate method of firestopping is patching opening to match original rated construction.

- G. Any opening in walls or floors not covered by the listed series of numbers shall be coordinated with the firestopping manufacturer.
- H. Any openings in floors or walls not described in the UL or listed by Intertek / Warnock Hersey Fire Resistance Directory, or outlined in manufacturer's information shall be sealed in a manner agreed upon by the Firestopping Manufacturer, Owner, and the Authority Having Jurisdiction.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Ensure all surfaces that contact seal materials are free of dirt, dust, grease, oil, rust, or loose materials. Clean and repair surfaces as required. Remove laitance and form-release agents from concrete.
- B. Ensure substrate and penetrating items have been permanently installed prior to installing firestopping systems. Ensure penetrating items have been properly spaced and have proper clearance prior to installing firestopping systems.
- C. Surfaces to which sealing materials are to be installed must meet the selected UL or Intertek / Warnock Hersey system substrate criteria.
- D. Prime substrates where recommended in writing by through-penetration firestop system manufacturer. Confine primer to area of bond.

3.2 INSTALLATION

- A. In existing construction, provide firestopping of openings prior to and after installation of penetrating items. Remove any existing coatings on surfaces prior to firestopping installation. Temporary firestopping shall consist of packing openings with fire resistant mineral wool for the full thickness of substrate, or an alternate method approved by the Authority Having Jurisdiction. All openings shall be temporarily firestopped immediately upon their installation and shall remain so until the permanent UL or listed by Intertek / Warnock Hersey listed firestopping system is installed.

- B. Install penetration seal materials in accordance with printed instructions of the UL or Intertek / Warnock Hersey Fire Resistance Directory and with the manufacturer's printed application instructions.
- C. Install dams as required to properly contain firestopping materials within openings and as required to achieve required fire resistance rating. Remove combustible damming after appropriate curing.

3.3 CLEANING AND PROTECTING

- A. Clean excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by through-penetration firestop system manufacturers and that do not cause damage.
- B. Provide final protection and maintain conditions during and after installation that ensure that through-penetration firestop systems are without damage or deterioration at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, remove damaged or deteriorated through-penetration firestop systems immediately and install new materials to produce systems complying with specified requirements.

3.4 INSPECTION

- A. All penetrations shall be inspected by the manufacturer's representative to ensure proper installation.
- B. Access to firestop systems shall be maintained for examination by the Authority Having Jurisdiction at their request.
- C. Proceed with enclosing through-penetration firestop system with other construction only after inspection reports are issued and firestop installations comply with requirements.
- D. The contractor shall allow for visual destructive review of 5% of installed firestop systems (minimum of one) to prove compliance with specifications and manufacturer's instructions and details. Destructive system removal shall be performed by the contractor and witnessed by the Architect/Engineer and manufacturer's factory representative. The Architect/Engineer shall have sole discretion of which firestop system installations will be reviewed. The contractor is responsible for all costs associated with this requirement including labor and material for removing and replacing the installed firestop system. If any firestop system is found to not be installed per manufacturer's specific instructions and details, all firestop systems are subject to destructive review and replacement at the Architect/Engineer's discretion and the contractor's expense.

END OF SECTION

SECTION 26 05 05
ELECTRICAL DEMOLITION FOR REMODELING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Electrical demolition

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work shall be as specified in individual Sections.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. THE DRAWINGS ARE INTENDED TO INDICATE THE SCOPE OF WORK REQUIRED AND DO NOT INDICATE EVERY BOX, CONDUIT, OR WIRE THAT MUST BE REMOVED. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING A BID AND VERIFY EXISTING CONDITIONS.
- B. Verify that abandoned wiring and equipment serve only abandoned equipment or facilities. Extend conduit and wire to facilities and equipment that will remain in operation following demolition. Extension of conduit and wire to equipment shall be compatible with the surrounding area. Extended conduit and conductors to match existing size and material.
- C. Coordinate scope of work with all other Contractors and the Owner at the project site. Schedule removal of equipment and electrical service to avoid conflicts.
- D. Bid submittal shall mean the Contractor has visited the project site and has verified existing conditions and scope of work.

3.2 PREPARATION

- A. The Contractor shall obtain approval from the Owner before turning off power to circuits, feeders, panels, etc. Coordinate all outages with Owner.
- B. 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. Assume all equipment and systems must remain operational unless specifically noted otherwise on drawings.
- C. 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. Obtain permission from Owner at least 48 hours before partially or completely disabling system. Minimize outage duration. Make temporary connections to maintain service in areas adjacent to work area.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Demolish and extend existing electrical work under provisions of Division 1 of Specifications and this Section.
- B. Remove, relocate, and extend existing installations to accommodate new construction.
- C. Remove abandoned wiring and raceway to source of supply. Existing conduit in good condition may be reused in place by including an equipment ground conductor in reused conduit. Reused conduit and boxes shall have supports revised to meet current codes. Relocating conduit shall not be allowed.
- D. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
- E. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories. Ballasts in light fixtures installed prior to 1980 shall be incinerated in EPA approved incinerator or disposed of in EPA certified containers and deposited in an EPA landfill certified for PCB disposal or recycled by permitted ballast recycler. Punctured or leaking ballasts must be disposed of according to Federal Regulations under the Toxic Substance Control Act. Provide Owner and Architect/Engineer with a Certificate of Destruction to verify proper disposal.
- F. Repair adjacent construction and finishes damaged during demolition and extension work. Patch openings to match existing surrounding finishes.
- G. Maintain access to existing electrical installations that remain active. Modify installation or provide junction boxes and access panel as appropriate.
- H. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified. Extended conduit and conductors to match existing size and material.
- I. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- J. This Contractor is responsible for all costs incurred in repair, relocations, or replacement of any cables, conduits, or other services if damaged without proper investigation.

3.4 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment that remain or are to be reused.
- B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.
- C. Luminaires: Remove existing luminaires for cleaning as indicated on the drawings. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Reinstall luminaire and connect to circuiting as indicated on drawings.
- D. ELECTRICAL ITEMS (E.G., LIGHTING FIXTURES, RECEPTACLES, SWITCHES, CONDUIT, WIRE, ETC.) REMOVED AND NOT RELOCATED REMAIN THE PROPERTY OF THE OWNER. CONTRACTOR SHALL PLACE ITEMS RETAINED BY THE OWNER IN A LOCATION COORDINATED WITH THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DISPOSAL OF MATERIAL THE OWNER DOES NOT WANT.

3.5 INSTALLATION

- A. Install relocated materials and equipment under the provisions of Division 1 of Specifications.

END OF SECTION

SECTION 26 05 13 WIRE AND CABLE

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Building wire

1.2 RELATED WORK

- A. Section 26 05 53 – Electrical Identification: Refer to electrical identification for color and identification labeling requirements.

1.3 REFERENCES

- A. NEMA WC 70 - Power Cables Rated 2,000V or Less for the Distribution of Electrical Energy
- B. NFPA 70 - National Electrical Code (NEC)
- C. UL 44 – Thermoset-Insulated Wires and Cables
- D. UL 83 – Thermoplastic-Insulated Wires and Cables
- E. UL 1581 – Standard for Electrical Wires, Cables, and Flexible Cords

PART 2 - PRODUCTS

2.1 BUILDING WIRE

- A. Feeders and Branch Circuits Larger Than 6 AWG: Copper, stranded conductor, 600-volt insulation, THHN/THWN or XHHW-2.
- B. Feeders and Branch Circuits Larger Than 6 AWG in Underground Conduit: Copper, stranded conductor, 600-volt insulation, THWN or XHHW-2.
- C. Feeders and Branch Circuits 6 AWG and Smaller: Copper conductor, 600-volt insulation, THHN/THWN. 6 and 8 AWG, stranded conductor; smaller than 8 AWG, solid or stranded conductor, unless otherwise noted on the drawings.
- D. Control Circuits: Copper, stranded conductor 600-volt insulation, THHN/THWN.
- E. Each 120 and 277-volt branch circuit shall have a dedicated neutral conductor. Neutral conductors shall be considered current-carrying conductors for wire derating.

PART 3 - EXECUTION

3.1 WIRE AND CABLE INSTALLATION SCHEDULE

- A. Above Accessible Ceilings:
 - 1. Building wire shall be installed in raceway.
- B. All Other Locations: Building wire in raceway.
- C. Above Grade: All conductors installed above grade shall be type “THHN”.
- D. Underground or In Slab: All conductors shall be type “THWN”.

3.2 CONTRACTOR CHANGES

- A. The basis of design is copper conductors installed in raceway based on ambient temperature of 30°C, NEC Table 310.16.
- B. The Contractor shall be responsible for derating and sizing conductors and conduits to equal or exceed the ampacity of the basis of design circuits, if he/she chooses to use methods or materials other than the basis of design.
- C. Record drawing shall include the calculations and sketches.

3.3 GENERAL WIRING METHODS

- A. Use no wire smaller than 12 AWG for power and lighting circuits, and no smaller than 14 AWG for control wiring.
- B. Use no wire smaller than 18 AWG for low voltage control wiring (<100 volts).
- C. Use 10 AWG conductor for 20 ampere, 120-volt branch circuit home runs longer than 75 feet, and for 20 ampere, 277-volt branch circuit home runs longer than 200 feet.
- D. Use no wire smaller than 8 AWG for outdoor lighting circuits.
- E. The ampacity of multiple conductors in one conduit shall be derated per NEC 310. In no case shall more than 4 conductors be installed in one conduit to such loads as motors larger than 1/4 HP, panelboards, motor control centers, etc.
- F. Where installing parallel feeders, place an equal number of conductors for each phase of a circuit in same raceway or cable.
- G. Splice only in junction or outlet boxes.
- H. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- I. Make conductor lengths for parallel circuits equal.
- J. All conductors shall be continuous in conduit from last outlet to their termination.
- K. Terminate all spare conductors on terminal blocks, and label the spare conductors.
- L. Cables or wires shall not be laid out on the ground before pulling.
- M. Cables or wires shall not be dragged over earth or paving.
- N. Care shall be taken so as not to subject the cable or wire to high mechanical stresses that would cause damage to the wire and cable.
- O. At least six (6)-inch loops or ends shall be left at each outlet for installation connection of luminaires or other devices.
- P. All wires in outlet boxes not connected to fixtures or other devices shall be rolled up, spliced if continuity of circuit is required, and insulated.

3.4 WIRING INSTALLATION IN RACEWAYS

- A. Pull all conductors into a raceway at the same time. Use UL listed wire pulling lubricant for pulling 4 AWG and larger wires.

- B. Install wire in raceway after interior of building has been physically protected from the weather and all mechanical work likely to injure conductors has been completed.
- C. Pulling shall be continuous without unnecessary stops and starts with wire or cable only partially through raceway.
- D. Where reels of cable or wire are used, they shall be set up on jacks close to the point where the wire or cable enters the conduit or duct so that the cable or wire may be unreeled and run into the conduit or duct with a minimum of change in the direction of the bend.
- E. Conductors shall not be pulled through conduits until plastering or masonry work is completed and conduits are free from moisture. Care shall be taken so that long pulls of wire or pulls around several bends are not made where the wire may be permanently stretched and the insulation damaged.
- F. Only nylon rope shall be permitted to pull cables into conduit and ducts.
- G. Completely and thoroughly swab raceway system before installing conductors.

3.5 WIRING CONNECTIONS AND TERMINATIONS

- A. Splice and tap only in accessible junction boxes.
- B. Use solderless, tin-plated copper, compression terminals (lugs) applied with circumferential crimp for conductor terminations, 8 AWG and larger.
- C. Use solderless, tin-plated, compression terminals (lugs) applied with indenter crimp for copper conductor terminations, 10 AWG and smaller.
- D. Use solderless pressure connectors with insulating covers for copper wire splices and taps, 8 AWG and smaller. For 10 AWG and smaller, use insulated spring wire connectors with plastic caps.
- E. Use compression connectors applied with circumferential crimp for conductor splices and taps, 6 AWG and larger. Tape uninsulated conductors and connectors with electrical tape to 150 percent of the insulation value of conductor. Cold shrink connector insulator with 1kV rating shall be used in damp and wet locations.
- F. Thoroughly clean wires before installing lugs and connectors.
- G. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.
- H. Phase Sequence: All apparatus shall be connected to operate in the phase sequence A-B-C representing the time sequence in which the phase conductors so identified reach positive maximum voltage.
- I. As a general rule, applicable to switches, circuit breakers, starters, panelboards, switchgear and the like, the connections to phase conductors are intended thus:
 - 1. Facing the front and operating side of the equipment, the phase identification shall be:
 - a. Left to Right - A-B-C
 - b. Top to Bottom - A-B-C
- J. Connection revisions as required to achieve correct rotation of motors shall be made at the load terminals of the starters or disconnect switches.

3.6 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of Division 1.
- B. Building Wire and Power Cable Testing: Perform an insulation-resistance test on each conductor with respect to ground and adjacent conductors. Test shall be made by means of a low-resistance ohmmeter, such as a "Megger". The applied potential shall be 500 volts dc for 300 volt rated cable and 1000 volts dc for 600 volt rated cable. The test duration shall be one minute. Insulation resistance must be greater than 100 mega-ohm for 600 volt and 25 mega-ohm for 300 volt rated cables per NETA Acceptance Testing Standard. Verify uniform resistance of parallel conductors.
- C. Inspect wire and cable for physical damage and proper connection.
- D. Torque test conductor connections and terminations to manufacturer's recommended values.
- E. Perform continuity test on all power and equipment branch circuit conductors. Verify proper phasing connections.
- F. Provide documentation of the manufacturer's recommended lug torque value for copper conductors, the date the lugs were torqued, and installed torque readings. Documentation indicating that the torque wrench has been calibrated not more than 30 days prior to tightening of lugs shall be provided.
- G. Protection of wire and cable from foreign materials:
 - 1. It is the Contractor's responsibility to provide adequate physical protection to prevent foreign material application or contact with any wire or cable type. Foreign material is defined as any material that would negatively impact the validity of the manufacturer's performance warranty. This includes, but is not limited to, overspray of paint (accidental or otherwise), drywall compound, or any other surface chemical, liquid, or compound that could come in contact with the cable, cable jacket, or cable termination components.

END OF SECTION

SECTION 26 05 33
CONDUIT AND BOXES

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Rigid metallic conduit and fittings (RMC)
- B. Intermediate metallic conduit and fittings (IMC)
- C. Electrical metallic tubing and fittings (EMT)
- D. Flexible metallic conduit and fittings (FMC)
- E. Rigid polyvinyl chloride conduit and fittings (PVC)
- F. Electrical connection
- G. Pull and junction boxes
- H. Handholes

1.2 RELATED WORK

- A. Section 26 05 53 – Electrical Identification: Refer to electrical identification for color and identification labeling requirements.

1.3 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI C80.1 - Rigid Steel Conduit, Zinc-Coated
 - 2. ANSI C80.3 - Electrical Metallic Tubing, Zinc-Coated and Fittings
 - 3. ANSI C80.4 - Fittings for Rigid Metal Conduit and Electrical Metallic Tubing
 - 4. ANSI C80.6 – Intermediate Metal Conduit, Zinc Coated
 - 5. ANSI/NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers and Box Supports
- B. Federal Specifications (FS):
 - 1. A-A-50553A – Fittings for Conduit, Metal, Rigid, (Thick-Wall and Thin-Wall (EMT) Type
 - 2. A-A-55810 – Specification for Flexible Metal Conduit
- C. NECA “Standards of Installation”
- D. National Electrical Manufacturers Association (NEMA):
 - 1. ANSI/NEMA FB 1 – Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing and Cable
 - 2. RN 1 – Polyvinyl chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit, Rigid Aluminum Conduit, and Intermediate Metal Conduit
 - 3. TC 2 – Electrical Polyvinyl Chloride (PVC) Conduit
 - 4. TC 9 – Fittings for PVC Plastic Utilities Duct for Underground Installation
- E. NFPA 70 – National Electrical Code (NEC)
- F. Underwriters Laboratories (UL): Applicable Listings
 - 1. UL 1 – Flexible Metal Conduit
 - 2. UL 6 – Rigid Metal Conduit
 - 3. UL 360 – Liquid Tight Flexible Steel Conduit
 - 4. UL514-B – Conduit Tubing and Cable Fittings

5. UL651-A – Type EB and a PVC Conduit
6. UL746A – Standard for Polymeric Materials – Short Term Property Evaluations
7. UL797 – Electrical Metal Tubing
8. UL1242 – Intermediate Metal Conduit

G. American Standard of Testing and Materials (ASTM):

1. ASTM D 570 - Standard Test Method for Water Absorption of Plastics
2. ASTM D 638 - Standard Test Method for Tensile Properties of Plastics
3. ASTM D 648 - Standard Test Method for Deflection Temperature of Plastics under Flexural Load in the Edge Wise Position
4. ASTM D 2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading
5. ASTM D 2447 - Standard Specification for Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, Based on Outside Diameter
6. ASTM D 3350 - Standard Specification for Polyethylene Plastic Pipe and Fittings Material

H. Definitions:

1. Fittings: Conduit connection or coupling.
2. Body: Enlarged fittings with opening allowing access to the conductors for pulling purposes only.
3. Mechanical Spaces: Enclosed areas, usually kept separated from the general public, where the primary use is to house service equipment and to route services. These spaces generally have exposed structures, bare concrete and non-architecturally emphasized finishes.
4. Finished Spaces: Enclosed areas where the primary use is to house personnel and the general public. These spaces generally have architecturally emphasized finishes, ceilings and/or floors.
5. Concealed: Not visible by the general public. Often indicates a location either above the ceiling, in the walls, in or beneath the floor slab, in column coverings, or in the ceiling construction.
6. Above Grade: Not directly in contact with the earth. For example, an interior wall located at an elevation below the finished grade shall be considered above grade but a wall retaining earth shall be considered below grade.
7. Slab: Horizontal pour of concrete used for a floor or sub-floor.

PART 2 - PRODUCTS

2.1 RIGID METALLIC CONDUIT (RMC) AND FITTINGS

A. Acceptable Manufacturers:

1. Acceptable Manufacturers: Allied, LTV, Steelduct, Calbond Calpipe, Wheatland Tube Co, O-Z Gedney, or approved equal.
2. Acceptable Manufacturers of RMC Conduit Fittings: Appleton Electric, O-Z/Gedney Co., Electroline, Raco, Bridgeport, Midwest, Regal, Thomas & Betts, Crouse-Hinds, Killark, or approved equal.

- B. Minimum Size Galvanized Steel: 3/4 inch (19mm), unless otherwise noted.
- C. Fittings and Conduit Bodies:
 - 1. End Bell Fittings: Malleable iron, hot dip galvanized, threaded flare type with provisions for mounting to form.
 - 2. Expansion Joints: Malleable iron and hot dip galvanized providing a minimum of 4 inches of movement. Fitting shall be watertight with an insulating bushing and a bonding jumper.
 - 3. Expansion Joint for Concrete Encased Conduit: Neoprene sleeve with bronze end coupling, stainless steel bands and tinned copper braid bonding jumper. Fittings shall be watertight and concrete-tight.
 - 4. Conduit End Bushings: Malleable iron type with molded-on high impact phenolic thermosetting insulation. Where required elsewhere in the contract documents, bushing shall be complete with ground conductor saddle and clamp. **High impact phenolic threaded type bushings are not acceptable.**
 - 5. All other fittings and conduit bodies shall be of malleable iron construction and hot dip galvanized.

2.2 INTERMEDIATE METALLIC CONDUIT (IMC) AND FITTINGS

- A. Minimum Size Galvanized Steel: 3/4 inch, unless otherwise noted.
- B. Acceptable Manufacturers: Allied, LTV, Steelduct, Wheatland Tube Co, O-Z Gedney, or approved equal.
- C. Fittings and Conduit Bodies:
 - 1. End Bell Fittings: Malleable iron, hot dip galvanized, threaded flare type with provisions for mounting to form.
 - 2. Expansion Joints: Malleable iron and hot dip galvanized providing a minimum of 4 inches of movement. Fitting shall be watertight with an insulating bushing and a bonding jumper.
 - 3. Expansion Joint for Concrete Encased Conduit: Neoprene sleeve with bronze end coupling, stainless steel bands and tinned copper braid bonding jumper. Fittings shall be watertight and concrete-tight.
 - 4. Conduit End Bushings: Malleable iron type with molded-on high impact phenolic thermosetting insulation. Where required elsewhere in the contract documents, bushing shall be complete with ground conductor saddle and clamp. **High impact phenolic threaded type bushings are not acceptable.**
 - 5. All other fittings and conduit bodies shall be of malleable iron construction and hot dip galvanized.

2.3 ELECTRICAL METALLIC TUBING (EMT) AND FITTINGS

- A. Minimum Size Electrical Metallic Tubing: 3/4 inch, unless otherwise noted.
- B. Acceptable Manufacturers of EMT Conduit: Allied, Calbond Calpipe, LTV, Steelduct, Wheatland Tube Co, or approved equal.

C. Fittings and Conduit Bodies:

1. 2" Diameter or Smaller: Compression type of steel designed for their specific application.
2. Larger than 2": Compression type of steel designed for their specific application.
3. Acceptable Manufacturers of EMT Conduit Fittings: Appleton Electric, O-Z/Gedney Co., Electroline, Raco, Bridgeport, Midwest, Regal, Thomas & Betts, or approved equal.

2.4 FLEXIBLE METALLIC CONDUIT (FMC) AND FITTINGS

- A. Minimum Size Galvanized Steel: 3/4 inch, unless otherwise noted. Lighting branch circuit wiring to an individual luminaire may be a manufactured, UL listed 3/8" flexible metal conduit and fittings with #14 AWG THHN conductors and an insulated ground wire. Maximum length of 3/8" FMC shall be six (6) feet.
- B. Acceptable Manufacturers: American Flex, Alfex, Electri-Flex Co, or approved equal.
- C. Construction: Flexible steel, approved for conduit ground, zinc coated, threadless type formed from a continuous length of spirally wound, interlocked zinc coated strip steel. Provide a separate equipment grounding conductor when used for equipment where flexibility is required.
- D. Fittings and Conduit Bodies:
 1. Threadless hinged clamp type, galvanized zinc coated cadmium plated malleable cast iron .
 2. Fittings and conduit bodies shall include plastic or cast metal inserts supplied by the manufacturer to protect conductors from sharp edges.
 3. Acceptable Manufacturers: O-Z/Gedney Co., Thomas & Betts, Appleton Electric, Electroline, Bridgeport, Midwest, Regal, or approved equal.
 4. approved equal.

2.5 RIGID NON-METALLIC CONDUIT (PVC) AND FITTINGS

- A. Minimum Size Rigid Smooth-Wall Nonmetallic Conduit: 3/4 inch, unless otherwise noted.
- B. Acceptable Manufacturers: Carlon (Lamson & Sessions) Type 40, Cantex, J.M. Mfg., or approved equal.
- C. Construction: Schedule 40 and Schedule 80 rigid polyvinyl chloride (PVC), UL labeled for 90°C.
- D. Fittings and Conduit Bodies: NEMA TC 3; sleeve type suitable for and manufactured especially for use with the conduit by the conduit manufacturer.
- E. Plastic cement for joining conduit and fittings shall be provided as recommended by the manufacturer.

2.6 [ECONN]: ELECTRICAL CONNECTION

- A. Electrical connection to equipment and motors, sized per NEC. Coordinate requirements with contractor furnishing equipment or motor. Refer to specifications and general installation notes for terminations to motors.

2.7 [JB]: PULL AND JUNCTION BOXES

- A. Sheet Metal Boxes: ANSI/NEMA OS 1; galvanized steel.
- B. Sheet metal boxes larger than 12 inches in any dimension that contain terminations or components: Continuous hinged enclosure with 1/4 turn latch and white back panel for mounting terminal blocks and electrical components.
- C. Cast Metal Boxes for Outdoor and Wet Location Installations: NEMA 250; Type 4 and Type 6, flat-flanged, surface-mounted junction box, UL listed as raintight. Galvanized cast iron box and cover with ground flange, neoprene gasket, and stainless steel cover screws.
- D. Cast Metal Boxes for Underground Installations: NEMA 250; Type 4, inside flanged, recessed cover box for flush mounting, UL listed as raintight. Galvanized cast iron box and plain cover with neoprene gasket and stainless steel cover screws.
- E. Flanged type boxes shall be used where installed flush in wall.

2.8 HANDHOLES

- A. **[HH-1]:** Handhole, composite polymer concrete body and cover. Stainless steel hardware. Bolted non-skid cover rated for 20,000 pounds. Design load occasional non-deliberate vehicular traffic. Stack units to achieve depth shown on plans. Units in landscaped areas shall be green in color. 11"W, 18"L, 18"D.
 - 1. Approved Manufacturers:
 - a. Hubbell/Quazite PG Series
 - b. Carson Industries H Series
 - c. Armorcast
 - d. Highline Products
 - e. Synertech

PART 3 - EXECUTION

3.1 CONDUIT INSTALLATION SCHEDULE AND SIZING

- A. In the event the location of conduit installation represents conflicting installation requirements as specified in the following schedule, a clarification shall be obtained from the Architect/Engineer. If this Contractor is unable to obtain a clarification as outlined above, concealed rigid galvanized steel conduit installed per these specifications and the NEC shall be required.
- B. The following schedule shall be adhered to unless they constitute a violation of applicable codes or are noted otherwise on the drawings. The installation of RMC conduit will be permitted in place of all conduit specified in this schedule.

| Installation Type | RMC | IMC | EMT |
|--|-----|-----|-----|
| Branch Circuits: Lighting, receptacles, controls, etc. | | X | X |
| Finished Spaces / Concealed | | | X |

| Installation Type | RMC | IMC | EMT |
|---|-----|-----|-----|
| Wet and Damp Locations: (conduit, boxes, fittings, installed and equipped to prevent water entry) | X | | |
| Interior Locations: Concealed | | | X |
| Interior Locations: Exposed | | X | X |
| Underground / Slabs on Grade - Refer to the following: | | | |

1. Site Conduits:

- a. Within 5' from the Perimeter of a Building Foundation: Concrete encased PVC conduit with a minimum of 3" thickness between the surface of the concrete and the nearest conduit.
- b. 5' or Greater from the Perimeter of a Building Foundation: PVC.
- c. Under Roads, Drives, and Vehicle Traveled Ways Schedule 40 PVC encased with a minimum of 3" concrete cover on all sides of conduit.

C. Size conduit as shown on the drawings and specifications. Where not indicated in the contract documents, conduit size shall be according to NEC. Conduit and conductor sizing shall be coordinated to limit conductor fill to less than 40%, maintain conductor ampere capacity as required by the NEC (to include enlarged conductors due to temperature and quantity derating values) and to prevent excessive voltage drop and pulling tension due to long conduit/conductor lengths.

D. Minimum Conduit Size (Unless Noted Otherwise):

1. Above Grade: 3/4 inch.
2. Below Grade: 1-1/4 inch.

3.2 CONDUIT ARRANGEMENT

- A. In general, conduit shall be installed concealed in walls, in finished spaces and where possible or practical, or as noted otherwise. Conduit shall be installed parallel or perpendicular to walls, ceilings, and exposed structural members. In unfinished spaces, mechanical and utility areas, conduit may run either concealed or exposed as conditions dictate and as practical unless noted otherwise on drawings. Installation shall maintain headroom in exposed vicinities of pedestrian or vehicular traffic.
- B. Exposed conduit on exterior walls or above roof will not be allowed without prior written approval of Architect/Engineer. A drawing of the proposed routing and a photo of the location shall be submitted 14 days prior to start of conduit rough-in. Routing shall be shown on coordination drawings.
- C. Conduit runs shall be routed as shown on large scale drawings. Conduit routing on drawings scaled 1/4"=1'-0" or less shall be considered diagrammatic, unless noted otherwise. The correct routing, when shown diagrammatically shall be chosen by the Contractor based on information in the contract documents, in accordance with manufacturer's written instructions, applicable codes, the NECA's "Standard of Installation", in accordance with recognized industry standards, and coordinated with other contractors.
- D. Contractor shall adapt his work to the job conditions and make such changes as required and permitted by the Architect/Engineer, such as moving to clear beams and joists, adjusting at columns, avoiding interference with windows, etc., to permit the proper installation of other mechanical and/or electrical equipment.

- E. Contractor shall cooperate with all Contractors on the project. He shall obtain details of other Contractor's work to ensure fit and avoid conflict. Any expense due to the failure of This Contractor to do so shall be paid for in full by him. The other trades involved as directed by the Architect/Engineer shall perform the repair of work damaged as a result of neglect or error by This Contractor. The resultant costs shall be borne by This Contractor.

3.3 CONDUIT SUPPORT

- A. Conduit runs installed above a suspended ceiling shall be properly supported. In no case shall conduit rest on the suspended ceiling construction, nor utilize ceiling support system for conduit support.
- B. Conduit shall not be supported from ductwork, water, sprinkler piping, or other non-structural members, unless approved by the Architect/Engineer. All supports shall be from structural slabs, walls, structural members, and bar joists, and coordinated with all other applicable contractors, unless noted otherwise.
- C. Conduit shall be held in place by the correct size of galvanized one-hole conduit clamps, two-hole conduit straps, patented support devices, clamp back conduit hangers, or by other means if called for on the drawings.
- D. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.
- E. Spring-steel conduit clips specifically designed for supporting single conduits or tubing may be used in lieu of malleable-iron hangers for 1-1/2" and smaller raceways serving lighting and receptacle branch circuits above accessible ceilings and for securing raceways to slotted channel and angle supports.
- F. Group conduits in parallel runs where practical and use conduit racks or trapeze hangers constructed of steel channel, suspended with threaded solid rods or wall mounted from metal channels with conduit straps or clamps. Provide space in each rack or trapeze for 25% additional conduits.
- G. Do not exceed 25 lbs. per hanger and a minimum spacing of 2'-0" on center when attaching to metal roof decking (excludes concrete on metal deck). This 25 lbs. load and 2'-0" spacing include adjacent electrical and mechanical items hanging from deck. If the hanger restrictions cannot be achieved, supplemental framing off steel framing will need to be added.
- H. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.
- I. Supports for metallic conduit shall be no greater than 10 feet. A smaller interval may be used if necessitated by building construction, but in no event shall support spans exceed the NEC requirements. Conduit shall be securely fastened within 3 feet of each outlet box, junction box, device box, cabinet, or fitting.
- J. Supports of flexible conduit shall be within 12 inches of each outlet box, junction box, device box, cabinet, or fitting and at intervals not to exceed 4.5 feet.
- K. Supports for non-metallic conduit shall be at sufficiently close intervals to eliminate any sag in the conduit. The manufacturer's recommendations shall be followed, but in no event shall support spans exceed the NEC requirements.
- L. Where conduit is to be installed in poured concrete floors or walls, provide concrete-tight conduit inserts securely fastened to forms to prevent conduit misplacement.

M. Finish:

1. Prime coat exposed steel hangers and supports. Hangers and supports in crawl spaces, pipe shafts, and above suspended ceiling spaces are not considered exposed.
2. Trim all ends of exposed field fabricated steel hangers, slotted channel and threaded rod to within 1" of support or fastener to eliminate potential injury to personnel unless shown otherwise on the drawings. Smooth ends and install elastomeric insulation with two coats of latex paint if exposed steel is within 6'-6" of finish floor and presents potential injury to personnel.

3.4 CONDUIT INSTALLATION

A. Conduit Connections:

1. Shorter than standard conduit lengths shall be cut square using industry standards. The ends of all conduits cut shall be reamed or otherwise finished to remove all rough edges.
2. Metallic conduit connections in slab on grade installation shall be sealed and one coat of rust inhibitor primer applied after the connection is made.
3. Where conduits with tapered threads cannot be coupled with standard couplings, then approved split or Erickson couplings shall be used. Running threads will not be permitted.
4. Install expansion/deflection joints where conduit crosses structure expansion/seismic joints.

B. Conduit terminations for all low voltage wiring shall have nylon bushings installed on each end of every conduit run.

C. Conduit Bends:

1. Use a hydraulic one-shot conduit bender or factory elbows for bends in conduit 2" in size or larger. All steel conduit bending shall be done cold; no heating of steel conduit shall be permitted.
2. All bends of rigid polyvinyl chloride conduit (PVC) shall be made with the manufacturer's approved bending equipment. The use of spot heating devices will not be permitted (i.e. blow torches).
3. A run of conduit shall not contain more than the equivalent of four (4) quarter bends (360°), including those bends located immediately at the outlet or body.
4. Telecommunications conduits shall have no more than two (2) 90-degree bends between pull points and contain no continuous sections longer than 100 feet. Insert pull points or pull boxes for conduits exceeding 100 feet in length.
 - a. A third bend is acceptable if:
 - 1) The total run is not longer than (33) feet.
 - 2) The conduit size is increased to the next trade size.
5. Telecommunications pull boxes shall not be used in lieu of a bend. Align conduits that enter the pull box from opposite ends with each other. Pull box size shall be

twelve (12) times the diameter of the largest conduit. Slip sleeves or gutters can be used in place of a pull box.

6. Telecommunications conduit bend radius shall be six (6) times the diameter for conduits under 2" and ten (10) times the diameter for conduits over 2".
7. Rigid polyvinyl chloride conduit (PVC) runs longer than 100 feet or runs which have more than two 90° equivalent bends (regardless of length) shall use rigid metal or RTRC factory elbows for bends.
8. Use conduit bodies to make sharp changes in direction (i.e. around beams).

D. Conduit Placement:

1. Conduit shall be mechanically continuous from source of current to all outlets. Conduit shall be electrically continuous from source of current to all outlets, unless a properly sized grounding conductor is routed within the conduit. All metallic conduits shall be bonded per the NEC.
2. Route exposed conduit and conduit above suspended ceilings (accessible or not) parallel/perpendicular to the building structural lines, and as close to building structure as possible. Wherever possible, route horizontal conduit runs above water and steam piping.
3. Route conduit through roof openings provided for piping and ductwork where possible. If not provided or routing through provided openings is not possible, route through roof jack with pitch pocket. Coordinate roof penetrations with other trades.
4. Conduits, raceway, and boxes shall not be installed in concealed locations in metal deck roofing or less than 1.5" below bottom of roof decking.
5. Avoid moisture traps where possible. Where unavoidable, provide a junction box with drain fitting at conduit low point.
6. All conduits through walls shall be grouted or sealed into openings. Where conduit penetrates firewalls and floors, seal with a UL listed sealant.
7. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN MASONRY OR EXTERIOR WALLS UNDER THIS DIVISION. A QUALIFIED MASON AT THE EXPENSE OF THIS CONTRACTOR SHALL REPAIR ALL OPENINGS TO MATCH EXISTING CONDITIONS.
8. Seal interior of conduit at exterior entries, air handling units, coolers/freezers, etc., and where the temperature differential can potentially be greater than 20°F, to prevent moisture penetration. Seal shall be placed where conduit enters warm space. Conduit seal fitting shall be a drain/seal, with sealing compound, equal to O-Z/Gedney type EYD.
9. Rigid polyvinyl chloride conduit (PVC) shall be installed when material surface temperatures and ambient temperature are greater than 40°F.
10. Where rigid polyvinyl chloride conduit (PVC) is used below grade, in a slab, below a slab, etc., a transition to rigid galvanized steel or PVC-coated steel conduit shall be installed before conduit exits earth. The metallic conduit shall extend a minimum of 6" into the surface concealing the non-metallic conduit.

11. Contractor shall provide suitable mechanical protection around all conduits stubbed out from floors, walls or ceilings during construction to prevent bending or damaging of stubs due to carelessness with construction equipment.
12. Contractor shall provide a polypropylene pull cord with 2000 lbs. tensile strength in each empty conduit (indoor and outdoor), except in sleeves and nipples.

3.5 CONDUIT TERMINATIONS

- A. Where conduit bonding is indicated or required in the contract documents, the bushings shall be a grounding type sized for the conduit and ground bonding conductor as manufactured by O-Z/Gedney, Appleton, Thomas & Betts, Burndy, Regal, or approved equal.
- B. Conduits with termination fittings shall be threaded for one (1) lock nut on the outside and one (1) lock nut and bushing on the inside of each box.
- C. Where conduits terminate in boxes with knockouts, they shall be secured to the boxes with lock nuts and provided with approved screw type tinned iron bushings or fittings with plastic inserts.
- D. Where conduits terminate in boxes, fittings, or bodies with threaded openings, they shall be tightly screwed against the shoulder portion of the threaded openings.
- E. Conduit terminations to all motors shall be made with flexible metallic conduit (FMC), unless noted otherwise. Final connections to roof exhaust fans, or other exterior motors and motors in damp or wet locations shall be made with liquidtight flexible metallic conduit (LFMC). Motors in hazardous areas, as defined in the NEC, shall be connected using flexible conduit rated for the environment. Flexible conduit shall not exceed 6' in length. Route equipment ground conductors from circuit ground to motor ground terminal through flexible conduit.
- F. Rigid polyvinyl chloride conduit (PVC) shall be terminated using fittings and bodies produced by the manufacturer of the conduit, unless noted otherwise. Prepare conduit as per manufacturer's recommendations before joining. All joints shall be solvent welded by applying full even coat of plastic cement to the entire areas that will be joined. Turn the conduit at least a quarter to one half turn in the fitting and let the joint cure for 1-hour minimum or as per the manufacturer's recommendations.
- G. All conduit ends shall be sealed with plastic immediately after installation to prevent the entrance of any foreign matter during construction. The seals shall be removed and the conduits blown clear of all foreign matter prior to any wires or pull cords being installed.

3.6 UNDERGROUND CONDUIT INSTALLATION

- A. Conduit Connections:
 1. Conduit joints in a multiple conduit run shall be staggered at least one foot apart.
- B. Conduit Bends (Lateral):
 1. Conduits shall have long sweep radius elbows instead of standard elbows wherever special bends are indicated and noted on the drawings, or as required by the manufacturer of the equipment or system being served.
 2. Telecommunications conduit bend radius shall be six times the diameter for conduits under 2" and ten times the diameter for conduits over 2". Where long cable runs are involved, sidewall pressures may require larger radius bends. Coordinate with Architect/Engineer prior to conduit installation to determine bend radius.

C. Conduit Elbows (vertical):

1. Minimum metal or RTRC elbow radiuses shall be 30 inches for primary conduits (>600V) and 18 inches for secondary conduits (<600V). Increase radius, as required, based on pulling tension calculation requirements.

D. Conduit Placement:

1. Conduit runs shall be pitched a minimum of 4" per 100 feet to drain toward the terminations. Duct runs shall be installed deeper than the minimum wherever required to avoid any conflicts with existing or new piping, tunnels, etc.
2. For parallel runs, use suitable separators and chairs installed not greater than 4' on centers. Band conduit together with suitable banding devices. Securely anchor conduit to prevent movement during concrete placement or backfilling.
3. Where concrete is required, the materials for concreting shall be thoroughly mixed to a minimum $f'c = 2500$ and immediately placed in the trench around the conduits. No concrete that has been allowed to partially set shall be used.
4. Before the Contractor pulls any cables into the conduit he shall have a mandrel 1/4" smaller than the conduit inside diameter pulled through each conduit and if any concrete or obstructions are found, the Contractor shall remove them and clear the conduit. Spare conduit shall also be cleared of all obstructions.
5. Conduit terminations in manholes, masonry pull boxes, or masonry walls shall be with malleable iron end bell fittings.
6. All spare conduits not terminated in a covered enclosure shall have its terminations plugged as described above.
7. Ductbanks and conduit shall be installed a minimum of 24" below finished grade, unless otherwise noted on the drawings or elsewhere in these specifications.
8. All non-metallic conduit installed underground outside of a slab shall be rigid.

E. Raceway Seal:

1. Where a raceway enters a building or structure, it shall be sealed with a sealing bushing or duct seal to prevent the entry of liquids or gases. Seal must be compatible with conductors and raceway system. Spare or unused raceway shall also be sealed.
2. All telecommunications conduits and innerducts, including those containing cables, shall be plugged at the building and vault with "JackMoon" or equivalent duct seal, capable of withstanding a 10-foot head of water (5 PSI).

3.7 BOX INSTALLATION SCHEDULE

A. Galvanized steel boxes may be used in:

1. Concealed interior locations above ceilings and in hollow studded partitions.
2. Exposed interior locations in mechanical rooms and in rooms without ceilings; higher than 8' above the highest platform level.

3. Direct contact with concrete except slab on grade.
- B. Cast boxes shall be used in:
1. Exterior locations.
 2. Exposed interior locations within 8' of the highest platform level.
 3. Direct contact with earth.
 4. Direct contact with concrete in slab on grade.
 5. Wet locations.

3.8 COORDINATION OF BOX LOCATIONS

- A. Provide electrical boxes as shown on the drawings, and as required for splices, taps, wire pulling, equipment connections, and code compliance.
- B. Electrical box locations shown on the Contract Drawings are approximate, unless dimensioned. Verify location of floor boxes and outlets in offices and work areas prior to rough-in.
- C. Locate and install boxes to allow access. Avoid interferences with ductwork, piping, structure, equipment, etc. Where installation is inaccessible, provide access doors. Coordinate locations and sizes of required access doors with the Architect/Engineer and General Contractor.
- D. Locate and install to maintain headroom and to present a neat appearance.
- E. Coordinate locations with Heating Contractor to avoid baseboard radiation cabinets.

3.9 PULL AND JUNCTION BOX INSTALLATION

- A. Locate pull boxes and junction boxes above accessible ceilings or in unfinished areas.
- B. Support pull and junction boxes independent of conduit.

3.10 EXPOSED BOX INSTALLATION

- A. Boxes shall be secured to the building structure with proper size screws, bolts, hanger rods, or structural steel elements.
- B. On brick, block and concrete walls or ceilings, exposed boxes shall be supported with no less than two (2) Ackerman-Johnson, Paine, Phillips, or approved equal screw anchors or expansion shields and round head machine screws. Cast boxes shall not be drilled.
- C. On steel structures, exposed boxes shall be supported to the steel member by drilling and tapping the member and fastening the boxes by means of round head machine screws.
- D. Boxes may be supported on steel members by APPROVED beam clamps if conduit is supported by beam clamps.
- E. Boxes shall be fastened to wood structures by means of a minimum of two (2) wood screws adequately large and long to properly support. (Quantity depends on size of box.)
- F. Wood, plastic, or fiber plugs shall not be used for fastenings.
- G. Explosive devices shall not be used unless specifically allowed.

END OF SECTION

SECTION 26 05 53
ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Adhesive labels, markings, nameplates, and signs
- B. Wire markers
- C. Box, and wire identification
- D. Pole identification

1.2 REFERENCES

- A. ANSI C2 – National Electrical Safety Code
- B. NFPA 70 – National Electrical Code (NEC)
- C. ANSI A13.1 – Standard for Pipe Identification
- D. ANSI Z535.4 – Standard for Product Safety Signs and Labels

PART 2 - PRODUCTS

2.1 ADHESIVE MARKINGS AND FIELD LABELS

- A. Adhesive Marking Labels for Raceway: Pre-printed, flexible, self-adhesive vinyl labels with legend indicating voltage and service (Emergency, Lighting, Power, HVAC, Communications, Control, Fire).
 - 1. Label Size as follows:
 - a. Raceways: Kroy or Brother labels 1-inch (25mm) high by 12-inches (305mm) long (minimum).
 - 2. Color: As specified for various systems.
- B. Colored Adhesive Marking Tape for banding Raceways, Wires, and Cables: Self-adhesive vinyl tape not less than 3 mils thick by 1 inch (25mm) to 2 inches (50mm) in width.
- C. Pretensioned Flexible Wraparound Colored Plastic Sleeves for Cable Identification: flexible acrylic bands sized to suit the cable diameter and arranged to stay in place by pre-tensioned gripping action when coiled around the cable.
- D. Wire/Cable Designation Tape Markers: Vinyl or vinyl-cloth, self-adhesive, wraparound, cable/conductor markers with preprinted numbers and letter.
- E. Underground Plastic Markers: Bright colored continuously printed plastic ribbon tape of not less than 6 inches wide by 4 mil thick, printed legend indicating type of underground line, manufactured for direct burial service. Tape shall contain a continuous metallic wire to allow location with a metal detector.
- F. Aluminum, Wraparound Marker Bands: 1-inch (25mm) width, 0.014 (5mm) inch thick aluminum bands with stamped or embossed legend, and fitted with slots or ears for permanently securing around wire or cable jacket or around groups of conductors.
- G. Brass or aluminum Tags: 2" (50mm) by 2" (50mm) by .05-inch (2mm) metal tags with stamped legend, punched for fastener.

H. Indoor/Outdoor Number and Letters: Outdoor grade vinyl label with acrylic adhesive designed for permanent application in severe indoor and outdoor environments.

I. Text Sizes:

1. The following information shall be used for text heights, fonts, and size, unless otherwise noted.
 - a. Font: Normal 721 Swiss Bold
 - b. Adhesive Labels: 3/16 inch (5mm) minimum text height
 - c. Vinyl / Plastic Laminate Labels: 3/4" inch (19mm) minimum text height

2.2 NAMEPLATES AND SIGNS

A. Engraved, Plastic-Laminated Labels, Signs and Instruction Plates: Engraving stock melamine plastic laminate, 1/16-inch (2mm) minimum thick for signs up to 20 square inches (13 square cm), or 8 inches (200mm) in length; 1/8 inch (3mm) thick for larger sizes. Labels shall be punched for mechanical fasteners.

B. Text Sizes:

1. The following information shall be used for text heights, fonts, and size, unless otherwise noted.
 - a. Text Height: 3/8 inch (10mm) minimum

C. Baked–Enamel Signs for interior Use: Preprinted aluminum signs, punched, or drilled for fasteners, with colors, legend, and size required for application. Mounting 1/4" grommets in corners.

D. Exterior, Metal-Backed, Butyrate Signs: Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396 inch (10mm) galvanized-steel backing: and with colors, legend, and size required for application. Mounting 1/4" grommets in corners.

E. Safety Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145.

F. Fasteners for Plastic-Laminated Signs; Self-tapping stainless steel screws or number 10/32 stainless steel machine screws with nuts and flat and lock washers.

2.3 PRODUCT COLORS

A. Raceways and Conduit:

1. Provide color coded conduit as indicated below. Conduit shall be colored by the manufacturer:
 - a. Normal Power and General Distribution: Silver
 - b. Emergency Power Distribution System:
 - 1) Optional Standby: Orange

B. Box Covers:

1. Box cover colors shall match conduit colors listed above.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Lettering and Graphics: Coordinate names, abbreviations, colors, and other designations used in electrical identification work with corresponding designations specified or indicated. Install numbers, lettering, and colors as required by code.
- B. Install identification devices in accordance with manufacturer's written instruction and requirements of NEC.
- C. Sequence of Work: Where identification is to be applied to surfaces that require finish, install identification after completion of finish work. All mounting surfaces shall be cleaned and degreased prior to identification installation.
- D. Circuit Identification: Tag or label conductors as follows:
 - 1. Multiple Power or Lighting Circuits in Same Enclosure: Where multiple branch circuits are terminated or spliced in a box or enclosure, label each conductor with source and circuit number.
 - 2. Multiple Control Wiring and Communication/Signal Circuits in Same Enclosure: For control and communications/signal wiring, use wire/cable marking tape at terminations in wiring boxes, troughs, and control cabinets. Use consistent letter/number conductor designations throughout on wire/cable marking tape.
 - 3. Match identification markings with designations used in panelboards shop drawings, Contract Documents, and similar previously established identification schemes for the facility's electrical installations.
- E. Apply warning, caution and instruction signs as follows:
 - 1. Install warning, caution or instruction signs where required by NEC, where indicated, or where reasonably required to assure safe operation and maintenance of electrical systems and of the items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions or explanations are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.
 - 2. Emergency Operating Signs: Install, where required by NEC, where indicated, or where reasonably required to assure safe operation and maintenance of electrical systems and of the items to which they connect, engraved laminate signs with white legend on red background with minimum 3/8-inch (10mm) high lettering for emergency instructions on power transfer, load shedding, or other emergency operations.
- F. Apply circuit/control/item designation labels of engraved plastic laminate for pushbuttons, pilot lights, alarm/signal components, and similar items, except where labeling is specified elsewhere.
- G. Install labels parallel to equipment lines at locations as required and at locations for best convenience of viewing without interference with operation and maintenance of equipment.

3.2 LIGHTING CONTROL AND RECEPTACLE COVER PLATES

- A. Product:
 - 1. Adhesive labels and field markings
 - 2. Nameplates and signs
- B. Identification material to be a clear, 3/8-inch (10mm) Kroy tape or Brother self-laminating vinyl label with black letters. Embossed Dymo-Tape labels are not acceptable. Permanently affix identification label to cover plates, centered above the receptacle openings.
- C. Provide identification on all switch and receptacle cover plates. Identification shall indicate source and circuit number serving the device (e.g. "C1A #24").

3.3 BOX LABELING

- A. Products:
 - 1. Adhesive labels and field markings
- B. Identify Junction, Pull and Connection Boxes: Labeling shall be 3/8-inch (10mm) Kroy tape or Brother self-laminating vinyl label, letters/numbers color coded same as conduits. In rooms that are painted out, provide labeling on inside of cover.
- C. All junction, pull, and connection boxes shall be identified as follows:
 - 1. For power and lighting circuits, indicate system voltage and identity of contained circuits ("120V, 1LA1-3,5,7").

3.4 CONDUCTOR COLOR CODING

- A. Products:
 - 1. All wire and cables shall be color coded by the manufacturer.
- B. Color coding shall be applied at all panels, switches, junction boxes, pull boxes, vaults, manholes etc., where the wires and cables are visible and terminations are made. The same color coding shall be used throughout the entire electrical system, therefore maintaining proper phasing throughout the entire project.
- C. Colored cable ties shall be applied in groups of three ties of specified color to each conductor at each terminal or splice point starting 3 inches (76mm) from the termination and spaced at 3- inches (76mm) centers. Tighten to a snug fit, and cut off excess length.
- D. Where more than one nominal voltage system exists in a building or facility, each ungrounded conductor of a multi-wire branch circuit, where accessible, shall be identified by phase and system.
- E. Conductors shall be color coded as follows:
 - 1. 208Y/120 Volt, 4-Wire:
 - a. A-Phase – Black
 - b. B-Phase – Red
 - c. C-Phase – Blue
 - d. Neutral – White
 - e. Ground Bond – Green

2. 480Y/277 Volt, 4-Wire:
 - a. A-Phase – Brown
 - b. B-Phase – Orange
 - c. C-Phase – Yellow
 - d. Neutral – Gray
 - e. Ground Bond – Green

3.5 POLE IDENTIFICATION

A. Product:

1. Adhesive labels and field markings
2. Nameplates and signs

- B. Lighting poles, bollards and overhead distribution poles shall be individually identified with a unique number, for maintenance purposes. Apply the vinyl label number above the hand hole cover or 24" (610mm) above grade.

END OF SECTION

SECTION 26 09 33
LIGHTING CONTROL SYSTEMS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Time switches

1.2 RELATED WORK

1.3 QUALITY ASSURANCE

- A. Manufacturers shall be regularly engaged in the manufacture of lighting control equipment and ancillary equipment, of types and capacities required, whose products have been in satisfactory use in similar service for not less than five (5) years.
- B. All components and assemblies are to be factory pre-tested prior to delivery and installation.
- C. Comply with NEC as applicable to electrical wiring work.
- D. Comply with applicable portions of NEMA standards pertaining to types of electrical equipment and enclosures.
- E. All assemblies are to be in compliance with FCC emissions standards specified in Part 15 Subpart J for Class A applications.

1.4 REFERENCES

- A. FS W S 896 Switch, Toggle
- B. NFPA 70 - National Electrical Code (NEC)
- C. Submit product data under provisions of Section 26 05 00.
- D. Submit a comprehensive package including devices, hardware, software, product specification, finishes, dimensions, installation instructions, warranty, system software requirements.
- E. Submit project specific control wiring diagrams showing all equipment, line voltage, and control wiring requirements for all components.

1.5 PROJECT RECORD DOCUMENTS

- A. Submit project record documents under provisions of Section 26 05 00.
- B. Accurately record location of all controls and devices. Include description of switching sequences and circuiting arrangements.

1.6 WARRANTY

- A. Manufacturer shall warrant products under normal use and service to be free from defects in materials and workmanship for a period of two (1) year from date of commissioning.

PART 2 - PRODUCTS

2.1 TIME SWITCH

- A. **[TC-1]:** Astronomical time switch, 7-day, 2 channel, electronic, one SPDT 5-amp contact, LCD display, 12 or 24-hour format, minimum 100 hours carryover, UL listed.

- 1. Approved Manufacturers: Tork EWZ201C

2.2 CONDUCTORS AND CABLES

- A. Splices and Taps:

- 1. Tapping or wire trap connectors shall be used to splice all Class 1 and Class 2 control wiring. Twist-on, wire-nut type connectors are not allowed.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Verify field dimensions and coordinate physical size of all equipment with the architectural requirements of the spaces into which they are to be installed. Allow space for adequate ventilation and circulation of air.
- C. Verify that required utilities are available, in proper location, and ready for use.
- D. Beginning of installation means installer accepts existing conditions.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved shop drawings.
- B. All wiring shall be installed in conduit.
- C. All branch load circuits shall be live tested before connecting the loads to the lighting control panel.

END OF SECTION

SECTION 26 28 21 CONTACTORS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Lighting contactors
- B. Enclosures

1.2 RELATED SECTIONS AND WORK

- A. Refer to Lighting Contactor Schedule.

1.3 REFERENCES

- A. ANSI/NEMA ICS 6 - Enclosures for Industrial Controls and Systems
- B. NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies
- C. UL 508 - Industrial Control Equipment

1.4 SUBMITTALS

- A. Submit shop drawings under provisions of Section 26 05 00.
- B. Include outline drawings with dimensions, and equipment ratings for voltage, capacity, and poles.
- C. Submit manufacturer's instructions under provisions of Section 26 05 00.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Schneider Electric
- B. Eaton Corporation
- C. ASCO

2.2 **[LC-1]**: LIGHTING CONTACTORS

- A. Contactors: NEMA ICS 2 and UL 508; electrically held, 2-wire control.
- B. Coil Operating Voltage: 120 volts, 60 Hertz.
- C. Contacts: 30 amp, 480 volt
- D. Enclosure: ANSI/NEMA ICS 6; Type 1.
- E. Provide solderless pressure wire terminals.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- C. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.
- D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction boxes; and equipment enclosures.
- E. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

END OF SECTION

SECTION 26 51 00
LIGHTING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Exterior luminaires and accessories

1.2 REFERENCES

- A. ANSI C78.377-2008 – Specifications for the Chromaticity of Solid State Lighting Products
- B. ANSI C82.11 - High Frequency Fluorescent Lamp Ballasts
- C. ANSI C82.77-2002 – Standard for Harmonic Emission Limits and Related Power Quality Requirements for Lighting Equipment
- D. IEEE C2 - National Electrical Safety Code

1.3 SUBMITTALS

- A. Submit product data under provisions of Section 26 05 00.
- B. Submit product data sheets for luminaires, lamps, ballasts and drivers. Include complete product model number with all options as specified. Submittal shall be arranged with fixtures listed in ascending order, and with each luminaire's associated lamp, ballast, driver, or pole information following luminaire's product data. Failure to organize submittal in this manner will result in the submittal being rejected.
- C. Submit lens product data, dimensions and weights if not included in product data sheet submittal.
- D. Include outline drawings, support points, weights, and accessory information for each luminaire type.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site. Store and protect under provisions of Section 26 05 00.
- B. Protect luminaire finishes, lenses, and trims from damage during storage and installation. Do not remove protective films until construction cleanup within each area is complete.
- C. Handle site lighting poles carefully to prevent breakage and damage to finish.

1.5 WARRANTY

- A. Light emitting diode (LED) light engines and drivers shall have a five-year warranty from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 EXTERIOR LUMINAIRES AND ACCESSORIES - GENERAL

- A. Listed for wet or damp location as scheduled. Fountain and pool luminaires shall be listed for submersible location to meet depth specified.
- B. Provide low temperature ballasts or LED drivers, with reliable starting to -20°F.

2.2 LIGHT EMITTING DIODE (LED) LUMINAIRE SYSTEMS

- A. Refer to the luminaire schedule for color temperature and minimum color rendering index CRI requirements.
- B. LED chip arrays specified as color changing shall have chip colors as noted on the luminaire schedule.
- C. LED chips shall be wired so that failure of one chip does not prohibit operation of the remainder of the chip array.
- D. Luminaire minimum lumens is defined as the absolute lumens per the manufacturers LM-79-08 test report.
- E. LED Driver:
 - 1. Solid state driver with integral heat sink. Driver shall have overheat, short-circuit and overload protection, power factor 0.90 or above and maximum total harmonic distortion of 20%. Surge suppression device for all exterior luminaires.
 - 2. Drivers shall have dimming capabilities as outlined in the luminaire schedule for each luminaire type.
 - 3. Driver shall have a minimum of 50,000 hours rated life.

2.3 LIGHTING POLES

- A. Reused existing 6"x6", 30-foot poles as shown on the drawings. Provide new hand hole cover, top cover and bolt covers.
- B. Provide new anchor Bolts: As recommended by pole manufacturer. Provide template, flat washers, lock washers, and hex nuts for each pole. Grout between anchor plate and concrete base with non-shrink grout after pole is plumbed.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Luminaire Pole Bases: Sized and constructed as indicated on the drawings. Project anchor bolts 2 inches minimum above base. Install poles plumb with double nuts for adjustment. Grout around pole anchor base.
- B. Embedded Luminaire Poles: Depth as indicated. Install plumb.
- C. Use belt slings or non-chafing ropes to raise and set pre-finished luminaire poles.

3.2 ADJUSTING AND CLEANING

- A. Align luminaires and clean lenses and diffusers at completion of work. Clean paint splatters, dirt, and debris from installed luminaires.
- B. Touch up luminaire and pole finish at completion of work.

3.3 LUMINAIRE SCHEDULE

- A. As shown on the drawings.

END OF SECTION

DIVISION 32
EXTERIOR IMPROVEMENTS

SECTION 32 3119
DECORATIVE METAL FENCES AND GATES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Decorative aluminum fences.

1.02 RELATED REQUIREMENTS

- A. Section 02751 – Cement Concrete Paving
- B. Section 02300 - Earthwork

1.03 REFERENCE STANDARDS

- A. ASTM B117 - Standard Practice for Operating Salt Spray (Fog) Apparatus; 2016.
- B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2014.
- C. ASTM D523 - Standard Test Method for Specular Gloss; 2014.
- D. ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments; 2008, with Editorial Revision (2017).
- E. ASTM D2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates; 2016.
- F. ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact) ; 1993 (Reapproved 2010).
- G. ASTM D3359 - Standard Test Method for Rating Adhesion by Tape Test; 2017.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Conduct a preinstallation meeting one week prior to start of work of this section; require attendance by affected installers.

1.05 SUBMITTALS

- A. See Section 01330 – Submittal Procedures.
- B. Product Data: Submit manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Shop Drawings:
 - 1. Indicate plan layout, spacing of components, post foundation dimensions, hardware anchorage, and schedule of components.
 - 2. Foundation details, concrete design mix and reinforcing schedule for anti-ram barrier system.
- D. Installer's Qualification Statement.
- E. Manufacturer's Warranty.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Experienced with type of construction involved and materials and techniques specified and approved by fence manufacturer.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Store materials in a manner to ensure proper ventilation and drainage. Protect against damage, weather, vandalism and theft.

1.08 WARRANTY

- A. See Section 01710 - Closeout Submittals, for additional warranty requirements.
- B. Finish: 10 years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Decorative Metal Fences and Gates:
 - 1. Alumi-Guard; Ascot: www.alumi-guard.com/sle.
 - 2. Ameristar Perimeter Security, USA; Echelan Plus; Majestic: www.ameristarfence.com.
 - 3. Approved equal.

2.02 FENCES

- A. Fences: Complete factory-fabricated system of posts and panels, accessories, fittings, and fasteners; finished with electrodeposition coating, and having the following performance characteristics:
 - 1. Capable of resisting vertical load, horizontal load and infill performance requirements for fence categories defined in ASTM F2408.
- B. Electro-Deposition Coating: Multi-stage pretreatment/wash with zinc phosphate, followed by epoxy primer and acrylic topcoat.
 - 1. Total Coating Thickness: 2 mils (0.058 mm), minimum.
 - 2. Color: Dark Bronze.
 - 4. Coating Performance: Comply with general requirements of ASTM F2408.
 - a. Adhesion: ASTM D3359 (Method B); Class 3B with 90 percent or more of coating remaining in tested area.
 - b. Corrosion Resistance: ASTM B117, ASTM D714 and ASTM D1654; 1/8 inch (15.8 mm) coating loss or medium No.8 blisters after 1,500 hours.
 - c. Impact Resistance: ASTM D2794; 60 inch pounds (6.8 N m).
 - d. Weathering Resistance: ASTM D523, ASTM D822/D822M and ASTM D2244; less than 60 percent loss of gloss.
- C. Aluminum: ASTM B221.
 - 1. Tubular Pickets, Rails and Posts: 6005-T5 alloy.
 - 2. Extrusions for Posts and Rails (Outer Channel): 6005-T5 alloy.
 - 3. Extrusions for Pickets and Rail (Inner Slide Channels): 6063-T5 alloy.
- D. Fasteners: ASTM A276/A276M, Type 302 stainless steel; finished to match fence components.
 - 1. Tamper-proof security bolts.
 - 2. Self-drilling hex-head screws.

2.03 ALUMINUM FENCE

- A. Decorative Aluminum Fence System: Provide fence meeting the Test Load and Coating Performance requirements of ASTM F2408 for Industrial class.
 - 1. Fence Panels: 4 feet (1.2 m) high by 6 feet (1.8 m) long.
 - a. Panel Style: Three rail.
 - b. Panel Strength: Capable of supporting 270 pounds (122.5 kg) minimum load applied at midspan without deflection.
 - c. Attach panels to posts with manufacturer's standard panel brackets and recommended fasteners.
 - d. Posts: Aluminum extrusions; 2-1/2 inches (63 mm) square.
 - e. Rails: Extruded aluminum channels.
 - 1) Double-walled aluminum U channel; outside cross-section dimensions of 1-3/4 inch (44.5 mm) square; interior guide channel forms lower limit of raceway for retaining rod.

- 2) Enclosed Retaining Rod: 0.125 inch (3.17 mm) diameter galvanized steel with variable pitch connection system for high angle racking and elimination of external fasteners.
- 3) Picket-to-Rail Intersection Seals: PVC grommets.
- 4) Picket Spacing, Standard: 3-7/8 inch (98 mm) on center.
- 5) Picket Spacing, Specialty: Manufacturer's specialty option.
- f. Pickets: Extruded aluminum tubes.
 - 1) Size: 3/4 inch (19.05 mm) square min.
 - 2) Size: 1 inch (25.4 mm) square.
 - 3) Style: Pickets with no finial extend above top rail.
- g. Fasteners: Manufacturer's standard stainless steel bolts, screws, and washers; factory finish fasteners to match fence.
- h. Accessories: Aluminum castings, extrusions and cold-formed strips; factory finished to match fence.
 - 1) Flat post cap.
- i. Flexibility: Capable of following variable slope of up to 1:4.
- j. Color: Manufacturer's standard, factory applied Dark Bronze.
- k. Products:
 - 1) Alumi-Guard, Ornamental Picket Fences; Premier: www.alumi-guard.com/sle.
 - 2) Ameristar Perimeter Security, USA; Echelon II: www.ameristarfence.com.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to installation.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Set fence posts in accordance with the manufacturer recommended spacing.
- C. When cutting rails immediately seal the exposed surfaces by:
 1. Removing metal shavings from cut area.
 2. Apply zinc-rich primer to thoroughly cover cut edge and drilled hole; allow to dry.
 3. Apply two coats of custom finish spray paint matching fence color.
 4. Failure to seal exposed surfaces in accordance with manufacturer's instructions will negate manufacturer's warranty.
- D. Space gate posts according to the manufacturers' drawings, dependent on standard out-to-out gate leaf dimensions and gate hardware selected.
 1. Base type and quantity of gate hinges o the application; weight, height, and number of gate cycles.
 2. Identify the necessary hardware required for the application on the manufacturer's gate drawings.
 3. Provide gate hardware by the manufacturer of the gate and install in compliance with manufacturer's recommendations.

3.04 ERECTION TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch (6.3 mm).
- B. Maximum Offset From Indicated Position: 1 inch (25.4 mm).
- C. Minimum Distance from Property Line: 6 inches (152 mm).

3.05 CLEANING

- A. Leave immediate work area neat at end of each work day.
- B. Clean jobsite of excess materials; scatter excess material from post hole excavations uniformly away from posts. Remove excess material if required.
- C. Clean fence with mild household detergent and clean water rinse well.
- D. Remove mortar from exposed posts and other fencing material using a 10 percent solution of muriatic acid followed immediately by several rinses with clean water.
- E. Touch up scratched surfaces using materials recommended by manufacturer. Match touchup paint color to fence finish.

3.06 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair, or replace damaged products before Date of Substantial Completion.

END OF SECTION

6.0 ATTACHMENTS

BID FORM

BID FORM

PROJECT IDENTIFICATION:

McHenry County College
Parking Lot A Reconstruction
8900 U.S. Route 14
Crystal Lake, IL 60012

HR GREEN PROJECT NUMBER: 180186.01

THIS BID IS SUBMITTED TO:

McHenry County College
Attn: Ms. Jennifer Jones
8900 U.S. Route 14
Crystal Lake, Illinois 60012
(Hereinafter called OWNER)

- 1.01 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with OWNER in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.
- 2.01 Bidder accepts all of the terms and conditions of the Instruction to Bidders. Bidder has not added any conditions or qualifying statements to the Bid. Bidder will sign and deliver the required number of counterparts of the Agreement with the Bonds, evidence of insurance coverage, and other documents required by the Bidding Requirements within five (5) days after the date of OWNER'S Notice of Award.
- 3.01 In submitting this Bid, Bidder represents, as set forth in the Agreement, that:
- A. Bidder has examined and carefully studied the Bidding Documents, the other related data identified in the Bidding Documents, and the following Addenda, receipt of all which is hereby acknowledged.

| <u>Addendum No.</u> | <u>Addendum Date</u> |
|---------------------|----------------------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

- B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress and performance of the Work.
- D. Bidder has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to

the Project Area which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents to be employed by Bidder, and safety precautions and programs incident thereto.

- E. Bidder does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) Bid and within the times and in accordance with the other terms and conditions of the Bidding Documents.
 - F. Bidder is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Bidding Documents.
 - G. Bidder has correlated the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies and data with the Bidding Documents.
 - H. Bidder has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by ENGINEER is acceptable to Bidder.
 - I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.
 - J. In accordance with Section 215 of the Clean Water Act (33 U.S.C. 1251 et seq.) and implementing EPA regulations, CONTRACTOR agrees that the CONTRACTOR, Subcontractors, and suppliers in the performance of this Contract will give preference to domestic construction materials.
 - K. In connection with the performance of Work under this Contract, CONTRACTOR agrees not to discriminate against any employee or applicant for employment because of age, race, religion, color, handicap, sex, physical condition or developmental disability or national origin. This provision shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. CONTRACTOR further agrees to take affirmative action to ensure equal employment opportunities for persons with disabilities. CONTRACTOR agrees to post in conspicuous places, available for employees and applicants for employment, notices setting forth the provisions of the nondiscrimination clause.
- 4.01 A. By submission of the Bid, each Bidder certifies, and in the case of a joint Bid each party thereto certifies as to his own organization, that in connection with the Bid:
- 1. The prices in the Bid have been arrived at independently, without consultation, communication, or agreement, for the purpose of restricting competition, as to any matter relating to such prices with any other Bidder or with any competitor;
 - 2. Unless otherwise required by law, the prices which have been quoted in the Bid have not knowingly been disclosed by the Bidder, prior to opening, directly or indirectly to any other Bidder or to any competitor; and
 - 3. No attempt has been made or will be made by the Bidder to induce any other person or firm to submit or not to submit a Bid for the purpose of restricting competition.

B. Each person signing the Bid shall certify that:

1. He is the person in the Bidder's organization responsible within that organization for the decision as to the prices being Bid and that he has not participated, and will not participate, in any action contrary to (I) i through (I) iii above; or
2. He is not the person in the Bidder's organization responsible within that organization for the decision as to the prices being Bid but that he has been authorized to act as agent for the persons responsible for such decision in certifying that such persons have not participated, and will not participate, in any action contrary to (I) i through (I) iii above, and as their agent shall so certify; and shall also certify that he has not participated, and will not participate, in any action contrary to (I) i through (I) iii above.

5.01 Each pay item should have a unit price and a total price.

6.01 The unit price shall govern if no total price is shown or if there is a discrepancy between the product of the unit price multiplied by the quantity.

7.01 If a unit price is omitted, the total price will be divided by the quantity in order to establish a unit price.

8.01 A Bid will be declared unacceptable if neither a unit price nor a total price is shown.

9.01 The undersigned firm certifies that it has not been convicted of bribery or attempting to bribe an officer or employee of the State of Illinois, nor has the firm made an admission of guilt of such conduct which is a matter of record, nor has an official, agent, or employee of the firm committed bribery or attempted bribery on behalf of the firm and pursuant to the direction or authorization of a responsible official of the firm. The undersigned firm further certifies that it is not barred from contracting with any unit of State or local government as a result of a violation of State laws prohibiting Bid-rigging or Bid-rotating.

10.01 The undersigned submits herewith this schedule of prices covering the work to be performed, which includes all labor and materials required under this contract:

SCHEDULE OF PRICES

(For complete information covering these items, see plans and specifications)

| MCHENRY COUNTY COLLEGE PARKING LOT E & F IMPROVEMENTS BASE BID 8900 US HWY 14, CRYSTAL LAKE, ILLINOIS | | | | | |
|--|---|----------|------|-----------|------------|
| | ITEM | QUANTITY | UNIT | UNIT COST | TOTAL COST |
| | DEMOLITION | | | | |
| 1 | Bituminous Pavement Removal, Full Depth | 8,479 | SY | | |
| 2 | Aggregate Base Removal and Stockpile | 1,414 | CY | | |
| 3 | Aggregate Lot Removal & Stockpile | 294 | CY | | |
| 4 | Curb & Gutter Removal | 655 | LF | | |
| 5 | Sidewalk Removal | 2,574 | SF | | |
| 6 | Light Pole & Base Removal | 12 | EA | | |
| 7 | Remove Storm Sewer | 116 | LF | | |
| 8 | Remove Storm Structure | 1 | EA | | |
| 9 | Sanitary Manhole Adjustment | 1 | EA | | |
| 10 | Fire Hydrant & Valve Adjustment | 1 | EA | | |
| 11 | Utility Box Adjustment | 1 | EA | | |
| 12 | Rip-Rap Removal | 76 | SF | | |
| 13 | Retaining Wall Removal | 20 | SFF | | |
| 14 | Remove and Relocate Signs | 15 | EA | | |
| 15 | Traffic Control Barriers | 1 | LS | | |
| 16 | Tree Removal | 32 | EA | | |
| 17 | Brush Removal | 1 | LS | | |
| | DEMOLITION TOTAL | | | | |
| | | | | | |
| | EROSION CONTROL | | | | |
| 18 | Silt Fence | 1,379 | LF | | |
| 19 | Inlet Protection | 10 | EA | | |
| 20 | Construction Entrance | 1 | EA | | |
| 21 | Concrete Washout | 1 | EA | | |
| | EROSION CONTROL TOTAL | | | | |
| | | | | | |
| | EARTHWORK | | | | |
| 22 | Earth Excavation (Cut/Fill) | 1,020 | CY | | |
| 23 | Import Structural Fill | 270 | CY | | |
| 24 | Topsoil Strip & Stockpile (6") | 852 | CY | | |
| 25 | Segmental Block Retaining Wall | 721 | SFF | | |
| | EARTHWORK TOTAL | | | | |
| | | | | | |

| | | | | | |
|----|--|-------|-----|--|--|
| | LANDSCAPING | | | | |
| 26 | Celtis occidentalis | 5 | EA | | |
| 27 | Gymnocladus dioica | 5 | EA | | |
| 28 | Quercus alba | 4 | EA | | |
| 29 | Shredded Hardwood Mulch | 3 | CY | | |
| 30 | Rock Mulch | 2 | CY | | |
| 31 | Hydroseed | 5,768 | SY | | |
| 32 | Topsoil Respread, Furnish & Place, 4" (Seeding) | 641 | CY | | |
| 33 | Erosion Control Blanket (DS75) | 1,307 | SY | | |
| | LANDSCAPING TOTAL | | | | |
| | | | | | |
| | FURNISHINGS | | | | |
| 34 | Aluminum Handrail | 161 | LF | | |
| | FURNISHINGS TOTAL | | | | |
| | | | | | |
| | ASPHALT PAVING | | | | |
| 35 | 1½ " Hot Mix Asphalt, Surface Course, Mix D, N50 | 980 | Ton | | |
| 36 | 2 1/2" Hot Mix Asphalt Binder Course, IL-19, N50 | 1,633 | Ton | | |
| 37 | Place & Compact Select Aggregate Base from Stockpile | 294 | CY | | |
| 38 | 8" Aggregate Base Course, CA-6 | 2,210 | CY | | |
| 39 | 4" Aggregate Shoulder, CA-6 | 8 | CY | | |
| 40 | Bituminous Prime Coat MC-30 (.25 gal/sy) | 2,840 | Gal | | |
| 41 | Bituminous Prime Coat SS-1 (.10 gal/sy) | 1,136 | Gal | | |
| 42 | Pavement Class D Patch | 29 | SY | | |
| 43 | Paint Pavement Marking Line 4" | 5,972 | LF | | |
| 44 | Paint Pavement Marking Line 24" | 82 | LF | | |
| 45 | Paint Pavement Marking Symbol | 7 | SF | | |
| | ASPHALT PAVING TOTAL | | | | |
| | | | | | |
| | CONCRETE PAVING | | | | |
| 46 | 5" P.C.C. Sidewalk | 1,115 | SF | | |
| 47 | Integral Curb & Sidewalk | 270 | SF | | |
| | CONCRETE PAVING TOTAL | | | | |
| | | | | | |

| | | | | | |
|----|---|-------|----|--|--|
| | SITE SIGNAGE | | | | |
| 48 | Stop Sign | 4 | EA | | |
| 49 | Handicap Parking Sign | 7 | EA | | |
| 50 | Pedestrian Crossing Sign | 2 | EA | | |
| | SITE SIGNAGE TOTAL | | | | |
| | | | | | |
| | STORMWATER MANAGEMENT | | | | |
| 51 | 12" RCP Pipe | 237 | LF | | |
| 52 | 15" RCP Pipe | 544 | LF | | |
| 53 | 15" CMP Pipe | 76 | LF | | |
| 54 | Catch Basin TC 2' Dia. (R-2504 OL Grate) | 2 | EA | | |
| 55 | Catch Basin TA 4' Dia. (R-2504 OL Grate) | 2 | EA | | |
| 56 | Manhole TA 4' Dia. (R-1713 CL Grate) | 1 | EA | | |
| 57 | RCP FES 15" | 3 | EA | | |
| 58 | Trench Backfill | 129 | CY | | |
| 59 | Rip Rap (RR-3) | 9 | SY | | |
| | STORMWATER MANAGEMENT TOTAL | | | | |
| | | | | | |
| | CONCRETE CURB & GUTTER | | | | |
| 60 | B-6.12 Curb & Gutter | 2,911 | LF | | |
| 61 | M-2.12 Curb & Gutter | 144 | LF | | |
| | CONCRETE CURB & GUTTER TOTAL | | | | |
| | | | | | |
| | SITE LIGHTING | | | | |
| 62 | Electrical Demolition | 1 | LS | | |
| 63 | Parking Lot Lighting & Circuiting up to the Hand Hole | 1 | LS | | |
| 64 | Entire Empty Conduit System for Future Cameras | 1 | LS | | |
| 65 | Time Clock, Lighting Contactor & Associated EM Circuiting up to the Hand Hole | 1 | LS | | |
| | SITE LIGHTING TOTAL | | | | |
| | | | | | |
| | BID ALTERNATES | | | | |
| 66 | 5" P.C.C. Sidewalk | 145 | SF | | |
| 67 | Concrete Stairs w/ Handrail - Complete | 1 | LS | | |
| 68 | Aluminum Handrail | 8 | LF | | |
| | | | | | |
| | | | | | |

| | | | | | |
|--|------------------------------|--|--|--|--|
| | TOTAL OF BID SECTIONS | | | | |
| | DEMOLITION TOTAL | | | | |
| | EROSION CONTROL TOTAL | | | | |
| | EARTHWORK TOTAL | | | | |
| | LANDSCAPING TOTAL | | | | |
| | FURNISHINGS TOTAL | | | | |
| | ASPHALT PAVING TOTAL | | | | |
| | CONCRETE PAVING TOTAL | | | | |
| | SITE SIGNAGE TOTAL | | | | |
| | STORMWATER MANAGEMENT TOTAL | | | | |
| | CONCRETE CURB & GUTTER TOTAL | | | | |
| | SITE LIGHTING TOTAL | | | | |
| | BID ALTERNATES | | | | |
| | | | | | |
| | TOTAL BASE BID | | | | |

SUMMARY

Total Base Bid: \$ _____

SCHEDULE OF SUPPLEMENTAL UNIT PRICES

If the pay items listed below are added to the project by Change Order, Bidder shall indicate the unit prices for quantities that apply to such quantities. Bidder has computed unit price(s) as provided in Paragraph 11.03.B of the General Conditions.

Crushed Stone (for unstable trench bottom)
as ordered (in place), per cubic yard \$ _____ per CY

Removal of Unsuitables (for unstable trench bottom)
as required, per cubic yard \$ _____ per CY

Aggregate Base Course CA-6 100% Crushed
as required, per ton \$ _____ per Ton

12.01 Bidder agrees that the Work will be substantially completed and ready for final payment on or before the dates or within the number of calendar days indicated in the Agreement.

12.02 Bidder accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified above, which shall be stated in the Agreement.

14.01 The terms used in this Bid with initial capital letters have the meanings indicated in the Instruction to Bidders, the General Conditions, and the Supplementary Conditions.

Bid Submitted By: _____

Title: _____

Business Name: _____

Address: _____

Telephone: _____ Fax: _____ Email: _____

The signature below certifies that the entire bid document is in order and that all instructions, specifications, rules and regulations as stipulated by the McHenry County College will be adhered to and complied with.

Authorized Signature:

Date:

CONTRACTOR CERTIFICATION

CONTRACTOR CERTIFICATION
Illinois Revised Statute 1987
Chapter 38, Sections 33E-3 and 33E-4

The undersigned hereby certifies that it is not barred from bidding on this contract as a result of violation of either Section 33E-3 (bid rigging) or 33E-4 (bid rotating) of the Illinois Revised Statutes 1987, Chapter 38.

Under penalty of perjury, the undersigned Contractor certifies that this proposal has not been arrived at collusively or otherwise in violation of Federal or Illinois antitrust laws.

Company Name _____

By * _____

Address _____

City/State/ZIP _____

* Must be actual signature in ink of a representative of Contractor authorized to legally commit the Contractor.

Section 33E-5(b) pertains to disclosure of information related to the terms of a bid and any bidder's responsiveness to a request for bids. Specifically, district officials or employees must not knowingly open a sealed bid at a time or place other than as specified by the district. Also, any official who knowingly discloses any information related to the terms of a sealed bid or any bidder's responsiveness to the request for bids commits a class 3 felony. This section does allow, however, that no violation occurs if any disclosure made to an interested person also is made generally available to the public. **CONSEQUENTLY, COLLEGES SHOULD BE CAUTIOUS NOT TO DISCLOSE ANY INFORMATION THAT IS NOT RELEASED TO THE PUBLIC.**

Section 33E-6 contains several provisions potentially impacting College purchasing procedures. **SPECIFICALLY, A PERSON COMMITS A CLASS 4 FELONY WHEN INFORMATION CONCERNING THE SPECIFICATIONS OF A CONTRACT IS KNOWINGLY CONVEYED TO A BIDDER OR PROSPECTIVE BIDDER OTHER THAN THROUGH THE BID INVITATION, PRE-BID CONFERENCE, OR CONTRACT SOLICITATION PROCEDURE.** Thus, once an INVITATION FOR BID for a particular contract is released, MCC cannot respond to individual inquiries from bidders. Likewise, no information may be volunteered concerning potential Subcontractors if the contract involves subcontracting work.

**CERTIFICATION OF COMPLIANCE WITH
ILLINOIS PREVAILING WAGE LAW**

CERTIFICATE OF COMPLIANCE WITH THE ILLINOIS PREVAILING WAGE LAW

Every eligible bidder and contractor/vendor shall comply with the employment section of Public Contracts provision of the Prevailing Wage Act, 820 ILCS 130/1, as amended.

McHenry County College District 528
8900 U.S. Highway 14
Crystal Lake, IL 60012

INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS
Certificate of Compliance with the Illinois Prevailing Wage Law

This letter is to certify that _____
(name of company)

is in compliance with Section 39A9 of Chapter 48 of the Illinois Revised Statutes and all amendments pertaining to the payment of prevailing wages as established by the department of labor, to all laborers, workers, and mechanics performing work under this agreement/contract.

Company street address _____

City _____

County _____ State _____ Zip _____

Contact name _____ contact phone _____

Sworn and subscribed to me on this _____ day of _____, 20____; before me, notary public
appointed in _____ County for the state of Illinois.

Signature of Notary

printed name

Seal

Commission expiration date

city of residence

county of residence

W9 Request for Taxpayer ID Number and Certification

Request for Taxpayer Identification Number and Certification

Give Form to the
requester. Do not
send to the IRS.

| | | |
|---|--|---|
| Print or type See Specific Instructions on page 2. | Name (as shown on your income tax return) | |
| | Business name/disregarded entity name, if different from above | |
| | Check appropriate box for federal tax classification (required): <input type="checkbox"/> Individual/sole proprietor <input type="checkbox"/> C Corporation <input type="checkbox"/> S Corporation <input type="checkbox"/> Partnership <input type="checkbox"/> Trust/estate <input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=partnership) ▶ _____ <input type="checkbox"/> Other (see instructions) ▶ _____ | <input type="checkbox"/> Exempt payee |
| | Address (number, street, and apt. or suite no.) | Requester's name and address (optional) |
| | City, state, and ZIP code | |
| List account number(s) here (optional) | | |

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on the "Name" line to avoid backup withholding. For individuals, this is your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the Part I instructions on page 3. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN* on page 3.

Note. If the account is in more than one name, see the chart on page 4 for guidelines on whose number to enter.

| | | | | | | | | | |
|--------------------------------|--|--|--|--|--|--|--|--|--|
| Social security number | | | | | | | | | |
| | | | | | | | | | |
| Employer identification number | | | | | | | | | |
| | | | | | | | | | |

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me), and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding, and
3. I am a U.S. citizen or other U.S. person (defined below).

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions on page 4.

| | | |
|------------------|----------------------------|--------|
| Sign Here | Signature of U.S. person ▶ | Date ▶ |
|------------------|----------------------------|--------|

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Purpose of Form

A person who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) to report, for example, income paid to you, real estate transactions, mortgage interest you paid, acquisition or abandonment of secured property, cancellation of debt, or contributions you made to an IRA.

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN to the person requesting it (the requester) and, when applicable, to:

1. Certify that the TIN you are giving is correct (or you are waiting for a number to be issued),
2. Certify that you are not subject to backup withholding, or
3. Claim exemption from backup withholding if you are a U.S. exempt payee. If applicable, you are also certifying that as a U.S. person, your allocable share of any partnership income from a U.S. trade or business is not subject to the withholding tax on foreign partners' share of effectively connected income.

Note. If a requester gives you a form other than Form W-9 to request your TIN, you must use the requester's form if it is substantially similar to this Form W-9.

Definition of a U.S. person. For federal tax purposes, you are considered a U.S. person if you are:

- An individual who is a U.S. citizen or U.S. resident alien,
- A partnership, corporation, company, or association created or organized in the United States or under the laws of the United States,
- An estate (other than a foreign estate), or
- A domestic trust (as defined in Regulations section 301.7701-7).

Special rules for partnerships. Partnerships that conduct a trade or business in the United States are generally required to pay a withholding tax on any foreign partners' share of income from such business. Further, in certain cases where a Form W-9 has not been received, a partnership is required to presume that a partner is a foreign person, and pay the withholding tax. Therefore, if you are a U.S. person that is a partner in a partnership conducting a trade or business in the United States, provide Form W-9 to the partnership to establish your U.S. status and avoid withholding on your share of partnership income.

AGREEMENT

AGREEMENT

Parking Lot E Reconstruction & Parking Lot F Addition

THIS AGREEMENT is by and between the McHenry County College, 8900 U.S. Route 14, Crystal Lake, Illinois 60012 (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR). OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1 – WORK

- 1.01 CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work of this Contract is generally described as follows:

The project includes the reconstruction of an approximate +/- 276 parking stall parking lot as well as a 30 stall parking lot addition for McHenry County College. General construction for the parking lot reconstruction/addition project includes, but not limited to, installation of storm sewers, new parking lot lighting system, and complete removal and replacement of the parking lot, along with the other work associated with the project as outlined in the plans and specifications.

ARTICLE 2 – THE PROJECT

- 2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

McHenry County College
Parking Lot 4 Reconstruction
8900 U.S. Route 14
Crystal Lake, IL 60012

ARTICLE 3 – ENGINEER

- 3.01 The Project has been designed by HR Green, Inc., who is hereinafter also called ENGINEER and who is to act as OWNER'S representative, assume all duties and responsibilities, and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

- 4.01 Time of Essence

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

- 4.02 Dates for Substantial Completion and Final Payment

A. The work will be substantially completed by July 19, 2019, and completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions by September 27, 2019. Substantial completion is defined as having an operational parking lot which includes at a minimum, but not limited to, placement of the surface course, pavement striping, and adjacent concrete curbing.

4.03 Liquidated Damages

- A. The Substantial Completion date of this project is July 19, 2019. The parties agree that the completion of the project is critical to provide parking areas for the college faculty and students. The parties agree that it is difficult to ascertain the College's damages because of the Contractor's failure to complete the project by the completion date but that \$2,000.00 per day is a reasonable estimate. The parties agree that that the Contractor shall pay to the College \$2,000.00 per day for each day beyond the time specified in paragraph 4.02 for Substantial Completion – not as a penalty or as a provision or means to enforce the completion date but rather as damages that both parties agree that the College will experience each additional day that the project is not completed by the completion date. After Substantial Completion, if CONTRACTOR shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER \$2,000.00 for each day that expires after the time specified in paragraph 4.02 for completion and readiness for final payment, until the Work is completed and ready for final payment.

ARTICLE 5 – CONTRACT PRICE

- 5.01 OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in the Unit Price Schedule as completed in the CONTRACTOR'S Bid Form, as attached hereto as an exhibit.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 Submittal and Processing of Payments

- A. CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

6.02 Progress Payments; Retainage

- A. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER each month during performance of the Work as provided below. All such payments will be measured by the schedule of values established and in accordance with Section 01290.
- B. Progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER may determine or OWNER may withhold.
 - 1. 90% of Work completed (with the balance being retainage). If the Work has been 50% completed as determined by ENGINEER, and if the character and progress of the Work have been satisfactory to OWNER and ENGINEER, OWNER, on recommendation of ENGINEER, may determine that as long as the character and progress of the Work remain satisfactory to them, there will be no retainage on account of Work subsequently completed, in which case the remaining progress payments will be in an amount equal to 100% of the Work completed less the aggregate of previous retainage and payments previously made. At 50% completion, or any time thereafter, when the character and

progress of the Work is not satisfactory, additional amounts may be retained, but in no event shall the total retainage be more than 10% of the value of the Work completed.

2. Upon Substantial Completion, the amount of retainage may be reduced. Upon Substantial Completion, OWNER may make additional payments, retaining at all times an amount sufficient to cover the estimated cost of the work still to be completed or corrected.

6.03 Final Payment

- A. Upon final completion and acceptance of the Work, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER.

ARTICLE 7 – INTEREST

- 7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall not bear interest.

ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS

- 7.01 In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:
 - A. CONTRACTOR has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.
 - B. CONTRACTOR has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - C. CONTRACTOR is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.
 - D. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by CONTRACTOR, including applying the specific means, methods, techniques, sequences, and procedures of construction, if any, expressly required by the Contract Documents to be employed by CONTRACTOR, and safety precautions and programs incident thereto.
 - E. CONTRACTOR does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.
 - F. CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the Site that relates to the Work as indicated in the Contract Documents.
 - G. CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

- H. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that CONTRACTOR has discovered in the Contract Documents, and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. In accordance with Section 215 of the Clean Water Act (33 U.S.C. 1251 et seq.) and implementing EPA regulations, CONTRACTOR agrees that the CONTRACTOR, Subcontractors, and suppliers in the performance of this Contract will give preference to domestic construction materials.
- K. In connection with the performance of Work under this Contract, CONTRACTOR agrees not to discriminate against any employee or applicant for employment because of age, race, religion, color, handicap, sex, physical condition or developmental disability, or national origin. This provision shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training including apprenticeship. CONTRACTOR further agrees to take affirmative action to ensure equal employment opportunities for persons with disabilities. CONTRACTOR agrees to post in conspicuous places, available for employees and applicants for employment, notices setting forth the provisions of the nondiscrimination clause.

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 Contents

- A. The Contract Documents consist of the following:
 - 1. This Agreement
 - 2. Performance & Maintenance Bond
 - 3. Payment Bond
 - 4. Specifications as listed in the table of contents of the Project Manual
 - 5. Addenda
 - 6. Documents in the Appendix
 - 7. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:
 - a. Notice to Proceed
 - b. Written Amendments
 - c. Change Orders
 - d. Work Change Directives
 - e. Field Orders
 - f. Engineer's written interpretations and clarifications
- B. The documents listed in Paragraph 9.01.A. are attached (except as expressly noted otherwise above) and incorporated by reference as part of this Agreement.
- C. There are no Contract Documents other than those listed above in this Article 9.

ARTICLE 10 – MISCELLANEOUS

10.01 Assignment of Contract

- A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.02 Successors and Assigns

- A. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.03 Severability

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

10.04 Equal Employment Opportunity Clause

- A. In the event of CONTRACTOR'S and/or vendor's noncompliance with any provision of this Equal Employment Opportunity Clause, the Illinois Fair Employment Practices Act or the Fair Employment Practices Commission's Rules and Regulations for Public Contracts, the CONTRACTOR and/or vendor may be declared non-responsible and therefore ineligible for future contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations, and the Contract may be canceled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation.
- B. During the performance of this Contract, CONTRACTOR and/or vendor agrees as follows:
 - 1. That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin or ancestry; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify such underutilization.
 - 2. That, if it hires additional employees in order to perform this Contract, or any portion hereof, it will determine the availability (in accordance with the Commission's Rules and Regulations for Public Contracts) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized.
 - 3. That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, national origin, ancestry, age, marital status, physical or mental handicap unrelated to ability, or an unfavorable discharge from military service.

4. That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the CONTRACTOR'S obligations under the Illinois Fair Employment Practices Act and the Commission's Rules and Regulations for Public Contracts. If any such labor organization or representative fails or refuses to cooperate with CONTRACTOR in its efforts to comply with such Act and Rules and Regulations. CONTRACTOR will promptly so notify the Illinois Fair employment Practices Commission and the contracting agency and will recruit employees from other sources when necessary to fulfill its obligations thereunder.
5. That it will submit reports as required by the Illinois Fair Employment Practices Commission's Rules and Regulations for Public Contracts, furnish all relevant information as may from time to time be requested by the Commission or the contracting agency, and in all respects comply with the Illinois Fair Employment Practices Act and the Commission's Rules and Regulations for Public Contracts.
6. That it will permit access to all relevant books, records, accounts and work sites by personnel of the contracting agency and the Illinois Fair Employment Practices Commission for purposes of investigation to ascertain compliance with the Illinois Fair Employment Practices Act and the Commission's Rules and Regulations for Public Contracts.
7. That it will include verbatim or by reference the provisions of Paragraphs 1 through 7 of this clause in every performance subcontract as defined in Section 2.10(b) of the Commission's Rules and Regulations for Public Contracts so that such provisions will be binding upon every such subcontractor, and that it will also so include the provisions of Paragraphs 1, 5, 6, and 7 in every supply subcontract as defined in Section 2.10(a) of the Commission's Rules and Regulations for Public Contracts so that such provisions will be binding upon every such subcontractor. In the same manner as with other provisions of this Contract, CONTRACTOR will be liable for compliance with applicable provisions of this clause by all its subcontractors; and further it will promptly notify the contracting agency and the Illinois Fair Employment Practices Commission in the event any subcontractor fails or refuses to comply therewith. In addition, no CONTRACTOR will utilize any subcontractor declared by the Commission to be non-responsible and therefore ineligible for Contracts or subcontracts with the State of Illinois or any of its political subdivision or municipal corporations.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed four (4) copies of this Agreement. One (1) copy each has been delivered to CONTRACTOR and ENGINEER and two copies to OWNER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR.

This Agreement will be effective on _____, 2019 (which is the Effective Date of the Agreement).

OWNER:

McHenry County College

By: _____
(signature)

(typed name and title)

Attest _____
(signature)

Address for giving notices:

8900 U.S. Route 14

Crystal Lake, Illinois 60012

CONTRACTOR:

By: _____
(signature)

(typed name and title)

Attest _____
(signature)

Address for giving notices:

License No. _____
(where applicable)

Approved as to form and execution this
_____ day of _____, 2019

(attorney for OWNER)

Countersigned by:

Chief Financial Officer
(or other designated official)

Designated Representative:

Name: _____

Title: _____

Address: _____

Phone: _____

Facsimile: _____

Agent for service of process: _____

(If CONTRACTOR is a corporation or a partnership,
attach evidence of authority to sign.)

Designated Representative:

Name: _____

Title: _____

Address: _____

Phone: _____

Facsimile: _____

STANDARD GENERAL CONDITIONS

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the Controlling Law.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by

ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE

and

Issued and Published Jointly By



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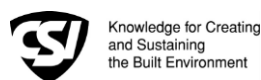
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American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400

These General Conditions have been prepared for use with the Suggested Forms of Agreement Between Owner and Contractor Nos. C-520 or C-525 (2002 Editions). Their provisions are interrelated and a change in one may necessitate a change in the other. Comments concerning their usage are contained in the EJCDC Construction Documents, General and Instructions (No. C-001) (2002 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. C-800) (2002 Edition).

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GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

3. *Application for Payment*--The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Asbestos*--Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.

5. *Bid*--The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

6. *Bidder*--The individual or entity who submits a Bid directly to Owner.

7. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda).

8. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.

9. *Change Order*--A document recommended by Engineer which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.

10. *Claim*--A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.

11. *Contract*--The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*-- Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor's submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.

13. *Contract Price*--The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).

14. *Contract Times*--The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any, (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.

15. *Contractor*--The individual or entity with whom Owner has entered into the Agreement.

16. *Cost of the Work*--See Paragraph 11.01.A for definition.

17. *Drawings*--That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.

18. *Effective Date of the Agreement*--The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

19. *Engineer*--The individual or entity named as such in the Agreement.

20. *Field Order*--A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.

21. *General Requirements*--Sections of Division 1 of the Specifications. The General Requirements pertain to all sections of the Specifications.

22. *Hazardous Environmental Condition*--The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto in connection with the Work.

23. *Hazardous Waste*--The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

24. *Laws and Regulations; Laws or Regulations*--Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

25. *Liens*--Charges, security interests, or encumbrances upon Project funds, real property, or personal property.

26. *Milestone*--A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

28. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

29. *Owner*--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

30. *PCBs*--Polychlorinated biphenyls.

31. *Petroleum*--Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.

32. *Progress Schedule*--A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*--The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.

34. *Project Manual*--The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.

35. *Radioactive Material*--Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

36. *Related Entity* -- An officer, director, partner, employee, agent, consultant, or subcontractor.

37. *Resident Project Representative*--The authorized representative of Engineer who may be assigned to the Site or any part thereof.

38. *Samples*--Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

39. *Schedule of Submittals*--A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.

40. *Schedule of Values*--A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

41. *Shop Drawings*--All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.

42. *Site*--Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.

43. *Specifications*--That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain

administrative requirements and procedural matters applicable thereto.

44. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

45. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

46. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.

47. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

48. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

49. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

50. *Unit Price Work*--Work to be paid for on the basis of unit prices.

51. *Work*--The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

52. *Work Change Directive*--A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times

but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

1.02 Terminology

A. The following words or terms are not defined but, when used in the Bidding Requirements or Contract Documents, have the following meaning.

B. Intent of Certain Terms or Adjectives

1. The Contract Documents include the terms "as allowed," "as approved," "as ordered", "as directed" or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives "reasonable," "suitable," "acceptable," "proper," "satisfactory," or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action or determination will be solely to evaluate, in general, the Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

C. Day

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. Defective

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

- a. does not conform to the Contract Documents, or
- b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents, or
- c. has been damaged prior to Engineer's - recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

E. Furnish, Install, Perform, Provide

1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.

F. Unless stated otherwise in the Contract Documents, words or phrases which have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 - PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.

B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

2.02 *Copies of Documents*

A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

2.03 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement

or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

2.04 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to the date on which the Contract Times commence to run.

2.05 *Before Starting Construction*

A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule; indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.06 *Preconstruction Conference*

A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, and maintaining required records.

2.07 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be provided whether or not specifically called for at no additional cost to Owner.

C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

3.02 *Reference Standards*

A. Standards, Specifications, Codes, Laws, and Regulations

1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard, specification, manual, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard, specification, manual or code, or any instruction of a Supplier shall be effective to change the duties or

responsibilities of Owner, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents. No such provision or instruction shall be effective to assign to Owner, or Engineer, or any of, their Related Entities, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

3.03 *Reporting and Resolving Discrepancies*

A. Reporting Discrepancies

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor may discover and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.

2. *Contractor's Review of Contract Documents During Performance of Work:* If, during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Law or Regulation applicable to the performance of the Work or of any standard, specification, manual or code, or of any instruction of any Supplier, Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.

3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor knew or reasonably should have known thereof.

B. Resolving Discrepancies

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

a. the provisions of any standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work

(unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.

B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:

1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample; (Subject to the provisions of Paragraph 6.17.D.3); or

3. Engineer's written interpretation or clarification.

3.05 *Reuse of Documents*

A. Contractor and any Subcontractor or Supplier or other individual or entity performing or furnishing all of the Work under a direct or indirect contract with Contractor, shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or Engineer's consultants, including electronic media editions; or

2. reuse any of such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaption by Engineer.

B. The prohibition of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 *Electronic Data*

A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's

sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.

B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party..

C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS

4.01 *Availability of Lands*

A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which the Work is to be performed and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.02 *Subsurface and Physical Conditions*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports of explorations and tests of subsurface conditions at or contiguous to the Site that Engineer has used in preparing the Contract Documents; and

2. those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) that Engineer has used in preparing the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the “technical data” contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such “technical data” is identified in the Supplementary Conditions. Except for such reliance on such “technical data,” Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor’s purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any “technical data” or any such other data, interpretations, opinions, or information.

4.03 *Differing Subsurface or Physical Conditions*

A. *Notice:* If Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either:

1. is of such a nature as to establish that any “technical data” on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or

3. differs materially from that shown or indicated in the Contract Documents; or

4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer’s Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner’s obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer’s findings and conclusions.

C. Possible Price and Times Adjustments

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition causes an increase or decrease in Contractor’s cost of, or time required for, performance of the Work; subject, however, to the following:

a. such condition must meet any one or more of the categories described in Paragraph 4.03.A; and

b. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of Paragraphs 9.07 and 11.03.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:

a. Contractor knew of the existence of such conditions at the time Contractor made a final commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract; or

b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor’s making such final commitment; or

c. Contractor failed to give the written notice as required by Paragraph 4.03.A.

3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be made therefor as provided in Paragraph 10.05. However, Owner and Engineer, and any of their Related Entities shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

4.04 *Underground Facilities*

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data; and

2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:

- a. reviewing and checking all such information and data,
- b. locating all Underground Facilities shown or indicated in the Contract Documents,
- c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction, and
- d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will

promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

4.05 *Reference Points*

A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.06 *Hazardous Environmental Condition at Site*

A. *Reports and Drawings:* Reference is made to the Supplementary Conditions for the identification of those reports and drawings relating to a Hazardous Environmental Condition identified at the Site, if any, that have been utilized by the Engineer in the preparation of the Contract Documents.

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their Related Entities with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or

2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or

3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.

C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.

D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any.

E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered to Contractor written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.

F. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work. If Owner and Contractor cannot agree as to

entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.

G. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06. G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

H. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 5 - BONDS AND INSURANCE

5.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified

in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.

B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent must be accompanied by a certified copy of the agent's authority to act.

C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

5.02 *Licensed Sureties and Insurers*

A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.03 *Certificates of Insurance*

A. Contractor shall deliver to Owner, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

B. Owner shall deliver to Contractor, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.

5.04 *Contractor's Liability Insurance*

A. Contractor shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and as will provide protection

from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;

2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:

a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or

b. by any other person for any other reason;

5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, include as additional insured (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;

2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

3. include completed operations insurance;

4. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;

5. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);

6. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and

7. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment.

a. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

5.05 *Owner's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

5.06 *Property Insurance*

A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, false work, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, (other than caused by flood) and such other perils or causes of loss as may be specifically required by the Supplementary Conditions;

3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;

5. allow for partial utilization of the Work by Owner;

6. include testing and startup; and

7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.

B. Owner shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.

D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any

deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

5.07 *Waiver of Rights*

A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insured or additional insured (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.

C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them.

5.08 *Receipt and Application of Insurance Proceeds*

A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.

B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 *Acceptance of Bonds and Insurance; Option to Replace*

A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract

Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 *Partial Utilization, Acknowledgment of Property Insurer*

A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. Contractor shall not be responsible for the negligence of Owner or Engineer in the design or specification of a specific means, method, technique, sequence, or procedure of construction which is shown or indicated in and expressly required by the Contract Documents.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to Owner and Engineer except under extraordinary circumstances. The superintendent will be Contractor's representative at the Site and shall have authority to act on behalf of Contractor. All communications given to or

received from the superintendent shall be binding on Contractor.

6.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner's written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

6.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start-up, and completion of the Work.

B. All materials and equipment incorporated into the Work shall be as specified or, if not specified, shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

6.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

6.05 *Substitutes and "Or-Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.

1. *"Or-Equal" Items:* If in Engineer's sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an "or-equal" item, in which case review and approval of the proposed item may, in Engineer's sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole,

3) it has a proven record of performance and availability of responsive service; and

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the Owner or increase in Contract Times, and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

2. Substitute Items

a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.

b. Contractor shall submit sufficient information as provided below to allow Engineer to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.

c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented in the General Requirements and as Engineer may decide is appropriate under the circumstances.

d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

1) shall certify that the proposed substitute item will:

a) perform adequately the functions and achieve the results called for by the general design,

b) be similar in substance to that specified, and

c) be suited to the same use as that specified;

2) will state:

a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time;

b) whether or not use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and

c) whether or not incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;

3) will identify:

a) all variations of the proposed substitute item from that specified, and

b) available engineering, sales, maintenance, repair, and replacement services;

4) and shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change,

B. Substitute Construction Methods or Procedures: If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.

C. Engineer's Evaluation: Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by either a Change Order for a substitute or an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.

D. Special Guarantee: Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

E. Engineer's Cost Reimbursement: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. Whether or not Engineer approves a substitute item so proposed or submitted by Contractor, Contractor shall reimburse Owner for the charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the charges of Engineer for making changes in the Contract

Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

F. Contractor's Expense: Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

6.06 Concerning Subcontractors, Suppliers, and Others

A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.

B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity, nor

2. shall anything in the Contract Documents create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual

or entity except as may otherwise be required by Laws and Regulations.

D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.

E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.

F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, and Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds (and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

6.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of Owner or Engineer its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

6.08 *Permits*

A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

6.09 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work. However, it shall not be Contractor's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

6.10 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

6.11 *Use of Site and Other Areas*

A. Limitation on Use of Site and Other Areas

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.

2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.

3. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused by or based upon Contractor's performance of the Work.

B. Removal of Debris During Performance of the Work: During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. Cleaning: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. Loading Structures: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.12 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, and written interpretations and clarifications in good order and annotated to show changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to Engineer for reference. Upon completion of the Work, these record documents, Samples, and Shop Drawings will be delivered to Engineer for Owner.

6.13 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and

3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.

C. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Draw-

ings or Specifications or to the acts or omissions of Owner or Engineer or , or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

6.15 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

6.16 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

6.17 *Shop Drawings and Samples*

A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the acceptable Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. Shop Drawings

a. Submit number of copies specified in the General Requirements.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:* Contractor shall also submit Samples to Engineer for review and approval in accordance with the acceptable schedule of Shop Drawings and Sample submittals.

a. Submit number of Samples specified in the Specifications.

b. Clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 6.17.D.

B. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals , any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. Submittal Procedures

1. Before submitting each Shop Drawing or Sample, Contractor shall have determined and verified:

a. all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

b. the suitability of all materials with respect to intended use, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work;

c. all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto; and

d. shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents

with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations, that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop Drawing's or Sample Submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

D. Engineer's Review

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

E. Resubmittal Procedures

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 Continuing the Work

A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or

disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 Contractor's General Warranty and Guarantee

A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its Related Entities shall be entitled to rely on representation of Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by Owner of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;

4. use or occupancy of the Work or any part thereof by Owner;

5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;

6. any inspection, test, or approval by others; or

7. any correction of defective Work by Owner.

6.20 Indemnification

A. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or

arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .

B. In any and all claims against Owner or Engineer or any of their respective consultants, agents, officers, directors, partners, or employees by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve, maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

6.21 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.

B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal

shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.

E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

ARTICLE 7 - OTHER WORK AT THE SITE

7.01 *Related Work at Site*

A. Owner may perform other work related to the Project at the Site with Owner's employees, or via other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:

1. written notice thereof will be given to Contractor prior to starting any such other work; and

2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.

B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and shall properly coordinate the Work with theirs. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and

properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering their work and will only cut or alter their work with the written consent of Engineer and the others whose work will be affected. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.

C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

7.02 *Coordination*

A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:

1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;

2. the specific matters to be covered by such authority and responsibility will be itemized; and

3. the extent of such authority and responsibilities will be provided.

B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

7.03 *Legal Relationships*

A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.

B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's actions or inactions.

C. Contractor shall be liable to Owner and any other contractor for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's action or inactions.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

8.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

8.02 *Replacement of Engineer*

A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

8.03 *Furnish Data*

A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

8.04 *Pay When Due*

A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

8.05 *Lands and Easements; Reports and Tests*

A. Owner's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site that have been utilized by Engineer in preparing the Contract Documents.

8.06 *Insurance*

A. Owner's responsibilities, if any, in respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

8.07 *Change Orders*

A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 *Inspections, Tests, and Approvals*

A. Owner's responsibility in respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 *Limitations on Owner's Responsibilities*

A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

8.10 *Undisclosed Hazardous Environmental Condition*

A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 *Evidence of Financial Arrangements*

A. If and to the extent Owner has agreed to furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents, Owner's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

9.01 *Owner's Representative*

A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract Documents and will not be changed without written consent of Owner and Engineer.

9.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep

Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 9.09. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

9.03 *Project Representative*

A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

9.04 *Authorized Variations in Work*

A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

9.05 *Rejecting Defective Work*

A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

9.06 *Shop Drawings, Change Orders and Payments*

A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.

C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.

D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question

B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believe that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.

C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.

D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show

partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 9.09 shall also apply to, the Resident Project Representative, if any, and assistants, if any.

ARTICLE 10 - CHANGES IN THE WORK; CLAIMS

10.01 *Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall

promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents as amended, modified, or supplemented as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.B.

10.03 *Execution of Change Orders*

A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:

1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;

2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and

3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

10.04 *Notification to Surety*

A. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any bond to be given to a surety, the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

10.05 *Claims*

A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.

B. *Notice:* Written notice stating the general nature of each Claim, shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Time shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:

1. deny the Claim in whole or in part,

2. approve the Claim, or

3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.

D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.

E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.

F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

ARTICLE 11 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

11.01 *Cost of the Work*

A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items, and shall not include any of the costs itemized in Paragraph 11.01.B.

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time at the Site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and

Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.

4. Costs of special consultants (including but not limited to Engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have

resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the Site, expresses, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance Contractor is required by the Contract Documents to purchase and maintain.

B. Costs Excluded: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A and 11.01.B.

C. Contractor's Fee: When all the Work is performed on the basis of cost-plus, Contractor's fee shall

be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

D. Documentation: Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

11.02 Allowances

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

B. Cash Allowances

1. Contractor agrees that:

a. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. Contingency Allowance

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.03 Unit Price Work

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

2. there is no corresponding adjustment with respect any other item of Work; and

3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12 - CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

12.01 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. The value of any Work covered by a Change Order or of any Claim for an adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or

2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an

allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).

C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraph 12.01.C.2.a is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;

e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

12.02 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted

by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.

B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

12.03 *Delays*

A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.

B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor, then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

D. Owner, Engineer and the Related Entities of each of them shall not be liable to Contractor for any claims, costs, losses, or damages (including but not limited to all fees and charges of Engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Contractor on or in connection with any other project or anticipated project.

E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

ARTICLE 13 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

13.01 *Notice of Defects*

A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. All defective Work may be rejected, corrected, or accepted as provided in this Article 13.

13.02 *Access to Work*

A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and governmental agencies with jurisdictional interests will have access to the Site and the Work at reasonable times for their observation, inspecting, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's Site safety procedures and programs so that they may comply therewith as applicable.

13.03 *Tests and Inspections*

A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;

2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in said Paragraph 13.04.C; and

3. as otherwise specifically provided in the Contract Documents.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to

be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.

E. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, it must, if requested by Engineer, be uncovered for observation.

F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

13.04 *Uncovering Work*

A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.

B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, furnishing all necessary labor, material, and equipment.

C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.

D. If, the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

13.05 *Owner May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

13.06 *Correction or Removal of Defective Work*

A. Promptly after receipt of notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).

B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

13.07 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:

1. repair such defective land or areas; or
2. correct such defective Work; or
3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications .

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitation or repose.

13.08 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness) and the diminished value of the Work to the extent not otherwise paid by Contractor pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

13.09 *Owner May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 13.09, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this Paragraph.

C. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 13.09.

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

14.01 *Schedule of Values*

A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress

payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

14.02 *Progress Payments*

A. Applications for Payments

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

B. Review of Applications

1. Engineer will, within 10 days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to Owner or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations on the Site of the executed Work as an experienced and qualified design professional and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

a. the Work has progressed to the point indicated;

b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under Paragraph 9.07, and to any other qualifications stated in the recommendation); and

c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract Documents; or

b. that there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

a. to supervise, direct, or control the Work, or

b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or

e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent

inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:

- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
- b. the Contract Price has been reduced by Change Orders;
- c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
- d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

C. Payment Becomes Due

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

D. Reduction in Payment

1. Owner may refuse to make payment of the full amount recommended by Engineer because:

- a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
- b. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
- c. there are other items entitling Owner to a set-off against the amount recommended; or
- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.

2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, when Contractor corrects to Owner's satisfaction the reasons for such action.

3. If it is subsequently determined that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1.

14.03 Contractor's Warranty of Title

A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

14.04 Substantial Completion

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.

B. Promptly after Contractor's notification, , Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will within 14 days after submission of the tentative certificate to Owner notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will within said 14 days execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.

D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial

Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

E. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to complete or correct items on the tentative list.

14.05 *Partial Utilization*

A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions.

1. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor will certify to Owner and Engineer that such part of the Work is substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 14.04 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 5.10 regarding property insurance.

14.06 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals

that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

14.07 *Final Payment*

A. Application for Payment

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance certificates of inspection, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.7;

b. consent of the surety, if any, to final payment;

c. a list of all Claims against Owner that Contractor believes are unsettled; and

d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner or Owner's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien.

B. *Engineer's Review of Application and Acceptance*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations

under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. Payment Becomes Due

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and , will be paid by Owner to Contractor.

14.08 *Final Completion Delayed*

A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

14.09 *Waiver of Claims*

A. The making and acceptance of final payment will constitute:

1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and

2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance

with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

15.01 *Owner May Suspend Work*

A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

15.02 *Owner May Terminate for Cause*

A. The occurrence of any one or more of the following events will justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);

2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;

3. Contractor's disregard of the authority of Engineer; or

4. Contractor's violation in any substantial way of any provisions of the Contract Documents.

B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:

1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion),

2. incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and

3. complete the Work as Owner may deem expedient.

C. If Owner proceeds as provided in Paragraph 15.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this Paragraph Owner shall not be required to obtain the lowest price for the Work performed.

D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.

E. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B, and 15.02.C.

15.03 *Owner May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses;

3. all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) incurred in settlement of terminated contracts with Subcontractors, Suppliers, and others; and

4. reasonable expenses directly attributable to termination.

B. Contractor shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

15.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this Paragraph.

ARTICLE 16 - DISPUTE RESOLUTION

16.01 *Methods and Procedures*

A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be

governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.

B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.

C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:

1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions, or

2. agrees with the other party to submit the Claim to another dispute resolution process, or

3. gives written notice to the other party of their intent to submit the Claim to a court of competent jurisdiction.

ARTICLE 17 - MISCELLANEOUS

17.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

17.02 *Computation of Times*

A. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract Documents. The provisions of this Paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

17.04 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

17.05 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

17.06 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS

SUPPLEMENTARY CONDITIONS

SUPPLEMENTARY CONDITIONS

GENERAL

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2002 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

The terms used in these Supplementary Conditions will have the meanings indicated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings indicated below, which are applicable to both the singular and plural thereof.

ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

SC - 1.01

Whenever the word ARCHITECT is used in the Specifications, it shall have the same meaning as the word ENGINEER as defined.

ARTICLE 2 – PRELIMINARY MATTERS

SC – 2.01

Add the following language at the end of paragraph 2.01B:

“No contractor or subcontractor shall be given a Notice to Proceed until executed contracts are transmitted to Owner.”

SC - 2.02

Delete paragraph 2.02.A. in its entirety and insert the following in its place:

- A. OWNER shall furnish to CONTRACTOR five copies of the Contract Documents with full-scale Drawings. Additional copies will be furnished upon request at the cost of reproduction.

SC – 2.03

Delete the last sentence of paragraph 2.03A. in its entirety and insert the following in its place:

In no event will the Contract Times commence to run later than the 90th day after the day of Bid opening or the sixtieth day after the Effective Date of the Agreement, whichever date is earlier.

SC - 2.05

Add the following language at the end of paragraph 2.05.A.:

A request for written interpretation or clarification of the Contract Documents shall be submitted on the Clarification/Interpretation Request form provided in the Appendix of this Project Manual.

SC - 2.07 A.3

Add the following to paragraph 2.07 A.3.

“Contractor’s Schedule of Values shall be verified. Each subcontractor and subsubcontractor and major material supplier shall be identified by name and address indicating the contract amount due and to become due in accordance with Section 5 of the Illinois Mechanics Lien Act.”

Revise 2.07 A.3 and 14.01 to read as follows:

Contractor’s Schedule of Values will be acceptable to Engineer as to form and substance if it provides the name and address of each subcontractor, the amount due and to become due each subcontractor and is sworn under oath by the Contractor in compliance with Section 5 of the Illinois Mechanics Lien Act.

ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

SC – 4.02

Add the following new paragraphs after paragraph 4.02.B.:

- A. In the preparation of Drawings and Specifications, ENGINEER or ENGINEER'S Consultants have relied upon reports of explorations and tests of subsurface conditions at the Site:
 - 1. Contained in the Appendix
- B. In the preparation of Drawings and Specifications, ENGINEER or ENGINEER'S Consultants relied upon the following drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities) which are at or contiguous to the Site:
 - 1. None.

SC – 4.06

Add the following new paragraphs after paragraph 4.06.I.:

- J. In the preparation of Drawings and Specifications, ENGINEER or ENGINEER'S Consultants have relied upon the following reports relating to a Hazardous Environmental Condition at the Site, if any:
 - 1. None.
- K. In the preparation of Drawings and Specifications, ENGINEER or ENGINEER'S Consultants relied upon the following drawings relating to a Hazardous Environmental Condition at the Site, if any:
 - 1. None.

ARTICLE 5 – BONDS AND INSURANCE

SC – 5.01

Delete the following text under Paragraph 5.01A

These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents.

Replace with:

These bonds shall remain in effect until the project has been finally accepted and final payment becomes due. Note, prior to the release of these bonds and final payment, a Maintenance Bond in the amount of 10% of the project cost will need to be submitted by Contractor to cover any items that may arise within the warranty period.

Add the following language at the end of Paragraph 5.01.C:

In addition, no further progress payments under the Agreement will be made by OWNER until CONTRACTOR complies with the provisions of this paragraph.

SC - 5.02

Add the following language at the end of paragraph 5.02.A.:

Surety or insurance companies shall have an A.M. Best rating of A- or better.

SC – 5.03

Add the following language as item 5.03 C

Evidence of Insurance:

1. When CONTRACTOR delivers the executed Agreement to OWNER, CONTRACTOR shall also deliver to OWNER, with a copy to each additional insured, identified certificates of insurance (and other evidence of insurance which OWNER or any additional insured may reasonably request) which CONTRACTOR is required to purchase and maintain in accordance with Article 5.
2. Before any Work at the site is started, OWNER will deliver to CONTRACTOR certificates of insurance (and other evidence of insurance which CONTRACTOR or any additional insured may reasonably request) which OWNER is required to purchase and maintain in accordance with Article 5.

SC - 5.04

Add the following new paragraph in section 5.04 A.:

7. Contractor to procure and maintain Contractors Pollution Coverage.

Add the following new paragraphs immediately after paragraph 5.04 B.:

- C. CONTRACTOR'S liability insurance shall contain an endorsement on the general liability policy that will provide full policy limits on a "per project" basis.
- D. The limits of liability for the insurance required by paragraph 5.04 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:
 1. Worker's Compensation and related coverage's under paragraphs 5.04.A.1. and A.2. of the General Conditions:

- a. State: Statutory
 - b. Applicable Federal (e.g., USL&H/Jones Act): Statutory
 - c. Employer's Liability: Statutory
2. Comprehensive General Liability under paragraphs 5.04.A.3. through A.6. of the General Conditions which shall include completed operations and product liability coverage's and eliminate the exclusion with respect to property under the care, custody and control of Contractor.
- a. General Aggregate \$5,000,000
 - b. Products – Completed Operations Aggregate \$2,000,000
 - c. Personal and Advertising Injury \$2,000,000
 - d. Each Occurrence (Bodily Injury and Property Damage) \$2,000,000
 - e. Personal Injury Liability coverage will include claims arising out of employment.
 - f. Property Damage Liability insurance to provide Explosion, Collapse, and Underground coverages where applicable.
 - g. Excess or Umbrella Liability
 - 1. General Aggregate: \$5,000,000
 - 2. Each Occurrence: \$5,000,000
3. Automobile Liability under paragraph 5.04.A.6. of the General Conditions:
- a. Bodily Injury:
 - 1) Each Person \$1,000,000
 - 2) Each Accident \$2,000,000
 - b. Property Damage:
 - Each Accident \$1,000,000
- E. If the additional insured has other insurance, which is applicable to the loss, it shall be on an excess or contingent basis. The amount of the Contractor's liability under each policy shall not be reduced by the existence of such other insurances.
- F. The coverage will be primary and non-contributory and shall include a Waive of Subrogation.

SC - 5.06

Delete paragraph 5.06 in its entirety and insert the following in its place:

A. The Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder's risk "all-risk" or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been

made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Contractor, Subcontractors and Sub-subcontractors in the Project.

B. Property insurance shall be on an "all-risk" or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, false work, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect's and Contractor's services and expenses required as a result of such insured loss.

C By the terms of this insurance, a mandatory "all perils" deductibles of \$2,500 and an earthquake and flood deductible of \$25,000 has been established. The Contractor shall be responsible for payment of the deductibles in the event of a paid claim. The Contractor shall carry whatever additional insurance he may deem necessary to protect himself against hazards not covered by the Builder's Risk Insurance, including theft.

D. This property insurance shall cover portions of the Work stored off the site, and also portions of the Work in transit. Owner's insurance shall not cover portions of the Work stored off the site unless expressly agreed to by the Owner in writing. The Contractor shall purchase and supply Owner and Construction Manager an all risk Installation Floater Policy which shall include perils of transit, including flood and earthquake, covering all property for this Project which will be in its care, custody and control. The Installation Floater shall name the Owner and Construction Manager as an additional insured. The off-site Work to be insured by Contractor must be clearly labeled and identified as owned by Owner; the location of storage shall be approved by Owner. Owner's insurance will not cover equipment such as tools owned by mechanics or tools, sheds, hoists, canvasses, tarpaulins, mixers, scaffolding, shoring, apparatus, machinery staging and towers owned or rented by Contractor and other similar items commonly referred to as construction equipment. At the Contractor's option and expense Contractor may carry theft or other coverage insurance not included in the above coverage, on materials which are in his possession for this project.

E. Partial occupancy or use shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

F. Liability of Contractor and Subcontractor is not limited by purchase of insurance. 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 of any tier, or the liability of the Architect, or either of their respective insurance carriers. Owner does not, in any way, represent that the coverages or limits of insurance specified is sufficient or adequate to protect the Owner, Construction Manager, Contractor, Architect, or any Subcontractor's interest or liabilities, but are merely minimums. The obligation of the Contractor and every Subcontractor of any tier to purchase insurance shall not, in any way, limit their obligations to the Owner in the event that 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 Architect's, Construction Manager's, Contractor's or any Subcontractor's insurance.

ARTICLE 6 – CONTRACTOR'S RESPONSIBILITIES

SC - 6.05

Delete the second sentence of Paragraph 6.05.A. in its entirety and insert the following in its place.

1. Where the specification or description contains or is followed by words reading that no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may not be submitted to ENGINEER for review. Where the specification or description contains or is followed by words reading "or equal", other items of material or equipment or material or equipment of other suppliers may be submitted to ENGINEER for review under the circumstances described below for "or equal" items. Where the specification or description does not contain or is not followed by words reading "or equal" or no substitution permitted, other items of material or equipment or material or equipment of other suppliers may be submitted to ENGINEER for review under the circumstances described for "substitute" items below.

Delete subparagraph 6.05.A.1. in its entirety and replace with the following:

- A. "Or equal" Items: If in ENGINEER'S sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named, equal in material and constructed quality, and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an "or equal" item, in which case review and approval of the proposed item may, in ENGINEER'S sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items.

Delete subparagraphs 6.05.A.1.a and 605.A.1.b in their entirety.

Add the following new subparagraph immediately after paragraph 6.05.A.2.d.

- B. The application for review of a substitute shall be on the CONTRACTOR'S Request For Substitution form provided in the Appendix of the Contract Documents and included with the submittal. The Installation List included with the Request shall include only installations of the proposed substitute in applications of approximately the same size and complexity, and the same design as those to be furnished for this Project. Include in the Installation List, as a minimum, the owner's name, address, and telephone number; engineer's name, address and telephone number; location and name of project; installation date, startup date, and date of final acceptance by owner; and application of material or equipment. If the experience indicated by the Installation List does not demonstrate at least 5 years of successful operation of the proposed substitute item, OWNER may require CONTRACTOR and Supplier to furnish, at CONTRACTOR'S expense, a special performance guarantee with surety bond as required by paragraph 6.05.D of the General Conditions with respect to the substitute. Only the time period between final approval of the proposed material or equipment on the referenced project and the Bid date for this Project will count towards the required satisfactory experience of the proposed substitute item. ENGINEER will be the sole judge of acceptability of experience, time credited, and whether the special performance guarantee will be required for a substitute item. ENGINEER will notify CONTRACTOR which proposed substitute(s) will require a special performance guarantee with surety bond.

Delete Paragraph 6.05.E. in its entirety and insert the following in its place:

- C. ENGINEER'S Cost Reimbursement: ENGINEER will record time required by ENGINEER and ENGINEER'S Consultants in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby.

Add the following new subparagraph immediately after paragraph 6.05.F.:

- G. If a substitute item of material or equipment proposed by CONTRACTOR is approved by ENGINEER, and the substitution requires a change in any of the Contract Documents to adapt the design to the proposed substitute, CONTRACTOR shall notify ENGINEER of the changes and be responsible for the costs involved to revise the design and to make modifications or changes to the construction, including the costs associated with the Work of other contractors due to such variance in design or space requirements. ENGINEER and

ENGINEER'S Consultants will prepare redesign and drawing revisions. CONTRACTOR shall reimburse OWNER for charges of ENGINEER and ENGINEER'S Consultants for redesign and drawing preparation. Reimbursement of ENGINEER shall be based on ENGINEER'S and ENGINEER'S consultants direct labor costs, indirect labor costs, profit on total labor, and any direct non-labor expenses such as travel and per diem.

SC – 6.06

In paragraph 6.06.B. delete the words “Supplementary Conditions” in two places and insert the words “Instructions to Bidders” in their place.

SC – 6.10

Add the following new paragraphs immediately after paragraph 6.10.A.:

- B. OWNER is exempt from state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Bid.

SC – 6.16

Add the following new paragraph immediately after paragraph 6.16.A.:

- B. Owner is not responsible for means, methods or techniques of construction nor site safety. Site safety is the sole and exclusive responsibility of Contractor. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, and CONTRACTOR cannot be reached, OWNER may act to attempt to prevent threatened damage, injury, or loss. OWNER will give CONTRACTOR and ENGINEER prompt written notice of such action and the cost of the correction or remedy shall be charged against CONTRACTOR. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by OWNER in response to such an emergency, a Work Change Directive or Change Order will be issued.

SC – 6.17

Add the following new subparagraph immediately after subparagraph 6.17.D.3.:

- 4. After ENGINEER has reviewed and approved a Shop Drawing or Sample, CONTRACTOR shall provide the material or equipment approved. ENGINEER will not review subsequent submittals of a different manufacturer or Supplier unless CONTRACTOR provides sufficient information to ENGINEER that the approved material or equipment is unavailable, time of delivery will delay the construction progress, or OWNER requests a different manufacturer or Supplier.

SC – 6.20

Add the following two new paragraphs immediately after Paragraph 6.20.C of the General Conditions:

- D. The obligations of CONTRACTOR under Paragraph 6.20 shall be construed to include injury or damage resulting from any failure to use or misuse by CONTRACTOR, CONTRACTOR'S agents and employees of any scaffold, hoist, crane, stay, ladder, support or other mechanical contrivance erected or constructed by any person or any or all other kinds of equipment whether or not owned or furnished by OWNER. It is understood that this excludes use by OWNER or OWNER'S employees of scaffolding owned and furnished by OWNER.

- E. In the event that CONTRACTOR is requested but refused to honor the indemnity obligations of 6.20.A and 6.20.B CONTRACTOR shall, in addition to all other obligations, pay the cost of bringing any such action, including attorneys fees, to the party requesting indemnity.

ARTICLE 9 – ENGINEER’S STATUS DURING CONSTRUCTION

SC – 9.03

Delete paragraph 9.03 in its entirety and insert the following in its place:

9.03 Project Representative

- A. ENGINEER will furnish a Resident Project Representative (RPR), assistants and other field staff to assist ENGINEER in observing the performance of the Work of CONTRACTOR.
- B. Through more extensive on-site observations of the Work in progress and field checks of materials and equipment by the RPR, ENGINEER shall “exercise reasonable professional care and skill” to provide further protection for OWNER against defects and deficiencies in the Work; but, the furnishing of such services will not make ENGINEER responsible for or give ENGINEER control over construction means, methods, techniques, sequences or procedures or for safety precautions or programs, or responsibility for CONTRACTOR’S failure to perform the Work in accordance with the Contract Documents.
- C. The responsibilities, authority, and limitations of the RPR are limited to those of ENGINEER in paragraph 9.10 of the General Conditions, and the Contract Documents, and are further limited and described as follows:
1. RPR is ENGINEER’S agent at the site, will act as directed by and under the supervision of ENGINEER, and will confer with ENGINEER regarding RPR’s actions. RPR’s dealings in matters pertaining to the on-site work shall in general be with ENGINEER and CONTRACTOR keeping OWNER advised as necessary. RPR’s dealings with subcontractors shall only be through or with the full knowledge and approval of CONTRACTOR. RPR shall generally communicate with OWNER with the knowledge of and under the direction of ENGINEER.
 2. Duties and responsibilities of the RPR:
 - a. Conduct a preconstruction conference with OWNER, CONTRACTOR, Utilities, and other appropriate parties affected by the Project. This meeting will allow all parties to the Project the opportunity to develop specific guidelines of involvement, establish timetables of events, and define Project requirements.
 - b. Review Applications for Payment submitted by CONTRACTOR. Evaluate applications against work observed as being completed. Forward applications to OWNER for approval and payment after revision, when necessary.
 - c. Provide direction for the assistants and coordinate observation activities.
 - d. Direct visiting inspectors representing public or other agencies having jurisdiction over the Project to OWNER or CONTRACTOR as appropriate.
 - e. Administer all required Written Amendments and other documents amending, modifying, or supplementing the Contract Documents as the Project proceeds.

- f. Disapprove or reject Work which is observed to be "defective". Require inspection or testing of Work as provided in Article 13 of the General Conditions when it is deemed necessary.
- g. Review the testing of equipment and systems provided by CONTRACTOR and assess its compliance with the Contract Documents.
- h. Determine final quantities for Work installed which will serve as the basis for the final payment to CONTRACTOR.
- i. Coordinate efforts required to prepare record drawings showing those changes made during construction, based on the marked-up prints, drawings and other data furnished by CONTRACTOR to ENGINEER and which ENGINEER considers significant.

SC - 9.10

Add the following new paragraph immediately after Paragraph 9.10.E.:

- F. When ENGINEER is on the Project site to perform the duties and responsibilities as set forth in the Contract Documents, ENGINEER will comply with CONTRACTOR'S safety plans, programs, and procedures. In the event ENGINEER determines that CONTRACTOR'S safety plans, programs, and procedures do not provide adequate protection for ENGINEER, ENGINEER may direct its employees to leave the Project site or implement additional safeguards for ENGINEER'S protection. If taken, these actions will be in furtherance of ENGINEER'S responsibility to its own employees only, and ENGINEER will not assume any responsibility for protection of any other persons affected by the Work.

ARTICLE 10 – CHANGES IN THE WORK; CLAIMS

SC – 10.03

Add the following new paragraph immediately after subparagraph 10.03.A.3.

- 4. Change Orders will be prepared on the form included in the Appendix of this Project Manual.

SC – 10.05

Add the following new subparagraph after paragraph 10.05.A:

- 1. Notice of the amount or extent of the claim shall include the following certification:

"CONTRACTOR certifies that this claim is made in good faith, that the supporting data are accurate and complete to the best of CONTRACTOR'S knowledge and belief, and that the amount or time requested accurately reflects the Contract adjustment for which CONTRACTOR believes OWNER is liable."

SC – 10.05 A.

In paragraph 10.05A modify the first sentence to read: All Claims, arising during construction, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision.

SC – 10.06

Add the following new paragraph immediately after paragraph 10.05.G:

- 10.06 CONTRACTOR acknowledges the applicability of the False Claims Act, 31 U.S.C. S3729, et seq., to this Contract, including liability for false and fraudulent claims resulting in civil penalties of \$5,000 to \$10,000, treble damages, and award of attorneys' fees and costs.

ARTICLE 11 – COST OF WORK; CASH ALLOWANCES; UNIT PRICE WORK

SC – 11.03

Delete Paragraph 11.03.D. in its entirety and insert the following in its place:

- D. The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:
1. if the total cost of a particular item of Unit Price Work amounts to 5% or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25% from the estimated quantity of such item indicated in the Agreement; and
 2. if there is no corresponding adjustment with respect to any other item of Work; and
 3. if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof; or if OWNER believes that the quantity variation entitles OWNER to an adjustment in the unit price, either OWNER or CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 10 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed.

ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES

SC – 12.01

Delete paragraph 12.01.B.2. in its entirety and insert the following in its place:

2. Where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum which includes an allowance for overhead and profit in accordance with Paragraph 12.01.C.

SC – 12.01

Delete paragraph 12.01 C. 2c, in its entirety and insert the following in its place:

- c. Adjustments in the Contract Sum and the Contract Time shall be effected only by a properly executed Change Order. The Contractor and Owner agree that notwithstanding any other provisions herein, the combined overhead and profit included in the total cost of any Change Order shall not exceed the following schedule:
- 1 For the General Contractor, for work performed by its own forces, ten percent (10%) of the cost.
 - 2 For the General Contractor for work performed by the General Contractor's Subcontractor, five percent (5%) of the amount due to the Subcontractor.
 - 3 For all Subcontractor or Sub-Subcontractor involved, for work performed by that Subcontractor or Sub-Subcontractor's own forces, an aggregate of not to exceed ten percent (10%) of the cost.

- 4 Total aggregate cost of overhead and profit to Owner shall not exceed fifteen percent (15%), regardless of the number of levels of Subcontractors and Sub-Subcontractors involved.

SC – 12.02

Add the following new paragraph immediately after paragraph 12.02.B.:

- C. Time extensions provided under paragraphs 12.02 and 12.05 of the General Conditions will only be allowed for controlling items of Work (critical path).

SC – 12.03

Delete paragraph 12.03.B. in its entirety and insert the following in its place:

- B. Except as provided for in paragraph 15.01., CONTRACTOR shall make no claim for damages for delay in the performance of the Work occasioned by acts or neglect by OWNER or any of its representatives, including ENGINEER, or ENGINEER's Consultants, or because of any injunction which may be brought against OWNER or its representative, including ENGINEER or ENGINEER's Consultants, and agrees that any such claim shall be fully compensated for by an extension of time in an amount equal to the time lost due to such delay, and that such time extension shall be CONTRACTOR's sole and exclusive remedy for such delay.

ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION

SC – 14.02

Amend the first sentence of subparagraph 14.02.A.1. by striking out the words "20 days" and inserting the words "30 days" in their place.

Amend the first sentence of paragraph 14.02.C. by striking out the words "Ten days" and inserting the words "Twenty days" in their place.

SC – 14.04

Add the following new subparagraphs immediately after paragraph 14.04.A.:

1. CONTRACTOR'S request for issuance of a Certificate of Substantial Completion shall occur after CONTRACTOR has, in the opinion of the ENGINEER, satisfactorily delivered all schedules, guarantees, Bonds, certificates or other evidence of insurance required by ARTICLE 5, certificates of inspection, affidavit of wage rate compliance, marked-up record documents (as provided in paragraph 6.12) and other documents. ENGINEER will not prepare a tentative certificate of Substantial Completion until all operation and maintenance data has been submitted and approved.

SC – 14.07

Amend the first sentence of subparagraph 14.07.A.1. by striking out the following words: "and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance certificates of inspection, marked up record documents (as provided in paragraph 6.12), and other documents"

ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION

SC – 15.04

Amend paragraphs 15.04.A and B by striking out the words “30 days” in six places and inserting the words “60 days” in their place and by striking out the words “seven days” in two places and inserting the words “ten days” in their place.

ARTICLE 16 – DISPUTE RESOLUTION

Add the following paragraphs immediately after 16.01:

SC – 16.02

During construction and after construction, at the sole discretion of the Owner, all claims, disputes and other matters in question between any of the Architect, Construction Manager, Owner, Contractor, Subcontractor or any material supplier arising out of, or relating to, agreements to which two or more of said parties are bound, or the Contract Documents or the breach thereof, except as provided in subparagraph 4.2.13 with respect to the Architect's decisions on matters relating to aesthetic effect, shall be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtain, as modified herein. At least one member of the arbitration panel shall be an attorney whose practice is primarily focused on the construction industry. In any such arbitration, the arbitrator shall make separate findings as to liability and the amount of damages with respect to each party to the arbitration to the extent any liability or responsibility for damages exists. The Architect, subcontractors and material suppliers who have an interest in the dispute shall be joined as parties to the arbitration. The Owner's contracts with the Architect and Construction Manager and the Contractor's subcontracts with the subcontractors and material suppliers, shall require such joinder. The arbitrator shall have authority to decide all issues between the parties including but not limited to claims for extras, delay and liquidated damages, matters involving defects in the Work, right to payment, whether matters decided by the Architect involve aesthetic effect and whether the necessary procedures for arbitration have been followed. The foregoing agreement to arbitrate and any other agreement to arbitrate with an additional person or persons, duly consented to by the parties, shall be specifically enforceable under the prevailing arbitration law. The award rendered by the arbitrator shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

SC - 16.03

Any Claim arising out of or related to the Contract, except those waived as provided for in Subparagraph 9.10.5, may, with the Owner's consent, be subject to arbitration. Prior to arbitration, the parties may, with the Owner's consent, endeavor to resolve disputes by mediation unless otherwise agreed in writing, all parties shall carry on the work and perform their duties during any mediation or arbitration proceedings.

SC - 16.04

In addition to the other rules of the American Arbitration Association applicable to any arbitration hereunder, the following shall apply:

1. Promptly upon the filing of the arbitration each party shall be required to set forth in writing and to serve upon each other party a detailed statement of its contentions of fact and law; .
2. All parties to the arbitration shall be entitled to reasonable discovery procedures and to the scope of discovery applicable to civil actions under Illinois law, including the provisions of the Code of Civil Procedure and Illinois Supreme Court rules applicable to discovery. Such discovery shall be noticed, sought and governed by those provisions of Illinois law;

3. The arbitration shall be commenced and conducted as expeditiously as possible consistent with affording reasonable discovery as provided herein. Similarly, the scope of discovery, and the extent of proceedings hereunder relating to discovery, shall be consistent with the parties' intent that the arbitration be conducted as expeditiously as possible;
4. The arbitrator(s) shall apply the law of Illinois and the terms and conditions of the Contract Documents and this Agreement;
5. These additional rules shall be implemented and applied by the arbitrator(s).

SC - 16.5

Claims and Timely Assertion of Claims. In the event of any litigation or arbitration between the parties hereunder, all attorneys' fees and other costs incurred shall be borne by the party determined to be at fault and in the event that more than one party is determined to be at fault, shall be allocated equitably by the court or arbitrator.

ARTICLE 17 – MISCELLANEOUS

SC – 17.01

Delete paragraph 17.01.A in its entirety and insert the following in its place:

- A. Whenever any provision of the Contract Documents requires the giving of a written notice or the delivery of any Bond, Agreement, Certificate of Insurance or any other item, it shall be deemed to have been validly given if delivered in person to the individual, to a member of the firm, or to an officer of the cooperation for whom it is intended, or if delivered at or sent by registered or certified mail (return receipt), postage prepaid, to the last business address known to the giver of the article.

SC – 17.07

Add the following new paragraph immediately after paragraph 17.06:

17.07 Lien Waivers:

- A. OWNER may at any time require CONTRACTOR to furnish lien waivers for labor and materials covered by specified Applications for Payment.

SC – 18

Add the following new paragraphs after paragraph 17.07:

- 18.01. Contractor acknowledges that this project is governed by the Illinois Prevailing Wage Act. Construction Manager shall pay its laborers if any and assure the Owner that Subcontractors shall pay its laborers not less than the established prevailing rate of wages. 820 ILCS 130/1 et seq. Construction Manager shall comply with all reporting requirements of the Illinois Prevailing Wage Act. Similarly, the Contractor shall assure owner that all Subcontractors and sub-tier subcontractors comply with the reporting requirements of the Illinois Prevailing Wage Act. Contractor and each sub-tier shall with each pay application submit certified payroll records as required by 820 ILCS 130/5.
- 18.02. Contractor represents that it does not discriminate in its hiring practices based upon race, color, religion, sex, marital status, national origin or ancestry, age, physical or mental handicap unrelated to ability, or an unfavorable discharge from military service. Contractor

shall assure the Owner that Subcontractors shall not discriminate as set forth in this paragraph. 775 ILCS 5/2-1053; 44 Ill. Admin. Code Section 750 et seq. Contractor shall (1) refrain from unlawful discrimination and discrimination based on citizenship status in employment and undertake affirmative action to assure equality of employment opportunity and eliminate the effects of past discrimination; (2) Comply with the procedures and requirements of the Department's regulations concerning equal employment opportunities and affirmative action; (3) Provide such information, with respect to its employees and applicants for employment, and assistance as the Department may reasonably request; (4) Have written sexual harassment policies that shall include, at a minimum, the following information: (i) the illegality of sexual harassment; (ii) the definition of sexual harassment under State law; (iii) a description of sexual harassment, utilizing examples; (iv) the vendor's internal complaint process including penalties; (v) the legal recourse, investigative and complaint process available through the Department and the Commission; (vi) directions on how to contact the Department and Commission; and (vii) protection against retaliation as provided by Section 6-101 of this Act. A copy of the policies shall be provided to the Owner or Department of Human Rights upon request.

- 18.03. Contractor represents that it has in place a Sexual Harassment Policy in accordance with the Illinois Human Rights Act and shall assure the Owner that Subcontractors shall have in place a Sexual Harassment Policy prior to commencement of work on the Project. 775 ILCS 5/1-105.
- 18.04. Contractor represents that it is in conformance with the Drug Free Workplace Act. 30 ILCS 580/1 et seq.
- 18.05. Contractor by execution of this Agreement certifies it is not barred from contracting as a result of bid rigging or bid rotation. 720 ILCS 5/33 E-11.
- 18.06. Contractor by execution of this Agreement agrees to provide Owner the name of each employee who may have direct daily contact with students, and such additional information as is necessary and authorizes Owner to submit such information to the State Police and other state agencies. Such information will be submitted for a criminal history records check and a check of the Statewide Sex Offender Database. Such investigation shall be performed at the Owner expense. 105 ILCS 5/10-21.9(f). Owner reserves the right to reject the use of any laborer with a criminal record of a conviction of or a finding of child abuse or who has been identified as a sex offender.
- 18.07. Contractor agrees by the execution of this agreement to give preference in employment and appointment to persons who have been members of the armed forces of the United States or who, while citizens of the United States, were members of the armed forces of allies of the United States in time of hostilities with a foreign country in accordance with the Veterans Preference Act. 330 ILCS 55.

END OF SECTION 00800

PERFORMANCE & MAINTENANCE BOND

PERFORMANCE & MAINTENANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

McHenry County College

8900 US Highway 14

Crystal Lake, IL 60012-2761

CONTRACT

Date:

Amount:

Description (Name and Location):

MCC Parking Lot E Reconstruction & Parking Lot F Addition

Job No.: 180186.01 Sealed Project Manual
and Sealed Plans stamped "For Construction"

BOND

Bond Number:

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

Company:

Signature: _____ (Seal)

Name and Title:

(Space is provided below for signatures of additional parties, if required.)

CONTRACTOR AS PRINCIPAL

Company:

Signature: _____ (Seal)

Name and Title:

SURETY

(Seal)

Surety's Name and Corporate Seal

By:

Signature and Title

(Attach Power of Attorney)

Attest:

Signature and Title

SURETY

(Seal)

Surety's Name and Corporate Seal

By:

Signature and Title

(Attach Power of Attorney)

Attest:

Signature and Title:

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.

3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:

3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and

3.3. Owner has agreed to pay the Balance of the Contract Price to:

1. Surety in accordance with the terms of the Contract;
2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.

4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:

4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
2. Deny liability in whole or in part and notify Owner citing reasons therefor.

5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

12.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3. Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone
Surety Agency or Broker
Owner's Representative (engineer or other party)

PAYMENT BOND

PAYMENT BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

McHenry County College
8900 US Highway 14
Crystal Lake, IL 60012-2761

CONTRACT

Date:

Amount:

Description (Name and Location):

MCC Parking Lot E Reconstruction & Parking Lot F Addition

Job No.: 180186.01 Sealed Project Manual
and Sealed Plans stamped "For Construction"

BOND

Bond Number:

Date (Not earlier than Contract Date):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Payment Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

Company:

Signature: _____ (Seal)

Name and Title:

SURETY

(Seal)

Surety's Name and Corporate Seal

By: _____

Signature and Title

(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

Attest: _____

Signature and Title

CONTRACTOR AS PRINCIPAL

Company:

Signature: _____ (Seal)

Name and Title:

SURETY

(Seal)

Surety's Name and Corporate Seal

By: _____

Signature and Title

(Attach Power of Attorney)

Attest: _____

Signature and Title:

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to Owner, this obligation shall be null and void if Contractor:

2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2. Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

4. Surety shall have no obligation to Claimants under this Bond until:

4.1. Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the addresses described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2. Claimants who do not have a direct contract with Contractor:

1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and

2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and

3. Not having been paid within the above 30 days, have sent a written notice to Surety and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.

6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:

6.1. Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2. Pay or arrange for payment of any undisputed amounts.

7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

15.1. Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

15.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone
Surety Agency or Broker:
Owner's Representative (engineer or other party):

NOTICE OF AWARD

Notice of Award

Dated: _____

| | | |
|--|----------------------------------|--------------------------------------|
| Project: MCC Parking Lot E Reconstruction & Parking Lot F Addition | | Owner's Contract No.: |
| Contract: | Owner: McHenry County College | Engineer's Project No.: 180186.01 |
| Bidder: | | Contact: |
| Bidder's Address: (send Certified Mail, Return Receipt Requested) | | |
| | | |
| | | |

You are notified that your Bid dated _____ for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for the McHenry County College Pond Restoration Project generally consists of the following:

The project includes the reconstruction of an approximate +/- 276 parking stall parking lot which includes a 30 stall parking lot addition for McHenry County College. General construction for the parking lot reconstruction/addition project includes, but not limited to, installation of storm sewers, new parking lot lighting system, and complete removal and replacement of the parking lot, along with the other work associated with the project as outlined in the plans and specifications.

The Contract Price of your Contract is _____ (\$_____).

Four (4) copies of each of the proposed Contract Documents (except Drawings) accompany this Notice of Award.

Additional sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within five [5] days of the date you receive this Notice of Award.

1. Deliver to the Owner four (4) fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents - the Contract Security Bonds and proof of insurance coverage as specified in the General Terms and Conditions.

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award and declare your Bid security forfeited.

Within ten (10) days after you comply with the above conditions, Owner will return to you one (1) fully executed counterpart of the Contract Documents.

McHenry County College

Owner

By:

Authorized Signature – Agent for McHenry County College

Title

Copy to: HR Green, Inc.
Mr. Todd Wheeland, MCC

NOTICE TO PROCEED

Notice to Proceed

Dated: _____

| | | |
|--|----------------------------------|--------------------------------------|
| Project: MCC Parking Lot E Reconstruction & Parking Lot F Addition | | Owner's Contract No.: |
| Contract: | Owner: McHenry County College | Engineer's Project No.: 180186.01 |
| Contractor:. | | |

Contractor's Address: [send Certified Mail, Return Receipt Requested]

You are notified that the Contract Times under the above contract will commence to run on _____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 4 of the Agreement, the date of Substantial Completion is _____ and the date of readiness for final payment is _____.

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

1. Attend Pre-Construction Meeting
2. Submit required Bonds to Owner and Insurance Certificates
3. Obtain all necessary permits
4. Preliminary Schedule of Construction

| | |
|---------------------------------------|---|
| _____ (Contractor) Received by: | McHenry County College _____ Owner Given by: Authorized Signature |
| _____ (Title) | _____ Title |
| _____ (Date) | _____ Date |

Copy to: HR Green, Inc.
Mr. Todd Wheeland, MCC

CONSTRUCTION ADMINISTRATION FORMS

CONSTRUCTION ADMINISTRATION FORMS

Contractor's Submittal Transmittal

Dated _____

Transmittal No.: _____

Submittal No.: _____

| | |
|------------|---|
| To: | Urgency: Extreme _____ Normal _____ |
| | Substitute: Yes _____ No _____ |
| | Project: |
| Attention: | |

Specification Section No: _____ Paragraph No: _____ Drawing No: _____

| | |
|---|-------------|
| Submittal Includes: _____ Shop Drawings _____ Product Data _____ Samples _____ Test Results _____ O&M Data _____ Misc | |
| Copies | Description |
| | |
| | |
| | |
| | |
| | |

THESE ARE TRANSMITTED:
_____ For Approval _____ As Requested _____ For Your Use

Remarks:

- The information included in this submittal has been reviewed by the undersigned, before submitting to the Engineer, for compliance with paragraph 6.17 of the General Conditions.
- Identified in this submittal, in accordance with paragraph 6.17 of the General Conditions, are _____ variations from the Contract Documents and indicated on the following pages:

- Contract Clarification/Interpretation Request form(s) were submitted and response(s) received:
____ Yes ____ No (If yes, attach form(s) to this transmittal)

Contractor: _____

Signature: _____ Date _____

Name (print): _____

Title: _____

[illegible]

Comments:

This image shows a full page of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page, typical of notebook paper. There are no margins, text, or other markings on the page.

Contractor's Clarification/Interpretation Request

| | |
|---------------------------|------------------------------------|
| Clarification Request No. | Date: |
| Contractor: | Specification Section/Drawing No.: |
| Project: | |
| Contract: | |

This is a request for clarification/interpretation on the following:

| | |
|--------------|-----------------------|
| Prepared by: | Date Response Needed: |
| Response: | |

| | |
|--|-------|
| Prepared by: | Date: |
| Response Returned to Contractor On: | |
| cc: Owner _____ | |
| Resident Project Representative: _____ | |

Work Change Directive

No. _____

Date of Issuance: _____ Effective Date: _____

| | | |
|-------------|--------|-------------------------|
| Project: | Owner: | Owner's Contract No.: |
| Contract: | | Date of Contract: |
| Contractor: | | Engineer's Project No.: |

You are directed to proceed promptly with the following change(s):

| Item No. | Description |
|----------|-------------|
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Attachments (list documents supporting change):

Purpose for Work Change Directive:

- ☐ Authorization for Work described herein to proceed on the basis of Cost of the Work due to:
- ☐ Nonagreement on pricing of proposed change.
- ☐ Necessity to expedite Work described herein prior to agreeing to changes on Contract Price and Contract Time.

Estimated change in Contract Price and Contract Times:

Contract Price \$ _____ (increase/decrease)

Contract Time _____ (increase/decrease)
days

If the change involves an increase, the estimated amounts are not to be exceeded without further authorization.

| | |
|---|-------|
| Recommended for Approval by Engineer: | Date |
| Authorized for Owner by: | Date |
| Accepted for Contractor by: | Date |
| Approved by Funding Agency (if applicable): | Date: |

Change Order

No. _____

Date of Issuance: _____ Effective Date: _____

| | | |
|-------------|--------|-------------------------|
| Project: | Owner: | Owner's Contract No.: |
| Contract: | | Date of Contract: |
| Contractor: | | Engineer's Project No.: |

The Contract Documents are modified as follows upon execution of this Change Order:

Description: _____

Attachments: (List documents supporting change):

CHANGE IN CONTRACT PRICE:

Original Contract Price:

\$ _____

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:

\$ _____

Contract Price prior to this Change Order:

\$ _____

[Increase] [Decrease] of this Change Order:

\$ _____

Contract Price incorporating this Change Order:

\$ _____

CHANGE IN CONTRACT TIMES:

Original Contract Times: ☐ Working days ☐ Calendar days

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

[Increase] [Decrease] from previously approved Change Orders No. _____ to No. _____:

Substantial completion (days): _____

Ready for final payment (days): _____

Contract Times prior to this Change Order:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

[Increase] [Decrease] of this Change Order:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

Contract Times with all approved Change Orders:

Substantial completion (days or date): _____

Ready for final payment (days or date): _____

RECOMMENDED:

By: _____
Engineer (Authorized Signature)

Date: _____

Approved by Funding Agency (if applicable): _____

ACCEPTED:

By: _____
Owner (Authorized Signature)

Date: _____

ACCEPTED:

By: _____
Contractor (Authorized Signature)

Date: _____

Date: _____

Contractor's Application For Payment No. _____

| | | |
|-----------------------|---------------------------|-------------------------|
| | Application Period: | Application Date: |
| To (Owner): | From (Contractor): | Via (Engineer) |
| Project: | Contract: | |
| Owner's Contract No.: | Contractor's Project No.: | Engineer's Project No.: |

APPLICATION FOR PAYMENT

Change Order Summary

| Approved Change Orders | | |
|--------------------------------|-----------|------------|
| Number | Additions | Deductions |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| TOTALS | | |
| NET CHANGE BY CHANGE ORDERS | | |

| | | |
|--|----|--|
| 1. ORIGINAL CONTRACT PRICE | \$ | |
| 2. Net change by Change Orders | \$ | |
| 3. CURRENT CONTRACT PRICE (Line 1 ± 2)..... | \$ | |
| 4. TOTAL COMPLETED AND STORED TO DATE (Column F on Progress Estimate) | \$ | |
| 5. RETAINAGE: | | |
| a. ____ % x \$ _____ Work Completed | \$ | |
| b. ____ % x \$ _____ Stored Material | \$ | |
| c. Total Retainage (Line 5a + Line 5b) | \$ | |
| 6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c)..... | \$ | |
| 7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application) | \$ | |
| 8. AMOUNT DUE THIS APPLICATION | \$ | |
| 9. BALANCE TO FINISH, PLUS RETAINAGE (Column G on Progress Estimate + Line 5 above) | \$ | |

CONTRACTOR'S CERTIFICATION

The undersigned Contractor certifies that: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

| | |
|-----|-------|
| By: | Date: |
| | |

| | | |
|--------------------|--------------------------------|--|
| Payment of: | \$ _____ | (Line 8 or other - attach explanation of other amount) |
| is recommended by: | _____ | _____ (Date) |
| | (Engineer) | |
| Payment of: | \$ _____ | (Line 8 or other - attach explanation of other amount) |
| is approved by: | _____ | _____ (Date) |
| | (Owner) | |
| Approved by: | _____ | _____ (Date) |
| | Funding Agency (if applicable) | |

CONTRACTOR'S APPLICATION FOR PAYMENT

Progress Estimate

Contractor's Application

| | | | | | | | | |
|---------------------------|-------------|-----------------|-----------------------------------|-------------|--|--|---------|---------------------------|
| For (contract): | | | | | Application Number: | | | |
| Application Period: | | | | | Application Date: | | | |
| A | | B | Work Completed | | E | F | | G |
| Item | | Scheduled Value | C | D | Materials Presently Stored (not in C or D) | Total Completed and Stored to Date (C + D + E) | % (F) B | Balance to Finish (B - F) |
| Specification Section No. | Description | | From Previous Application (C + D) | This Period | | | | |
| | | | | | | | | |
| | Totals | | | | | | | |

Progress Estimate

Contractor's Application

| | | | | | | | | | | |
|---------------------|-------------|--------------|------------|-----------|------------------------------|---------------------|---------------------------------------|--|---------|---------------------------|
| For (contract): | | | | | | Application Number: | | | | |
| Application Period: | | | | | | Application Date: | | | | |
| A | | | | B | C | D | E | F | | G |
| Item | | Bid Quantity | Unit Price | Bid Value | Estimated Quantity Installed | Value | Materials Presently Stored (not in C) | Total Completed and Stored to Date (D + E) | % (F) B | Balance to Finish (B - F) |
| Bid Item No. | Description | | | | | | | | | |
| | | | | | | | | | | |
| | Totals | | | | | | | | | |

Stored Material Summary

Contractor's Application

| For (contract): | | | | | | Application Number: | | | |
|---------------------|------------------------------|-----------------------|-------------------|-------------|-------------------|---------------------|----------------------|-------------|---|
| Application Period: | | | | | | Application Date: | | | |
| A | B | C | D | | E | | F | | G |
| Invoice No. | Shop Drawing Transmittal No. | Materials Description | Stored Previously | | Stored this Month | | Incorporated in Work | | Materials Remaining in Storage (\$) (D + E - F) |
| | | | Date (Month/Year) | Amount (\$) | Amount (\$) | Subtotal | Date (Month/Year) | Amount (\$) | |
| | | | | | | | | | |
| | | Totals | | | | | | | |

Certificate of Substantial Completion

| | | |
|-------------|--------|-------------------------|
| Project: | Owner: | Owner's Contract No.: |
| Contract: | | Date of Contract: |
| Contractor: | | Engineer's Project No.: |

This [tentative] [definitive] Certificate of Substantial Completion applies to:

- ☐ All Work under the Contract Documents: ☐ The following specified portions:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [revised tentative] [definitive] list of items to be completed or corrected, is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

- ☐ Amended Responsibilities ☐ Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

The following documents are attached to and made part of this Certificate:

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed by Engineer

Date

Accepted by Contractor

Date

Accepted by Owner

Date

CONTRACTOR'S REQUEST FOR SUBSTITUTION
(Include with Submittal)

Provisions requiring submittal of this form are described in Paragraph 6.05 of the General and Supplementary Conditions.

Substitution Request No.: _____

Project: _____

Contract: _____

We hereby apply for consideration _____

(Proposed Substitute Manufacturer)

as a substitute manufacturer to the manufacturer(s) named in Specification Section _____

Paragraph/Drawing No. _____ for the following reasons. (Check one or more)

_____ The specified equipment or material is unavailable or the time of delivery will substantially delay the construction of the project, but not as result of Contractor's failure to pursue Work promptly or coordinate various activities. (Provide supporting information)

_____ The proposed equipment or material will provide for packaging and coordination with other equipment from a single source supplier. (Submit name of source supplier and other equipment to be packaged.)

_____ The proposed equipment or material is a "Substitute Item" to that specified and the Contractor will provide the Owner with a credit of \$_____ if the equipment or material is accepted.

We certify that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to the specified, be suited to the same use as that specified, and will not prejudice Contractor's achievement of Substantial Completion on time.

Contractor: _____

Signature: _____ Date: _____

Name (print): _____

Title: _____

NOTE: Engineer may require Contractor to furnish, at Contractor's expense, additional data about the proposed substitute including but not limited to, an analysis by Contractor of the equivalency of the proposed substitute to the named item.

A. Physical Characteristics of Proposed Substitute (if applicable).

Operating Weight: _____ Height: _____ Width: _____ Depth: _____

Voltage: _____ Hertz: _____ KWor HP: _____

B. Will acceptance of the proposed substitute by the Owner:

1. Require a change in the Drawings or Specifications: Yes ☐ No ☐
If yes, attach an explanation and detailed drawings or specifications.

2. Require payment of any license fee or royalty: Yes ☐ No ☐
If yes, attach an explanation.

3. Result in a change of contract time: Yes ☐ No ☐

C. Variations of proposed substitute from specified material, equipment, methods or procedures include: (if none, state none. Attach separate listing if more space is needed.)

1.

2.

3.

4.

D. Service Source (Maintenance, Repair, and Replacement) Availability:

1. Name of Business: _____

Address: _____

Years in Business: _____ Factory Authorized: Yes ☐ No ☐

Parts Stocked: Major: Yes ☐ No ☐ Minor: Yes ☐ No ☐

Field Service Staff Available: Yes ☐ No ☐

2. Name of Business: _____

Address: _____

Years in Business: _____ Factory Authorized: Yes ☐ No ☐

Parts Stocked: Major: Yes ☐ No ☐ Minor: Yes ☐ No ☐

Field Service Staff Available: Yes ☐ No ☐

E. Identify costs, direct or indirect, if any, associated with acceptance of this proposed substitute.
(If none, state none.)

REQUEST FOR INFORMATION (RFI) FORM

RFI NO. _____

Contractor requests for information will be considered upon receipt of this completed RFI form. By submission of this form, the Contractor attests to the fact that having carefully reviewed the Contract Documents and coordinated the Work with the appropriate trades and reviewed field conditions, that the information requested cannot be determined from such efforts as called for in the General Conditions of the Contract.

Date: _____ Project: _____

To: _____

Description of Requested Information: _____

Specification References: _____

Drawing References: _____

Proposed method of resolving issue: _____ Sketches and/or Pages Attached: ____ Yes ____ No

Potential impact on project cost: _____

Response Date: _____ List date by which response by Engineer is requested to maintain project schedule. (Allow sufficient time for response.)

Signed: _____, Project Superintendent
Signature signifies acceptance of responsibility for accuracy and completeness of information.

ENGINEER'S RESPONSE

Notations listed below indicate the Engineer's action on method proposed by the Contractor to resolve issues or remarks in response to RFI when no Contractor recommendation has been provided. Changes to Contract Amount and/or project time shall be processed using standard Change Order Forms.

Sketches and/or Pages Attached: ____ Yes ____ No

Signed: _____ Date: _____

Field Order

No. _____

Date of Issuance: _____ Effective Date: _____

| | | |
|-------------|--------|-------------------------|
| Project: | Owner: | Owner's Contract No.: |
| Contract: | | Date of Contract: |
| Contractor: | | Engineer's Project No.: |

Attention:

You are hereby directed to promptly execute this Field Order issued in accordance with General Conditions Paragraph 9.04.A, for minor changes in the Work without changes in Contract Price or Contract Times. If you consider that a change in Contract Price or Contract Times is required, please notify the Engineer immediately and before proceeding with this Work.

Reference: _____
(Specification Section(s)) (Drawing(s) / Detail(s))

Description:

Attachments:

| |
|-----------|
| Engineer: |
|-----------|

| | |
|-------------------------------------|-------|
| Receipt Acknowledged by Contractor: | Date: |
|-------------------------------------|-------|

Copy to: