Bid Document For

Lake Land College
Entrance Improvements

Lake Land College Project Number
2024-014

5001 Lake Land Blvd.
Mattoon, IL 61938

September 16, 2025

PROJECT MANUAL

LAKE LAND
COLLEGE

DOCUMENT 00010
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SECTION 00 0100 – ADVERTISEMENT FOR BIDS

Bids: September 24, 2025

LAKE LAND COLLEGE DISTRICT #517
MATTOON, ILLINOIS
Project No. 2024-014

The Lake Land College District Number 517 Board of Trustees will receive sealed bids for the Entrance improvements.

A mandatory pre-bid meeting will be held at 10:00 AM Central Standard Time on Wednesday, October 8, 2025 in Neal Hall, South Conference Room 032 on the campus of Lake Land College, 5001 Lake Land Boulevard, Mattoon, IL. Bids will be received until 1:00 PM Central Standard Time on Wednesday, October 22, 2025 in Neal Hall, South Conference Room 032 on the campus of Lake Land College, 5001 Lake Land Boulevard, Mattoon, IL. Bids received after this time will not be accepted. Bids will be opened and publicly read immediately after the specified closing time. All interested parties are invited to attend. Obtain bidding documents/requirements at the office of the Facilities Planning Manager, phone (217) 234-5054, jmoore3@lakelandcollege.edu.

The Board of Trustees reserves the right to waive irregularities and reject all bids or parts of bids.

Successful Bidders shall have the sole responsibility of complying with all aspects of existing Prevailing Wage Policies.

Lake Land College actively promotes continuing economic development in compliance with the Business Enterprise for Minorities, Females, and Persons with Disabilities Act (30 ILCS 575). Successful Prospective Vendors shall have the sole responsibility of complying with all aspects.

Tom Wright
Chairperson - Lake Land College Board of Trustees

END OF SECTION 00 0100

SECTION 00 0200 – INSTRUCTIONS TO BIDDERS

PART 1 GENERAL

1.1 DEFINITIONS

A. Lake Land College Board of Trustees will be hereafter referred to in this Specification as “Owners” and all correspondence shall be addressed to: Facilities Planning Manager, Lake Land College, 5001 Lake Land Blvd., Mattoon, IL 61938.

B. A Bidder is a person or entity who submits a Bid to the Owner.

C. Bidding Documents include the Advertisement for Bid, Instructions to Bidders, Bid Forms and supplements, and Addenda.

D. Contract Documents include any Contract forms, Specifications, Drawings, Addenda, and modifications.

E. An Agreement is a written agreement between the Owner and Contractor setting forth the obligations of the parties thereunder, including but not limited to the provision of the specified goods and materials, the basis of payment and the contract time.

F. A Bid is a complete and properly signed proposal to provide the goods and services for the sums stipulated therein, submitted in accordance with the Bidding Documents.

G. The Base Bid is the sum stated in the Bid for which the Bidder offers to provide the goods and services described in the Bidding Documents as the base, to which items may be added or from which items may be deleted for sums stated in Alternate Bids.

H. An Alternate Bid is an amount stated in the Bid to be added to or deducted from the amount of the Base Bid if the corresponding changes in the items, as described in the Bidding Documents, are executed.

I. A Unit Price is an amount stated in the Bid as a price per unit of measurement for goods or services as described in the Bidding Documents or in the proposed Contract Documents.

1.2 DOCUMENTS

A. Copies of the Bidding Documents may be obtained at the Office of the Facilities Planning Manager, 5001 Lake Land Boulevard, Mattoon, Illinois 61938, (217) 234-5054, jmoore3@lakelandcollege.edu.

1.3 EXAMINATION OF DOCUMENTS

A. Bidders shall examine all documents. Failure to do so will not relieve a successful bidder of his obligation to provide all labor and materials necessary to carry out the provision of his contract for the sum stated thereon.

B. Each Bidder, by submitting his bid represents that he has read and understands the bidding documents.

1.4 EXAMINATION OF PREMISES

A. Before submitting proposals for this work, each bidder will be held to have examined the premises and satisfied himself as to the conditions existing and under which he will be obliged to operate, or that will in any manner, affect the work of this contract.

B. No allowance will be made subsequently in this connection in behalf of the contractor for any error or negligence on his part. The contractor agrees to accept the existing conditions as found at the time of signing of contract.

1.5 AREAS, QUANTITIES AND MEASUREMENTS

A. The contractor shall be responsible for all areas, quantities, and measurements related to the work to be performed under this contract. No extra charge or compensation shall be allowed the contractor for any error or negligence on his part. The contractor shall visit the job site and acquaint himself with all conditions concerning this work.

1.6 INTERPRETATIONS DURING BIDDING

A. If any Bidder is in doubt as to the meaning of any part of the Bidding Documents, they may submit a written request to: Facilities Planning Manager, 5001 Lake Land Boulevard, Mattoon, Illinois 61938; for an interpretation of that part.

B. Written requests for interpretations or clarifications must be made no later than five (5) working days prior to the Bid Date specified in the Advertisement for Bids.

C. Any interpretation or change will be made only by Addenda numbered, dated, and issued by the Owner to each Bidder on record as having received a set of Bidding Documents and will be available for inspection wherever the Bidding Documents are kept available for that purpose. Lake Land College will not be responsible for any other explanations or interpretations of the Bidding Documents.

1.7 SUBSTITUTION OF PRODUCTS

A. Manufacturer’s trade names are used in specifications for the express purpose of establishing a standard of quality and coordination of design, not for the purpose of limiting competition.

B. All sizes of equipment must be as specified, and all pieces of equipment must include or have those features which are set forth in the specifications.

C. No substitution will be considered unless a written request has been submitted with their bid.

D. Bidders proposing substitutions in writing must submit detailed specifications with catalog cuts or manufacturer's literature, pictorially portraying that on which they are bidding for comparison to specified items by the Owner.

E. Any additional explanation or statement which the Bidder wishes to make must be placed in the same envelope and attached to the proposal. Unless the Bidder so indicates, it is understood that the Bidder has bid in strict accordance with the specifications and drawings and has made no substitutions, modifications or additional stipulations.

F. Bids shall not contain any recapitulation of the work to be done and no oral, telephone, facsimile or email proposals or modifications will be considered.

1.8 QUALIFICATION OF BIDDERS

A. Bidders may be disqualified and their Bids not considered for any of the following specific reasons:
   1. Reason to believe collusion exists among Bidders.
   2. The Bidder being interested in any litigation against the Owner.
   3. The Bidder being in arrears on any existing contract or having defaulted on a previous contract.
   4. Lack of competency as revealed by the financial statement, experience, and equipment, questionnaires, or qualification statement.
   5. Uncompleted work, which in the judgment of the Owner will prevent or hinder the prompt completion of additional work if awarded.
   6. If requested, a Bidder shall submit to the Owner a confidential Financial Statement in a sealed envelope.

1.9 PREPARATION OF BID

A. All bids must be submitted on the bid form contained herein. Oral, telephone, facsimile, electronic mail, or telegraph bids will not be accepted.

B. The Bidder shall base the bid on materials complying with the Bidding Documents, and shall list all information where the bid form requires.

C. The blank spaces in the bid form shall be filled in correctly with ink or typewritten. A bid form containing an alteration or erasure of any price contained in the bid which is used in determining the lowest responsible bid shall be rejected unless the alteration or erasure is corrected as herein provided:
   1. An alteration or erasure must be crossed out and the correction printed in ink or typewritten adjacent to the alteration or erasure.
   2. The person signing the bid must initial the correction in ink.

3. In the event that any price used in determining the lowest responsible bid is expressed by the Bidder in both written and numerical form, the written representation shall govern in all cases.

D. If the bid form includes alternates, each Bidder shall bid on each alternate. Failure to comply may be cause for rejection.

E. If an individual submits Bid, he or his duly authorized agent must sign his name. If a firm, association or partnership submits the Bid, the name, address and title of each member must be given, and an official or duly authorized agent must sign the Bid. Powers of attorney authorizing agents or others to sign Bids must be properly certified and must be in writing and submitted with the Bid.

F. Bids from individuals or partnerships, if signed by an attorney-in-fact, shall have attached to the bid the power of attorney, evidencing the authority to sign the bid. If the bid is signed by any other legal entity, the authority of the person signing shall be attached to the bid.

G. A W-9 Form is required with each bid submittal.

1.10 EXEMPTION FROM SALES TAX ON MATERIALS

A. The Owner is exempted by Section Three of the Illinois Use Tax Act (Sec 3, House Bill 1610 approved July 31, 1961. IL. Rev. Stat. 1961, Chap. 120 Sec 439.3) from paying any of the taxes imposed by that act and sales to the Owner are exempt by Section Two of the Illinois Retailer's Occupation Tax Act (Section 2, House Bill 1609, Approved July 31, 1961 IL. Rev. Stat. 1961, Chap. 120 Sec. 441) from any of the taxes imposed by that Act.

1.11 IDENTIFICATION AND SUBMITTAL OF BID

A. Each bid and all papers bound and attached to it shall be placed in an envelope and securely sealed therein. The envelope shall be plainly marked with the following:
1. The word "BID"
2. Name and address of the Bidder.

B. The envelope of the bid shall be addressed to:

Facilities Planning Manager
Lake Land College
NW Building & FH Flooring Replacement, Project #2024-002
5001 Lake Land Boulevard
Mattoon, Illinois, 61938

C. Bids shall be delivered before the time set for the opening of the bids. Bids arriving by mail or otherwise after the time designated for the opening of bids will be returned unopened. Oral, telephone, facsimile, electronic mail, or telegraph bids shall not be accepted.

1.12 MODIFICATION OR WITHDRAWAL OF BID

A. A bid may not be modified after submittal. Bidders may withdraw a bid at any time before opening. A Withdrawal of a Bid must be made in writing or in person by a bidder or his duly authorized agent. If a firm, association or partnership wishes to withdraw a bid, an official or duly authorized agent must sign the written request or appear in person.

B. Once withdrawn, the bidder must submit a new bid prior to the opening in order to be considered.

C. No Bid may be withdrawn or modified after the Bid opening except where the award of the Contract has been delayed beyond 60 days after date of Bid.

1.13 OPENING OF BIDS

A. The Bids submitted will be opened at the time and place stated in the Advertisement for Bids and publicly read aloud and thereafter shall remain on file with the Owner.

B. After Bids are opened, the Bids will be tabulated for comparison on the basis of the Bid prices and quantities shown on the Bids.

C. The Owner reserves the right to withhold the award of the Contract for a period of 60 days from the date of the opening of Bids and no award will be made until the Owner is satisfied as to the responsibilities of the low Bidders.

D. Until final award of the Contract, the Owner reserves the right to reject any or all Bids or proceed to do the work otherwise in the best interest of the Owner.

1.14 EVALUATION AND CONSIDERATION OF BIDS

A. The Owner reserves the right to reject all bids or parts of bids, and to waive informalities therein.

B. For the purpose of determining the lowest responsible bidder in the consideration of all bids submitted, the Owner reserves the right to accept or reject any or all alternates in the numerical order in which they appear on the bid form.

1.15 DISQUALIFICATION OF BIDDERS

A. Bids will not be considered if they show any omissions, additions, alterations of form, conditions not requested unauthorized alternate Bids or irregularities of any kind. However, the Owner reserves the right to waive any irregularities and to make the award in the best interest of the Owner.

B. The Bidder acknowledges the right of the Owner to reject any or all Bids and to waive any informality or irregularity in any Bid received. In addition, the Bidder

recognizes the right of the Owner to reject a Bid if the Bidder fails to submit the data required by the Bidding Documents.

C. For the purpose of determining the lowest responsible bidder in the consideration of all bids submitted, the Owner reserves the right to accept or reject any or all alternates in the numerical order in which they appear on the bid form.

1.16 APPLICABLE LAWS

A. All applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over the Work shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though herein written out in full.

B. Bidder's signatures shall be construed as acceptance of and willingness to comply with all provisions of the acts of the General Assembly of the State of Illinois relating to the Department of Human Rights Act, previously the Illinois

C. Fair Employment Practices Act, Prevailing Wage Act for workers in our area, preference to citizens of the United States and residents of the State of Illinois, and discrimination and intimidation of employees. Provisions of said acts are hereby incorporated by reference and become a part of this proposal and specification.

1.17 EXECUTION OF THE AGREEMENT

A. The successful Bidder, if awarded the Project, shall sign the necessary Agreements with the Owner and furnish Payment and Performance Bonds and Certificates of Insurance, if required elsewhere in this document, but no such Agreement shall be in force and effect until it is executed by all parties, and the Payment and Performance Bonds and Certificates of Insurance have been approved.

B. Failure to execute and return the Agreement within ten (10) calendar days may result in the rescinding of the Contract award.

1.18 RECORDS:

A. The Contractor shall maintain, for a minimum of 5 years after the completion of the contract, adequate books, records and supporting documents to verify the amounts, recipients, and uses of all disbursements of funds passing in conjunction with the contract; the contract and all books, records and supporting documents related to the Contract shall be available for review and audit, and the Contractor agrees to cooperate fully with any audit conducted and to provide full access to all relevant materials.

END OF SECTION 00 0200

BID FORM

PROJECT IDENTIFICATION: Entrance Improvements, Project # 2024-**014**

BID TO: Board of Trustee C/O Facilities Planning Manager
Lake Land College District Number #517
5001 Lake Land Boulevard
Mattoon, Illinois, 61938

BID FROM: _____

_____

_____

The undersigned Bidder agrees, if this Bid is accepted, to enter into an Agreement with the Owner, in the form included in the Bidding Documents, to perform and furnish all materials, labor and equipment as specified or indicated in the Bidding Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the terms and conditions of the Contract Documents.

In submitting this Bid, Bidder represents that:

1. This Bid will remain subject to acceptance for 60 days after the day of the bid opening.
2. The Owner has the right to reject this bid.
3. Bidder will sign and submit the Agreement with the Bonds and other documents as required by the Bidding requirements within 15 days after the Owner's Notice of Award.
4. A W-9 Form is required.
5. Bidder has copies of all the Bidding Documents.
6. Bidder is familiar with federal, state and local laws and regulations.
7. Bidder has correlated the information known to Bidder with the Bidding Documents.
8. This Bid is genuine and not made in the interest of or on the behalf of an undisclosed person, firm or corporation and is not submitted in conformity with an agreement or rules of a group, association, organization or corporation; Bidder has not directly or indirectly induced or solicited another Bidder to submit a false or sham Bid; Bidder has not solicited or induced a person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain for itself an advantage over another Bidder or over the Owner.
9. Bidder has received the following addenda receipt of which is hereby acknowledged.

Date	Number
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Bidder will provide all materials, labor and equipment as specified in accordance with the Contract Documents for the following price(s):

STIPULATED-SUM BASE BID PRICE
(Entrance Improvements) _____ Dollars ($_____)
(use words) (figures)

ADD ALTERNATE #1 BID PRICE
(Irrigation System) _____ Dollars ($_____)
(use words) (figures)

ADD ALTERNATE #2 BID PRICE
(Paver Art) _____ Dollars ($_____)
(use words) (figures)

ADD ALTERNATE #3 BID PRICE
(Concrete Roadway-Podesta Dr) _____ Dollars ($_____)
(use words) (figures)

ADD ALTERNATE #4 BID PRICE
(Dimensional Sign Letters) _____ Dollars ($_____)
(use words) (figures)

Bidder agrees to provide all materials, labor and equipment, as specified.

SUBMITTED on _____, 2025

Company _____, (Seal)

Address _____

Signed _____

_____
(Printed Name)

Phone _____
Fax _____
Email _____

Pages 1 and 2 of this Bid Form must be submitted in order for this bid to be valid.

END OF SECTION

SECTION 00 0600 – BONDS AND CERTIFICATES

PART 1 GENERAL

1.1 BID DEPOSIT AND CONTRACT SECURITY

A. No bid security will be required for this project.

1.2 PERFORMANCE BOND AND LABOR AND MATERIAL PAYMENT BOND

A. Performance Bond required for bids over $50,000.

B. Contractors shall be required to furnish, in duplicate, a Performance Bond and a Labor and Material Payment Bond in strict conformance to, and submitted on A.I.A. Document A-312 equal to the full amount of their Contract covering the faithful performance of the Contract and the payment of all obligations arising thereunder in such form as the Owner may prescribe and with such sureties as he may approve.

C. The Contractor's Bonding Agency shall carry either a Rating of "A-VIII" on the AM Best Rating System or be able to show Comparable Financial Status and Bonding Volume. Acceptance of Bonding Agency qualification shall be approved by the Owner.

D. NOTE: This Performance Bond, and Labor and Material Payment Bond, shall be furnished and in effect before any work is started under this Contract.

E. The life of the Bond and guarantee shall extend twelve (12) months beyond the day on which final payment under the Contract falls due, or the date of which the Owner accepts the work as completed whichever comes first. If final acceptance is by mutual agreement, a proper date shall be determined.

F. If before the expiration of the twelve (12) month guarantee period, a Contractor has been notified by the Owner regarding any work to be completed or corrected, any unpaid bills presented to the Owner, or any other unfinished business, the expiration of the twelve (12) month period does not relieve the Contractor or his bondsmen of the proper execution of such items.

G. The Contractor or his bondsmen shall pay any lien or court costs and attorney's fee of the Owner, and cost that any creditor may incur in the forced collection of any just claim, and interest from date of filing lien until payment is made.

H. In the event the Contractors should default and it becomes necessary for the sureties to complete the Contract, the Owner reserves the right to approve all Contractors and Subcontracts obtained by the sureties.

I. The General Conditions of this Contract shall govern all issued, and any provisions of the bonds in conflict with these general conditions shall be waived.

1.3 FAILURE TO FURNISH PERFORMANCE BOND

A. Should the successful Bidder fail or refuse to sign a formal written Contract with the Owner, or fail or refuse to furnish a Performance Bond satisfactory to the Owner and the Manager within ten (10) days after written notification of the acceptance of the proposal by the Owner, the Bidder will be considered to have abandoned the proposal. In such event the Owner shall retain all proceeds of the Bid Security (Bid Bond or Certified Check) in order to secure a "Successful Bidder". The term "Successful Bidder" shall be deemed to include any bidder whose proposal is accepted by the Owner.

1.4 COMPENSATION AND PUBLIC LIABILITY INSURANCE

A. Principal Contractors shall carry sufficient insurance on their workmen to absolutely protect the Owner from any liability or damage resulting to the workmen as provided under the "Workmen's Compensation Act", and "Structural Works Act".

B. The Principal Contractors and all Subcontractors performing services on said site shall take out and furnish to the Owner, and maintain during the life of this Agreement, complete Owner's Protective Liability Insurance in the amounts as specified herein for bodily injury, property damage, liability, or damage resulting to the Workmen as provided under the Workmen's Compensation and Structural Works Act of the State of Illinois as shall protect the Owner, Principal Contractor, and any Subcontractor performing work covered by this Agreement from claims for damages of personal injury including accidental death, as well as, from claims for property damage which may arise from operations under this Agreement, whether such operations be by the Principal Contractors or by any Subcontractors or by anyone, directly or indirectly employed by either of them, and the amounts of such insurance shall not be less than:

1. Comprehensive Automobile Liability:
   a. $1,000,000 Bodily Injury per person.
   b. $1,000,000 Bodily Injury per occurrence.
   c. 500,000 Property Damage per occurrence.
   d. $1,000,000 Combined Single Limit coverage for bodily injury and property damage per occurrence in the same aggregate limit will be accepted in lieu of the separate limits specified above.

2. Workman’s Compensation: Statutory Limits
   a. Employer’s Liability: $500,000 Bodily Injury per person.
   b. The Contractor may use a Self-Insured plan for Workman’s Compensation Insurance if the plan is approved by the State of Illinois. For approval, the Contractor shall obtain a Certificate from the Illinois Industrial Commission, Office of Self-Insurance Administration, Springfield office.

3. Comprehensive General Liability:
   a. $1,000,000 Bodily Injury per person.
   b. $2,000,000 Product and Completed Operations Aggregate
   c. $1,000,000 Bodily Injury aggregate limit.
   d. $1,000,000 Property Damage per occurrence.
   e. $2,000,000 Property Damage aggregate limit.
   f. $1,000,000 Combined Single Limit coverage for bodily injury and property damage per occurrence in the same aggregate limit will be accepted in lieu of the separate limits specified above.
4. Umbrella
   a. $1,000,000 Umbrella

C. The above Comprehensive General Liability Insurance shall be specifically endorsed to cover the terms of Liability Insurance for the Owner as set forth hereinafter.

D. The Contractor shall cause Certificates of Insurance to be deposited with the Owner.

1.5 LIABILITY INSURANCE FOR OWNER

A. The Contractor shall purchase and maintain public liability insurance naming the Owner and his agents and employees as insured with respect to any claim that may be made against the Owner or his agents and employees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense shall be covered by such insurance only if (a) it 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, and (b) is caused in whole or in part by any negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable regardless of whether or not the claimant contends that the Owner or his agents or employees are in part negligent or otherwise legally culpable with regard to the loss.

B. Such insurance shall provide a defense for the Owner and his agents and employers, including the cost of defense counsel and other expenses of litigation.

C. Principal Contractors shall carry the insurance of their Subcontractors or shall require their Subcontractors to carry their own insurance in the amounts stated above.

D. This insurance shall cover all Agreements and any extra work connected with the construction of this Project.

E. Contractors shall instruct their Insurance Companies to supply the Owner with Certificates of Insurance showing that such insurance is kept in force until completion of the Agreement. These Certificates of Insurance shall be provided before Contractors start any work under this Agreement.

1.6 BUILDERS RISK INSURANCE (Owner)

A. Immediately after the signing of construction contracts or at such time as construction materials become situated upon the construction site or sites, the Owner will affect and maintain upon the entire structure on which work of this Contract is to be done, and upon all materials, on or adjacent thereto, intended for use thereon, to 100 percent of the insurable value thereof, an All- Risk Coverage Insurance Policy.

B. This insurance will not cover Contractor's equipment, tools, or storage sheds and temporary buildings.

C. Any loss is to be made adjustable with and payable to, the Owner, Contractors, Subcontractors, and Material Dealers as their interests may appear at the time of loss.

D. The Owner, Contractor, and all Subcontractors waive all rights of action, each against the others, for damages caused by fire or other perils covered by insurance provided for under the terms of this Contract, except such rights as they may have to the proceeds of insurance held by the Owner as trustee.

END OF SECTION 00 0600

EXAMPLE AGREEMENT BETWEEN OWNER AND CONTRACTOR

where the basis of payment is a STIPULATED SUM

AGREEMENT

made as of the __th day of _____ in the year of Two Thousand and Twenty-Five, (Month XXth, 2025).

BETWEEN the Owner:	LAKE LAND COLLEGE, DISTRICT 517 5001 Lake Land Blvd. Mattoon, Illinois 61938
and the Contractor:	CONTRACTOR NAME ADDRESS ADDRESS
The Project is:	2024-014 Entrance Improvements Lake Land College 5001 Lake Land Blvd. Mattoon, IL 61938
The Prime Design Consultant is:	Planning Design Studio 2816 Sutton Blvd., Suite 1 Saint Louis, MO 63143

The Owner and Contractor agree as set forth below.

SECTION 000700

ARTICLE 1

THE CONTRACT DOCUMENTS

1.1 The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement; these form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than Modifications, appears in Article 7.

ARTICLE 2

THE WORK OF THIS CONTRACT

2.1 The Contractor shall execute the entire Work described in the Contract Documents, except to the extent specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3

DATE OF COMMENCEMENT

3.1 The date of commencement of the Work shall be the date of this Agreement.

ARTICLE 4

CONTRACT SUM

4.1 The Owner shall pay the Contractor in current funds for the Contractor's performance of the Contract the Contract Sum of **INSERT WRITTEN AMOUNT HERE** ($XX,XXX.XX), subject to additions and deductions as provided in the Contract Documents.

4.2 The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

A. Alternate No. 1: Irrigation System
B. Alternate No. 2: Paver Art
C. Alternate No. 3: Concrete Roadway-Podesta Dr.
D. Alternate No. 4: Dimensional Sign Letters

ARTICLE 5

PAYMENTS TO CONTRACTOR

5.1 Payments shall be made as described in the Payment Procedures outlined below:

PAYMENT PROCEDURES

A. The Owner will make payment on account of the Contract as follows:

1. Upon completion of all work as directed in these specifications the Contractor shall request payment in full. Payment made via ACH is strongly encouraged.

2. Payment will be made provided Architect or Design Consultant certifies that the work meets all requirements of these specifications.

3. The Contractor shall provide an invoice for the work which will satisfy the following:

a) Itemize separate line item cost for each major division of work, using specifications Table of Contents as basis for format for listing cost of work.

b) List all major subcontracts and subcontractors.

c) All forms must be typed and all sections of the forms completed.

d) All forms must have ORIGINAL SIGNATURE and be NOTARIZED.

4. The Contractor acknowledges that this Contract calls for the construction of a "public work," within the meaning of the Illinois Prevailing Wage Act, 820 ILCS 130/1 et seq. ("the Act") and that the Contractor and its subcontractors shall be required to comply with the Act when performing work in connection with this Contract. The Act requires contractors and subcontractors to pay laborers, workers and mechanics performing services on public works projects no less than the current "prevailing rate of wages" (hourly cash wages plus amount for fringe benefits) in the county where such work is performed. The Department publishes the prevailing wage rates, including those for Coles County, on its website (accessible at www2.labor.illinois.gov). The Department revises the prevailing wage rates from time to time. The Contractor, and each subcontractor performing work in furtherance of this Contract, has an obligation to check the Department's website for revisions to prevailing wage rates for Coles County. For information regarding current prevailing wage rates, the Contractor shall refer to the Illinois Department of Labor's website. The Contractor and all subcontractors performing work under this Contract must comply with all requirements of the Act, including

but not limited to all wage, notice, record-keeping and reporting requirements. If requested by the College, the Contractor shall also submit certified payroll documentation to the College for all work performed by the Contractor or any subcontractor in connection with the Contract. Such documentation, if requested, shall be submitted by the Contractor no later than the 15th of each month following the performance of work in connection with this Contract. In the event the College requires the Contractor to submit such documentation, the Contractor shall not be relieved of its obligations to otherwise comply with the Act.

PAYMENTS WITHHELD

A. The Owner may withhold, or on account of subsequently discovered evidence, nullify the whole or part of any payment to such an extent as may be necessary to protect the Owner from loss on account of:

1. Defective work not remedied.

2. Claims filed or reasonable evidence indicating probable filing of claims.

3. Failure of the Contractor to make payment properly to Subcontractors for materials and/or labor.

4. A reasonable doubt that the Contract can be completed for the balance then unpaid.

5. Damage to another Contractor.

B. When the above conditions are remedied payment will be made for the amounts withheld.

C. Should the Contractor fail to perform any work according to the drawings and specifications, or should he refuse to correct any work not done according to the drawings and specifications, the Owner may, after having given the Contractor ten days written notice, construct such work or make repairs necessary to meet the requirements of the Contract. The cost of such work shall be deducted from the final payment due the Contractor.

LIEN WAIVERS

A. Before final payment, the Contractor shall submit Lien Waivers marked "FINAL" from all Subcontractors and Material Suppliers covering all labor and materials furnished on the job. All Lien Waivers shall have ORIGINAL SIGNATURES and be NOTARIZED.

B. If any Lien or unpaid bills should be presented to the Owner after full payment has been made to a Contractor, the Contractor or his bondsmen shall refund to the

Owner all the money the latter may be compelled to pay in discharging such obligations, including all court costs and reasonable attorney's fees.

C. During the course of construction should there be any doubt regarding whether or not the Contractor has been paying his bills or subcontractors promptly, Waivers of Lien - Partial may be requested and shall be submitted.

5.2 Final payment, constituting the entire balance of the Contract Sum, shall be made by the Owner to the Contractor when (l) the Contract has been fully performed by the Contractor; and (2) a final Certificate for Payment has been issued by the Architect or Design Consultant; such final payment shall be made by the Owner not more than 30 days after the issuance of the Architect's or Design Consultant’s final Certificate for Payment.

ARTICLE 6

TERMINATION OR SUSPENSION

6.1 The Contract may be terminated by the Owner for violation(s) of the terms of the Agreement and/or Conditions of the Contract (General, Supplemental, and other Conditions).

ARTICLE 7

ENUMERATION OF CONTRACT DOCUMENTS

7.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated as follows:

7.2 The Agreement is this executed Agreement Between Owner and Contractor.

7.3 The General Conditions are the General Conditions of the Contract for Construction, AIA Document A201, 1987 Edition.

7.4 The Supplementary and other Conditions of the Contract, including the scope of work, are those contained in the Project Manual (Solicitation documents) dated September 16, 2025, and are as listed in Section 00010 Table of Contents.

7.5 The Specifications are those contained in the Project Manual dated as in Paragraph 7.4, and are as listed in Section 00010 Table of Contents.

7.6 The Drawings are as listed on the cover sheet of the drawing set.

This Agreement is entered into as of the day and year first written above and is executed in at least two original copies of which one is to be delivered to the Contractor and one to the Owner.

OWNER: **Lake Land College**

CONTRACTOR: **INSERT NAME HERE**

_____

(Signature)

Dr. Jonathan Bullock, President

_____

(Signature)

_____

(Printed name and title)

SECTION 00 0800 – SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.1 DEFINITIONS

A. Where the term "Owner" is used throughout these specifications same shall mean the Lake Land College Board of Trustees as their agent.

B. Where the term "Manager" is used, it shall refer to the Manager of Facilities Planning Manager.

C. Where the term "Contractor", "Prime Contractor", or "Principal Contractor" is used, it refers to anyone having a Principal Contract with the Owner.

D. Where the term "Subcontractor" is used, it refers to anyone having a Contract for labor or material with any of the Principal or Prime Contractor on the job.

1.2 THEFT, ETC,

A. The Contractors shall be responsible for any damage or loss resulting to the work, materials, or tools due to theft, or in any manner not covered by the insurance called for elsewhere in these Specifications. Payments on account of Contract do not relieve Contractors of this obligation. Contractors may carry Theft Insurance at their own option.

1.3 SOCIAL SECURITY, UNEMPLOYMENT INSURANCE

A. The Contractors shall keep records and pay, all social security, withholding tax, unemployment insurance, and other taxes imposed by the various governmental authorities and laws.

1.4 MATERIAL AND WORKMANSHIP

A. The owner or his agent shall have full power to reject any material or workmanship which, in their opinion, do not conform with these specifications or drawings, and cause same to be immediately removed and reconstructed without additional cost to the Owner.

1.5 PERMITS

A. The Owner will obtain and pay for all permits required by Local Law, except as indicated otherwise in these specifications.

1.6 CLEANING OF GROUNDS AND BUILDINGS

A. At the completion of the project and before final acceptance by the Owner, the area shall be cleared of all rubbish, materials, and debris which accumulate

during the process of work under this Contract. See section 011000 – Summary of Work, of these Specifications.

1.7 SUBCONTRACTORS

A. The Principal Contractors shall be responsible for any and all Subcontractors working under them and shall carry insurance for them or see that they are carrying it themselves so as to relieve the Owner of any and all liability.

B. Nothing contained in the Contract Documents shall create any contractual relation between any Subcontractor and the Owner.

C. The Owner assumes no responsibility for the overlapping or omission of parts of the work by various Subcontractors in their Contracts with the Principal Contractors.

1.8 PATCHING

A. The expense of any undue alterations, cutting, patching, or repairing of damage due to carelessness or neglect caused by any trade shall be borne by the Contractor for that trade. The work shall be done by the workmen of the Contractor whose work was damaged so that such patching will be least conspicuous.

1.9 OTHER WORK NOT IN CONTRACT

A. The Owner reserves the right to let separate Contracts for other work in connection with this project, but agrees that such work shall not interfere with the work of the Contracts previously made.

1.10 EXTRAS AND CHANGES

A. Should any extra work or changes be required during the work, the Owner and Contractor shall agree upon the price for such extra work or changes and the Owner shall issue a change order to the Contractor for such work as agreed upon. Payment shall be made under same conditions as for original Contract.

B. No payment shall be made for extra work or materials unless a formal written change order is issued by the Owner.

1.11 CORRECTION OF WORK AFTER FINAL PAYMENT

A. Neither the final Certificate, nor payment, nor any provision in the Contract Documents shall relieve the Contractor of responsibility for faulty materials or workmanship discovered to be not as specified or shown on the Drawings.

B. The Contractor shall remedy any defects due thereto, and pay for, any damages to other work resulting therefrom, which shall appear within a period of one year from the date of acceptance.

C. The Owner shall give notice of observed defects with reasonable promptness. The Owner shall judge the defects as to maintenance, workmanship, or material defects.

D. All questions arising under this article shall be decided by the Owner subject to arbitration.

1.12 LOCAL LABOR

A. It is the desire of the Owner that the Contractors make use of all local labor, material, insurance, etc., if possible, as long as it does not work a hardship on the Contractors.

1.13 STANDARD SPECIFICATIONS

A. The Illinois Department of Transportation Standard Specifications for Road and Bridge Construction (Adopted January 1, 2022) and Supplemental Specifications and Recurring Special Provisions (Adopted January 1, 2025).

1.14 PRECEDENCE OF DOCUMENTS

A. The Contract Documents shall be given precedence in the following order, provided they are in existence at the time of the closing of the Contracts:
1. Agreement
2. General Conditions of the Contract
3. Any Valid Building Code
4. Specifications
5. Full Sized Detail Drawings
6. Large Scale Drawings
7. General Drawings

1.15 PROTECTION OF GENERAL PUBLIC

A. All Contractors shall provide protection of the general public at all times, providing protection devices as prescribed by laws having jurisdiction.

B. The Contractor will, at all times, take all reasonable precautions for the safety of employees on the project, and of the public and all other persons who may be affected, and will comply with all applicable provisions of Federal, State, and Municipal Safety Laws and Building and Construction Codes.

1.16 GUARANTEE & WARRANTIES

A. All Prime Contractors shall guarantee their work and the work of their Subcontractors for a period of one year from the date of acceptance of their work, unless stipulated for a longer period of time under specific sections of the specifications.

B. All items requiring a warranty certificate from the manufacturer shall be executed and the certificate delivered to the Owner before final payment can be approved.

1.17 SUPERINTENDENT

A. The General Contractor shall keep a capable superintendent on the job site at all times when major work is in progress. This Superintendent shall lay out all work required under the Contract and also assist other Contractors in laying out and planning their work.

B. The Contractors, or his Superintendent, shall also notify other Contractors when it will be necessary to install certain work and take complete responsibility for co-ordination of construction.

1.18 REQUIREMENTS

A. All Contractors shall comply with all laws, rules and regulations governing the work under this Contract.

B. Should the Contractor observe anything in the contract documents that is contrary to any code requirement, he shall notify the Owner immediately in writing. The Owner shall issue all changes required to correct the variance, and be responsible for code interpretations.

1.19 OCCUPATIONAL SAFETY AND HEALTH

A. It shall be each Contractor's responsibility to comply with all local, state and federal laws and regulations governing job safety and health standards, and the requirements of the "Occupational Safety and Health Act of 1970" enacted by Congress and signed into law on December 29, 1970 and all applicable changes, revisions, and amendments.

1.20 FAIR EMPLOYMENT PRACTICES

A. All Contractors agree that, in accordance with an Act to prohibit discrimination and intimidation on account of race or color in employment and Contracts for public buildings or public works, approved July 8, 1933, as amended, no person will be refused or denied employment in any capacity on the grounds of race or color, nor be discriminated against in any manner by reason thereof in connection with the performance of the work set forth in the attached drawings and specifications; nor will any unfair employment practice, as defined in the Fair Employment Practices Act, approved July 21, 1961 and all applicable changes, revisions, and amendments, be committed by the said Contractor.

1.21 PREVAILING WAGE POLICY

A. The Owner has established a general prevailing rate of hourly wage in said District, as determined by the Illinois Department of Labor.

B. All Contractors and Subcontractors shall comply with the following and any later amendments thereto:

C. "Illinois Statutes, as amended by Act approved August 8, 1961, (SB No. 250) (Rev. State Chap. 48, Sec. 39S-1 et. seq.) declared to be the policy of the State of Illinois that a wage of no less than the general prevailing hourly rate as paid for work of a similar character in the locality in which the work is performed, shall be paid to all laborers, workmen and mechanics employed by or on behalf of any and all public bodies engaged in public works, exclusive of maintenance work."

D. Contractors shall have the responsibility of complying with all aspects of the Prevailing Wage Policy.

E. Certified payroll documentation must be provided to the college by the 15th of the following month.

1.22 BUSINESS ENTERPRISE FOR MINORITIES, FEMALES, AND PERSONS WITH DISABILITIES ACT

A. On August 25, 2015, Governor Rauner signed into law the Business Enterprise for Minorities, Females, and Persons with Disabilities Act (30 ILCS 575), effective immediately. The Act stipulates certain requirements regarding the use of businesses owned by minorities, females and persons with disabilities for the procurement of goods and services by State agencies, universities, and community colleges.

B. The College recognizes the importance of increasing the participation of businesses owned by minorities, females and persons with disabilities in public contracts in an effort to overcome the discrimination and victimization such firms have historically encountered. It is the College's policy to promote the economic development of businesses owned by minorities, females and persons with disabilities by setting aspirational goals to award contracts to businesses owned by minorities, females, and persons with disabilities for certain services as provided by the Business Enterprise for Minorities, Females and Persons with Disabilities Act, 30 ILCS 575/0.01 et seq. (the "Act") and the Business Enterprise Council for Minorities, Females, and Persons with Disabilities (the "Council").

C. Certified Business Enterprise Contractors
   1. In determining whether a business is owned by a minority, female, or person with disabilities, the College shall require the business to provide proof of certification by the Business Enterprise Council, an entity delegated the authority to make certifications by the Business Enterprise Council, or by a state agency with statutory authority to make such a certification, that the business entity is owned by a minority, female, or person with a disability, or by submitting an ownership affidavit provided by the College.

D. Subcontractors and Suppliers

1. The College's aspirational goals are based on the total dollar amounts awarded to businesses owned by minorities, females, and persons with disabilities. All funds awarded to any certified subcontractors and/or suppliers shall be included for the College's aspirational goals, so long as the expenditures are direct, necessary, and proximately related to the work or service of the contract.

E. Evaluation of Contracts to Facilitate Aspirational Goals
   1. These procedures shall not eliminate, alter, reduce, alleviate or modify in any way the College's procedures for purchasing. However, in addition to the College's purchasing procedures, the College shall evaluate all contracts, except those subject to federal reimbursement, to determine whether the bidder or contracting party assists the College in meeting its aspirational goals as set forth above, and increase the participation of businesses owned by minorities, females, and persons with disabilities in contracts with the College.

F. Bidding Requirements.
   1. Bid Documents
      a. When the College procedures and/or state law require the College to competitively bid a contract, the College shall state in its bid documents the College's aspirational goal for the contract. The College's bid documents shall also require each bid submitted for a contract to include: (i) the bidder's name, (ii) the bid amount, and (iii) a business enterprise program utilization plan indicating the percentage of disadvantaged businesses that will be awarded by the bid.
   2. Lowest, Responsive and Responsible Bidder
      a. As required by state law and the College's purchasing procedures, the College shall award contracts subject to state public bidding requirements to the lowest, responsive and responsible bidder. A bidder's failure to complete a utilization plan or submit necessary certifications shall be an issue of "responsiveness" which may make the bidder ineligible to receive the contract. In awarding contracts, the College shall also consider that the definition of "lowest responsible bidder" is broader than "lowest bidder" or "financially responsible", and that in proper circumstances, certain public interests can be considered as "responsible" in the College's discretion as allowed by applicable state laws, rules or regulations.
   3. Opportunity to Cure
      a. In the event that a bidder offers the lowest, responsive and responsible bid but fails to meet the contract's aspirational goals, the College shall notify the bidder of this deficiency and give the bidder no more than ten (10) days to cure that deficiency. The College may provide the bidder with sufficient information necessary to obtain the Business Enterprise Council's list of certified businesses owned by minorities, females and persons

with disabilities. The bidder may only cure this deficiency by subcontracting with businesses that are certified as provided in these procedures.

4. Good Faith Effort Procedures
   a. If the bidder cannot meet the contract's aspirational goal, the bidder must document in the utilization plan its good faith efforts that could reasonably have been expected to meet the goal. The College shall consider the quality, quantity, and intensity of the bidder's efforts, and may evaluate the bidder's:
      1) Solicitation through all reasonable and available means of certified subcontractors, suppliers, and/or vendors that have the capability to perform the work required by the contract. The bidder must solicit this interest to give certified businesses sufficient time to respond to the solicitation, must provide adequate information about the plans, specifications, and contract requirements in a timely manner, and must take appropriate steps to follow up initial solicitations.
      2) Use of resources from the College, the Business Enterprise Council, and any other business or community groups that provide assistance in the recruitment and placement of certified businesses.
      3) Selection of portions of the contract work to be performed by certified vendors to increase the likelihood that the goal will be achieved. This includes, where appropriate, breaking out contract work items or services into economically feasible units to facilitate participation by certified businesses, even when the bidder might otherwise prefer to perform the work or services with its own employees.
      4) Negotiation in good faith with interested certified businesses. In order to show good faith efforts, the bidder's utilization plan shall include the names, addresses, and telephone numbers of certified businesses that were considered, and an explanation for why an agreement could not be reached.
      5) Thorough investigation of the capabilities of certified businesses and not rejecting them as unqualified without sound reasons.
      6) Efforts to assist interested certified businesses in obtaining contract required lines of credit, insurance, equipment, supplies, materials, or other related assistance or services.
5. Award of Contract
   a. If the College determines that the bidder is the lowest, responsive and responsible bidder and has either met the contract's aspirational goals or has made a good faith effort to meet the goal, the College may award the contract to the bidder. The College

shall have the right to reject all bids and re-bid the contact in its sole discretion.

6. Incorporation into Contract
   a. The successful bidder's utilization plan shall become part of the awarded contract and shall not be modified or amended without the College's written consent.

END OF SECTION 00 0800

SECTION 01 1000 - SUMMARY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Contract description.

B. Work by Contractor.

C. Contractor supplied products.

D. Owner's use of site and premises.

E. Work sequence/coordination.

F. Owner occupancy.

G. Commencement and Completion

H. Contractor's Responsibility

I. Utility Service Disruption

J. Building Protection

K. Site Protection

L. Material Storage

M. Cleaning of Grounds

1.2 CONTRACT DESCRIPTION

A. This project is located on the campus of Lake Land College, 5001 Lake Land Boulevard, Mattoon, Illinois.

B. Work of the Project includes the construction of roadway and landscape improvements to Entrances 1,2, 3 and Route 45 at Lake Land College.

C. Perform Work of this Contract under lump sum contract with Owner in accordance with Conditions of Contract.

1.3 WORK BY CONTRACTOR

A. Work under this contract includes, but is not limited to:
   1. Site preparation, clearing and grubbing.
   2. Finish grading and drainage improvements.

3. Demolition of existing pavement areas.
4. Construction of new masonry columns, fencing, walls, paver plaza, banner poles, and signage.
5. Block letter monument signage.
6. Construction of concrete and asphalt paving (including IDOT right-of-way pavement adjustments).
7. Adjustments to existing utilities including storm sewer and water.
8. Sign lighting.
9. Landscape plantings.
10. Irrigation System (Bid Alternate)
11. “Paver Art” in lieu of standard pavers (Bid Alternate)
12. Asphalt roadway paving in lieu of concrete roadway paving (Bid Alternate)
13. Other items called for by these contract documents.

B. Items noted NIC (Not in Contract) will be furnished and installed by others.

1.4 CONTRACTOR SUPPLIED PRODUCTS

A. Contractor's Responsibilities:
1. Provide Shop Drawings, Test Results, Product Data, and Material Samples. Forward them within 48 hours of receipt to Owner’s Representative.
2. Receive and unload products at site; inspect for completeness or damage.
3. Handle, store, install and finish products.
4. Repair or replace items damaged after receipt.
5. Arrange and pay for all necessary permits.
6. Other items called for by these contract documents.

1.5 OWNER'S USE OF SITE AND PREMISES

A. Limit use of site and premises during construction as agreed to by the College and the Contractor.
1. The site is anticipated to be open to the public during construction of improvements.
2. The south intersection for Parking Lot F shall remain open and accessible to students and campus users for as long as possible. The Contractor shall schedule and sequence construction activities to minimize disruptions and limit the duration of any required closure. The Contractor shall coordinate with the College in advance to determine the specific dates and duration of the closure and obtain approval before shutting down access.

B. Access to Site: Limited to current vehicular entrances.

C. Construction Staging/Sequencing: Limited to area designated as follows.
1. Staging and access as indicated on the drawings and coordinated with Owner.

1.6 WORK SEQUENCE/COORDINATION

A. During construction period, coordinate, consult and cooperate with Owner's Representative regarding construction schedule and operations.

B. The campus will be occupied by the Owner and the general public during all phases of construction. It shall be the Contractors responsibility to coordinate the work with the Owner to maintain access to roadways, parking and buildings during normal hours of operation, and to minimize conflict with the College's schedule.

C. Sequence of work shall be coordinated with the College be scheduled to minimize inconveniences for the College students and staff.

D. A copy of the College calendar is available upon request.

E. The Contractor shall notify the Owner three (3) working days prior to commencing work on site.

1.7 OWNER OCCUPANCY

A. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.

1.8 COMMENCEMENT AND COMPLETION DATE

A. All work on this project is subject to the College's schedule and circulation needs, which are as follows:
   1. Coordinate Work schedule with the College. This project and bid will be taken to the Board of Trustees meeting on November 10, 2025, for approval. Coordination of the work schedule can begin after Board approval is granted with completion no later than May 1, 2026.
   2. Two days' notice is required for schedule changes.
   3. Saturdays and Sundays are available with prior approval from the College.
   4. Any alternate dates MUST be coordinated with the College.
   5. PROVIDE PROPOSED SCHEDULE WITH BID.

1.9 CONTRACTOR'S RESPONSIBILITIES

A. The General Contractor on this project regardless of whether he has a Contract for the General Construction or complete Construction Work shall have the responsibility of coordinating and directing the work. This shall include the scheduling and/or co-ordination of all other Prime Contractors having a contract with the Owner and shall include assistance to these Contractors in the layout of their work when it must be coordinated with work the General Contractor is performing. The General Contractor shall include the cost of performing this co-ordination in his Bid.

B. The remaining Prime Contractors and Subcontractors on the project will be charged with scheduling their own work so that it can be coordinated with the General Contractors schedule. They shall give the General Contractor their full co-operation.

1.10 UTILITY SERVICE DISRUPTION

A. This project will require interruption of utility service.

1.11 BUILDING PROTECTION

A. The Contractor shall be responsible for protecting the existing buildings and contents from damage from any cause as a result of work to be performed under this Contract. Any damaged to buildings or contents shall be repaired or replaced to equal the original condition of the damaged area or contents.

B. All damaged buildings or contents shall be repaired or replaced at the Contractor's expense and to the satisfaction of the Owner.

1.12 SITE PROTECTION

A. The Contractor shall be responsible for protecting the adjacent site from damage from any cause as a result of work to be performed under this Contract. Any damaged areas, including yard areas and plants, walks, steps, paved areas, irrigation system, etc., shall be repaired or replaced to equal the original condition of the damaged areas.

B. All damaged areas shall be repaired at the Contractor's expense and to the satisfaction of the Owner.

1.13 MATERIAL STORAGE

A. The Owner will allocate certain areas of the site for the purpose of storing materials and equipment and locating Contractor's temporary office. The Contractor shall contact the Owner before any materials are situated in the building or on the site and determine a general plan for storing materials.

B. Materials shall be placed on the site in a neat and orderly manner.

1.14 CLEANING OF GROUNDS

A. The site shall be maintained free of unnecessary debris and clutter during all phases of construction.

B. At the completion of the project and before final acceptance by the Owner, the site shall be cleared of all rubbish, materials, and debris which accumulated during the process of construction.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01 1000

SECTION 01 2000 - PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Payments

B. Payments Withheld

C. Lien Waivers

D. Cash allowances.

E. Schedule of values.

F. Applications for payment.

G. Change procedures.

H. Defect assessment.

I. Alternates.

1.2 PAYMENTS

A. The Owner will make payment on account of the Contract as follows:
   1. Upon completion of all work as directed in these specifications the Contractor shall request payment in full. Payment made via ACH is strongly encouraged.
   2. Payment will be made provided Manager certifies that the work meets all requirements of these specifications. Successful bidder must provide a W-9 for processing of payment.
   3. The Contractor shall provide an invoice for the work which will satisfy the following:
      a. Itemize separate line-item cost for each major division of work, using specifications Table of Contents as basis for format for listing cost of work. See Section 1.6 Schedule of Values.
      b. List all major subcontracts and subcontractors.
      c. All forms must be typed and all sections of the forms completed.
      d. All forms must have ORIGINAL SIGNATURE and be NOTARIZED.

1.3 PAYMENTS WITHHELD

A. The Owner may withhold, or on account of subsequently discovered evidence, nullify the whole or part of any payment to such an extent as may be necessary to protect the Owner from loss on account of:
   1. Defective work not remedied.

2. Claims filed or reasonable evidence indicating probable filing of claims.
3. Failure of the Contractor to make payment properly to Subcontractors for materials and/or labor.
4. A reasonable doubt that the Contract can be completed for the balance then unpaid.
5. Damage to another Contractor.

B. When the above conditions are remedied payment will be made for the amounts withheld.

C. Should the Contractor fail to perform any work according to the drawings and specifications, or should he refuse to correct any work not done according to the drawings and specifications, the Owner may, after having given the Contractor ten days written notice, construct such work or make repairs necessary to meet the requirements of the Contract. The cost of such work shall be deducted from the final payment due the Contractor.

1.4 LIEN WAIVERS

A. Before final payment, the Contractor shall submit Lien Waivers marked "FINAL" from all Subcontractors and Material Suppliers covering all labor and materials furnished on the job. All Lien Waivers shall have ORIGINAL SIGNATURES and be NOTARIZED.

B. If any Lien or unpaid bills should be presented to the Owner after full payment has been made to a Contractor, the Contractor or his bondsmen shall refund to the Owner all the money the latter may be compelled to pay in discharging such obligations, including all court costs and reasonable attorney's fees.

C. During the course of construction should there be any doubt regarding whether or not the Contractor has been paying his bills or subcontractors promptly, Waivers of Lien - Partial may be requested and shall be submitted.

1.5 CASH ALLOWANCES

A. Costs Included in Cash Allowances: Cost of product to Contractor or Subcontractor, less applicable trade discounts, delivery to site and labor for installation.

B. Costs Not Included in Cash Allowances: Product handling at the site, including unloading, uncrating, and storage; protection of products from elements and from damage, contractor overhead and profit, state and local product taxes.

C. Landscape Architect/Engineer Responsibilities:
1. Provide information regarding selection of products, suppliers, and installers.
2. Select products in consultation with Owner’s Representative, as requested, and transmit decision to Contractor.

D. Contractor Responsibilities:
   1. Assist Landscape Architect/Engineer in selection of products, suppliers, and installers, as needed.
   2. Obtain proposals from suppliers and installers and offer recommendations.
   3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
   4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
   5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.
   6. Prepare Change Order(s).

E. Differences in costs will be adjusted by Change Order.

1.6 SCHEDULE OF VALUES

A. Submit printed schedule on AIA Form G703 - Continuation Sheet for G702. Contractor's standard form or electronic media printout will be considered if similar to the G702 format.

B. Submit Schedule of Values in duplicate within 21 calendar days after date of Owner-Contractor Agreement. Contractor to provide draft Schedule of Values for approval prior to issuing first Payment Application.

C. Include separately from each line item, direct proportional amount of Contractor's overhead and profit.

D. Revise schedule to list approved Change Orders, with each Application For Payment.

1.7 APPLICATIONS FOR PAYMENT

A. Submit three notarized copies of each application on AIA Form G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet for G702.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Submit updated construction schedule with each Application for Payment.

D. Payment Period: Submit at intervals stipulated in the Agreement.

E. Submit with transmittal letter.

F. Submit waivers indicated in the general conditions and agreement.

G. Substantiating Data: When the College's representative requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:
   1. Current construction photographs.
   2. Partial release of liens from major subcontractors and vendors.
   3. Record documents as specified in Section 01 7000, for review by Owner which will be returned to Contractor.
   4. Affidavits attesting to off-site stored products.
   5. Construction progress schedules, revised and current as specified in Section 01 3300.

1.8 CHANGE PROCEDURES

A. Submittals: Submit name of individual authorized to receive change documents, and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. The College's representative will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions on AIA Form G710 or similar format.

C. The College's representative may issue a Proposal Request including a detailed description of proposed change with supplementary or revised Drawings and specifications and the period of time during which the requested price will be considered valid. Contractor will prepare and submit estimate within 7 calendar days.

D. Contractor may propose changes by submitting a request for change to the Owner's Representative, describing proposed change and its full effect on the Work. Include a statement describing reason for the change, and effect on Contract Sum/Price and Contract Time with full documentation and a statement describing effect on Work by separate or other Contractors. Document requested substitutions in accordance with Section 01 6000.

E. Stipulated Sum/Price Change Order: Based on Proposal Request and Contractor's estimated maximum price quotation or Contractor's request for Change Order as approved by the Owner's Representative.

1.9 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of the Owner's Representative, it is not practical to remove and replace the Work, the Owner's Representative will direct appropriate remedy or adjust payment.

C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price.

D. Defective Work will be partially repaired to instructions of Owner's Representative, and unit sum/price will be adjusted to new sum/price.

E. Individual specification sections may modify these options or may identify specific formula or percentage sum/price reduction.

F. Authority of Owner's Representative to assess defects and identify payment adjustments, is final.

G. Non-Payment For Rejected Products: Payment will not be made for rejected products for any of the following:
1. Products wasted or disposed of in a manner that is not acceptable.
2. Products determined as unacceptable before or after placement.
3. Products not completely unloaded from transporting vehicle.
4. Products placed beyond lines and levels of required Work.
5. Products remaining on hand after completion of the Work.
6. Loading, hauling, and disposing of rejected products.

1.10 ALTERNATES

A. Alternates quoted on Bid Forms will be reviewed and accepted or rejected at Owner's option. Accepted Alternates will be identified in Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work.

C. Schedule of Alternates:
1. Alternate No. 1: Irrigation System
   a. Base Bid Item: No Irrigation system to be provided.
   b. Add. Alternate Item: Provide complete irrigation system design and installation as shown on Sheet L2.3 and as indicated in specification section 32 8423 Underground Sprinklers.
2. Alternate No. 2: Paver Art
   a. Base Bid Item: Provide and install standard pavers as shown on the drawings
   b. Add. Alternate Item: Provide and install "Paver Art" system shown on Sheet L3.0, detail 2.
3. Alternate No. 3: Concrete Roadway-Podesta Dr
   a. Base Bid Item: Provide and install asphalt roadway paving on Podesta Dr. as shown in the drawings.
   b. Add. Alternate Item: Provide and install concrete roadway paving in lieu of asphalt on Podesta Drive as shown on Sheet C2.0.
4. Alternate No. 4: Dimensional Sign Letters
   a. Base Bid Item: Provide and install main entry sign with vinyl lettering as shown on the drawings.
   b. Add. Alternate Item: Provide and install main entry sign with dimensional lettering as shown on Sheet L3.4, detail 1.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01 2000

SECTION 01 3000 - ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Coordination and project conditions.

B. Field engineering.

C. Preconstruction meeting.

D. Progress meetings.

E. Pre-installation meetings.

F. Cutting and patching.

G. Special procedures.

1.2 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of various sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Verify utility requirements and characteristics of operating equipment are compatible with site utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, operating equipment.

C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.

F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.3 FIELD ENGINEERING

A. Employ Land Surveyor registered in State of Illinois and acceptable to the Owner's Representative.

B. Locate and protect survey control and reference points. Promptly notify Owner's Representative of discrepancies discovered.

C. Control datum for survey is that established by Owner provided survey and shown on Drawings.

D. Verify set-backs and easements; confirm drawing dimensions and elevations.

E. Provide field engineering services. Establish elevations, lines, and levels, utilizing the latest recognized engineering survey practices.

F. Maintain complete and accurate log of control and survey work as Work progresses.

G. Utilize licensed surveyor for layout of all major project components.

H. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

I. Promptly report to Owner's Representative loss or destruction of reference point or relocation required because of changes in grades or other reasons.

J. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Owner's Representative.

1.4 PRECONSTRUCTION MEETING

A. Owner will schedule meeting after Notice of Award.

B. Attendance Required: Owner, Owner's Representative, Landscape Architect/Engineer, major subcontractors and Contractor.

C. Agenda:
1. Execution of Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of products, schedule of values, and progress schedule.
5. Designation of personnel representing parties in Contract, and Owner's Representative.
6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
7. Scheduling.

D. Owner's Representative to record minutes and distribute copies within three calendar days after meeting to participants, with two copies to Landscape Architect/Engineer and those affected by decisions made.

1.5 PROGRESS MEETINGS

A. Owner's Representative shall schedule and administer meetings throughout progress of the Work at intervals as agreed to by Contractor, Owner and Landscape Architect.

B. Owner's Representative shall make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: Job superintendent, major subcontractors and suppliers, Owner and/or Owner's Representative as appropriate to agenda topics for each meeting.

D. Agenda:
1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittals schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of progress schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on progress schedule and coordination.
13. Other business relating to Work.

E. Owner's Representative shall record minutes and distribute copies within three calendar days after meeting to participants, with two copies to Landscape Architect/Engineer and those affected by decisions made.

1.6 PRE-INSTALLATION MEETINGS

A. When required in individual specification sections, convene pre-installation meetings at Project site prior to commencing work of specific section.

B. Require attendance of parties directly affecting, or affected by, Work of specific section.

C. Notify Owner a minimum of four days in advance of meeting date.

D. Prepare agenda and preside at meeting:
1. Review conditions of installation, preparation and installation procedures.
2. Review coordination with related work.

E. Owner's Representative shall record minutes and distribute copies within three calendar days after meeting to participants, with two copies to Landscape Architect/Engineer and those affected by decisions made.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 CUTTING AND PATCHING

A. Employ original skilled and experienced installer to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting:
1. Structural integrity of element.
2. Integrity of weather-exposed or moisture-resistant elements.
3. Efficiency, maintenance, or safety of element.
4. Visual qualities of sight exposed elements.
5. Work of Owner or separate contractor.

C. Execute cutting, fitting, and patching, including excavation and fill, to complete Work, and to:
1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and non-conforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.

E. Cut masonry and concrete materials using masonry saw or core drill.

F. Restore Work with new products in accordance with requirements of Contract Documents.

G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

H. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.

I. Identify hazardous substances or conditions exposed during the Work to Owner's Representative for decision or remedy.

3.2 SPECIAL PROCEDURES

A. Materials: As specified in individual product sections; match existing with new products and salvaged products for patching and extending work.

B. Employ original skilled and experienced installer to perform alteration work.

C. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

E. Remove debris and abandoned items from area and from concealed spaces.

F. Prepare surface and remove surface finishes to permit installation of new work and finishes.

G. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.

H. Remove, cut, and patch Work in manner to minimize damage and to permit restoring products and finishes to original or specified condition.

I. Refinish existing visible surfaces to remain in renovated rooms and spaces, to specified condition for each material, with neat transition to adjacent finishes.

J. Where new Work abuts or aligns with existing, provide smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

K. When finished surfaces are cut so that smooth transition with new Work is not possible, terminate existing surface along straight line at natural line of division and submit recommendation to Owner’s Representative for review.

L. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.

M. Finish surfaces as specified in individual product sections.

END OF SECTION 01 3000

SECTION 01 3300 - SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Administrative submittals

B. Submittal procedures.

C. Construction progress schedules.

D. Proposed products list.

E. Product data.

F. Shop drawings.

G. Samples.

H. Design data.

I. Test reports.

J. Certificates.

K. Manufacturer's instructions.

1.2 ADMINISTRATIVE SUBMITTALS

A. On a weekly basis during the progress of the Work, maintain, and submit to the Owner’s Representative, full and correct information as to:
   1. The daily number of persons employed in connection with each subdivision of the Work.
   2. The classification, rate of pay, citizenship status, and address of each of these persons.
   3. The cost, source, and amount of each class of materials delivered, equipment received, and major construction equipment used in each subdivision of the Work.
   4. General description of construction activities.

1.3 SUBMITTAL PROCEDURES

A. Transmit each submittal with transmittal form.

B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.

C. Identify Project, Contractor, subcontractor and supplier; pertinent drawing and detail number, and specification section number, appropriate to submittal.

D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.

E. Schedule submittals to expedite Project, and deliver to Owner’s Representative at business address. Coordinate submission of related items.

F. For each submittal for review, allow fourteen calendar days, excluding delivery time to and from Contractor.

G. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of completed Work.

H. Allow space on submittals for Contractor and Architect/Engineer review stamps. Place a note on sheet fronts when a stamp is placed on the back.

I. When revised for resubmission, identify changes made since previous submission.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

K. Mark any submittal that is not requested.

1.4 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial schedules within 21 calendar days after date of Owner-Contractor Agreement. After review, resubmit required revised data within 5 calendar days.

B. Submit Progress Schedules with each Application for Payment.

C. Distribute copies of reviewed schedules to Project site file, subcontractors, suppliers, and other concerned parties.

D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

E. Submit computer generated horizontal bar chart with separate line for each item of work identified in the schedule of values, identifying first work day of each week.

1.5 PROPOSED PRODUCTS LIST

A. Within 21 calendar days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.6 PRODUCT DATA

A. Product Data: Submit to Owner’s Representative for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Submit number of copies Contractor requires, plus two copies Owner’s Representative will retain.

C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 7000.

1.7 SHOP DRAWINGS

A. Shop Drawings: Submit to Owner’s Representative for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

C. Submit number of reproductions Contractor requires, plus two copies Owner’s Representative will retain.

D. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents described in Section 01 7000.

1.8 SAMPLES

A. Samples: Submit to Owner's Representative for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Samples For Selection as Specified in Product Sections:
   1. Submit to Owner's Representative for aesthetic, color, or finish selection.
   2. Submit samples of finishes from full range of manufacturers' standard color, textures, and patterns for Owner's Representative selection.

C. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

D. Include identification on each sample, with full Project information.

E. Submit number of samples specified in individual specification sections; Landscape Architect/Engineer will retain one sample, unless otherwise specified.

F. Reviewed samples which may be used in the Work are indicated in individual specification sections.

G. Samples will not be used for testing purposes unless specifically stated in specification section.

1.9 DESIGN DATA

A. Submit for Owner Representative's knowledge as contract administrator or for Owner.

B. Submit for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.10 TEST REPORTS

A. Submit for Owner Representative's knowledge as contract administrator or for Owner. Test reports shall be delivered promptly after test completion, no longer than 5 work days after testing maximum.

B. Submit test reports for information for limited purpose of assessing conformance with information given and design concept expressed in Contract Documents.

1.11 CERTIFICATES

A. When specified in individual specification sections, submit certification by manufacturer, installation/application subcontractor, or Contractor to Owner's Representative, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Owner's Representative.

1.12 MANUFACTURER'S INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Owner's Representative for delivery to Owner in quantities specified for Product Data.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01 3300

SECTION 01 4000 - QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Quality control and control of installation.

B. Tolerances

C. References.

D. Mock-up requirements.

E. Testing and inspection services.

F. Examination.

G. Preparation.

1.2 QUALITY CONTROL AND 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. When manufacturers' instructions conflict with Contract Documents, request clarification from Owner’s Representative 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. Perform Work by persons qualified to produce required and specified quality.

F. Verify field measurements are as indicated on Drawings, Shop Drawings or as instructed by manufacturer.

G. Secure products in place with positive anchorage devices and footings designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.3 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. When manufacturers' tolerances conflict with Contract Documents, request clarification from Owner's Representative before proceeding.

C. Adjust products to appropriate dimensions. Alter dimensions after installation only if it will not affect the overall effectiveness of the product. Position before securing products in place.

1.4 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date for receiving bids, except where specific date is established by code.

C. Obtain copies of standards where required by product specification sections.

D. When specified reference standards conflict with Contract Documents, request clarification from Owner's Representative before proceeding.

E. Neither contractual relationships, duties, nor responsibilities of parties in Contract nor those of Landscape Architect/Engineer shall be altered from Contract Documents by mention or inference otherwise in reference documents.

1.5 MOCK-UP REQUIREMENTS

A. Tests will be performed under provisions identified in this section and identified in respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be comparison standard for remaining Work and shall remain in place until substantial completion.

D. Where mock-up has been accepted by Owner's Representative and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so by Owner's Representative.

1.6 TESTING AND INSPECTION SERVICES

A. Lake Land College shall employ and pay for services of an independent testing agency to perform all specified testing required for this project.
   1. Prior to start of Work, the contractor will be provided with the testing laboratory name, address, and telephone number, and names of full time registered Engineer and responsible officer.

2. Submit copy of report of laboratory facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of deficiencies reported by inspection.
3. Contractor will pay or reimburse Lake Land College for all tests that are below specified standard.

B. The independent firm will perform tests, inspections and other services specified in individual specification sections and as required by Owner's Representative.
1. Laboratory: Authorized to operate in State of Illinois.
2. Laboratory Staff: Maintain full time registered Engineer on staff to review services.
3. Testing Equipment: Calibrated at reasonable intervals with devices of accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.

C. Testing, inspections and source quality control may occur on or off project site. Perform off-site testing as required by Owner's Representative or Owner.

D. Reports will be submitted by independent firm to Owner's Representative, Landscape Architect/Engineer and Contractor, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
1. Notify Owner's Representative and independent firm 24 hours prior to expected time for operations requiring services.
2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

F. Testing and employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

G. Re-testing or re-inspection required because of non-conformance to specified requirements shall be performed by same independent firm on instructions by Owner's Representative. Payment for re-testing or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price, regardless of the results of the test.

H. Agency Responsibilities:
1. Test samples of mixes submitted by Contractor.
2. Provide qualified personnel at site. Cooperate with Owner's Representative and Contractor in performance of services.
3. Perform specified sampling and testing of products in accordance with specified standards.

4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Owner's Representative and Contractor of observed irregularities or non-conformance of Work or products.
6. Perform additional tests required by Owner's Representative.
7. Attend preconstruction meetings and progress meetings.

I. Agency Reports: After each test, promptly submit two copies of report to Owner's Representative and to Contractor. When requested by Architect/Engineer, provide interpretation of test results. Include the following:
1. Date issued.
2. Project title and number.
3. Name of inspector.
4. Date and time of sampling or inspection.
5. Identification of product and specifications section.
6. Location in Project.
7. Type of inspection or test.
8. Date of test.
9. Results of tests.
10. Conformance with Contract Documents.

J. Limits On Testing Authority:
1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency or laboratory may not approve or accept any portion of the Work.
3. Agency or laboratory may not assume duties of Contractor.
4. Agency or laboratory has no authority to stop the Work.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Verify utility services are available, of correct characteristics, and in correct locations.

3.2 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

END OF SECTION 01 4000

SECTION 01 4500 - TREE PROTECTION

PART 1 GENERAL

1.1 SUMMARY

A. This section includes the protection of trees that are indicated to remain but interfere with or are close to new construction, as herein specified. Trees which are to remain and must be protected are indicated on the drawings by tree protection fencing.

1.2 REFERENCE STANDARDS

A. Tree Appraisal:
   1. Guide for Plant Appraisal, 9th Edition, International Society of Arboriculture.

1.3 SUBMITTALS

A. Section 01 3300: Submittal Procedures

B. Schedule Submittals: Submit contractors schedule for work in areas were trees exist prior to beginning any work. This schedule will be the start of all ongoing coordination with the Lake Land College who will be responsible for the initial placement of all tree protection fencing. This schedule will be updated and presented during regular construction meetings as work progresses.

1.4 PROJECT CONDITIONS

A. The College will construct tree protection fencing along all construction boundaries as determined during the layout of all sitework. The area within the fence shall be designated a tree protection zone.

B. The protection zone shall designate the area not to be entered with construction material, equipment or personnel without prior approval of the Dir. of Physical Plant Operations. The Contractor shall give the College 48 hours advance notice for access into any tree protection area.

C. If it is approved to enter the tree protection zone, extreme care should be taken not to compact the earth as compaction can cause severe root damage due to the reduced air and water to the tree roots. If the area within the protection zone should be compacted by construction material, equipment or personnel, it will be necessary to aerate the soil thoroughly in the root zone immediately following compaction, as directed by the Dir. of Physical Plant Operations, at the expense of the contractor.

D. In the event any area within the protection zone is disturbed, necessary repairs shall be made immediately, as determined by the Dir. of Physical Plant Operations.

E. Trenching or excavation spoils should be returned to trench or excavation site within 24 hours. If the return is not possible within that time period, the spoils shall be stored away from tree root zones, unless authorized by the Dir. of Physical Plant Operations.

F. Do not allow exposed roots to dry out before permanent backfill is placed; provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in moist condition and temporarily support and protect from damage until permanently relocated and covered with earth.

G. The Contractor shall be responsible for payment to Lake Land College, for a period of two years, the value of any existing trees that are required to be removed as a result of the Contractor's action.

H. Nothing should be stored outside of the construction zone. No filling of gas tanks, cleaning of tools, repairing equipment, or parking of vehicles shall occur outside of the construction zone.

I. All chemical waste should be hauled away for proper disposal.

J. Stock piled materials should be stored off turf areas.

K. Care shall be taken with construction equipment to avoid any breaking of branches, tearing of the bark or wounding the trunk.

L. If tree limbs need to be removed for overhead clearance of machinery or to provide access or, if tree repair work is needed due to construction damage, the Dir. of Physical Plant Operations should be notified beforehand to perform the proper procedure. The contractor is not permitted to prune or limb trees.

M. Protect tree root systems from damage to noxious materials cause by run-off or spillage during mixing, placement, or storage of construction materials. Protect root systems from flooding, eroding, or excessive wetting resulting from dewatering operations.

PART 2 MATERIALS

2.1 The Contractor shall be responsible for providing all supplemental materials as required by the tree protection specification, with the exception of tree protection fencing and posts, which will be installed by Lake Land College. In the event that the Contractor damages the tree protection fence beyond repair, it is the Contractor's responsibility to provide and replace any damage or destroyed fence.

PART 3 EXECUTION

3.1 PRECONSTRUCTION MEETING

A. A pre-construction meeting shall be held on-site to include a presentation of tree protection measures to operators, construction supervisors, Contractor's representatives, by the Dir. of Physical Plant Operations.

3.2 SEQUENCE

A. Grading limits shall be rough staked by Contractor with the Dir. of Physical Plant Operations in order to facilitate location for trenching and fencing installation. No clearing or grading shall begin in areas where tree treatment and preservation measures have not been completed.

B. The sequence of tree treatment and preservation shall be:
   1. Rough stake grading limits.
   2. Prune offending tree limbs and branches as designated by the Dir. of Physical Plant Operations. (College performs work)
   3. Perform root pruning where necessary and as directed by the Dir. of Physical Plant Operations. (College performs work)
   4. Install Tree Protection Fencing. (College performs work)
   5. Construction activities including demolition and construction begin.
   6. Enforce the Protection Zones outlined by the Tree Protection Fencing specification.
   7. Aerate soil and turf areas throughout the entire construction area after all construction is completed with equipment approved by the College. (College performs work)

C. Above measures shall be directed in the field by the Owner's Representative with the Dir. of Physical Plant Operations.

D. Tree protection fencing shall be maintained and repaired by the Contractor for the duration of construction. It must not be altered without prior approval by the Dir. of Physical Plant Operations.

E. Access to fenced areas by equipment, materials or individuals that may cause harm to protected trees will only be permitted with the prior approval of the Dir. of Physical Plant Operations.

F. Trees, shrubs or undergrowth shall be removed from protected areas only when necessary and shall be performed with hand tools only.

G. Attachment of signage, fencing, etc. to any tree to be saved is prohibited.

H. After construction, all temporary barriers, fencing, debris, etc. shall be removed from the site by the Contractor.

3.3 TREE PRESERVATION WORK

A. Traffic Control:
1. Tree roots are mostly concentrated in the top 12 to 18 inches of the soil and spread two to three times the width of the branches. Protect roots within the drip line of the tree(s). The College will erect a 4-ft. high fence, based on the pre-construction meeting and other field meetings between the Dir. of Physical Plant Operations and the Contractor, to prevent damage from excavation, soil compaction or stockpiling of soil over roots. Remove fencing only after all construction work is done, including final grading and smoothing of site.

B. Removal of Unwanted Trees:
1. Take care removing unwanted trees to insure that removal measures do not injure existing trees to be saved. Trees less than 2” caliper, measured 6” above ground, to be removed shall be cut with hand tools only and the stump ground out with rotary stump grinders. No tree shall be pushed over with equipment in a manner that will disrupt roots of nearby trees to be preserved. All removal shall be done under the direction of the Dir. of Physical Plant Operations.

C. Root Pruning:
1. Clean cuts to roots seal off quickly and prevent disease-causing problems. Prevent ragged, rough wounds from dull or improper equipment. Avoid use of bulldozer tearing roots leaving wound that will not seal readily. Use stump grinders to root prune along lines, as directed by Dir. of Physical Plant Operations. Nearby excavation can occur after root pruning. This will insure clean-cut roots. Any exposed roots that appear to be ragged or torn should be cut cleanly with a sharp pruning saw. Trees shall be mulched to help wound closure and regrowth. Do not allow exposed roots to dry out. All root pruning to be performed only under the supervision of the Dir. of Physical Plant Operations.

D. Tunneling:
1. Tunneling shall occur at the locations shown on the drawings. Tunneling should occur at a depth of at least two feet below ground. Tunneling in locations other than those shown shall only occur with approval of the Dir. of Physical Plant Operations.

E. Soil Compaction Prevention/Soft Access:
1. Use temporary wood chip mulch, gravel or bridges to prevent soil compaction around roots when fencing to prevent compaction traffic is not

possible. Place wood chips or gravel 6 to 12 inches deep on top of a geotextile landscape fabric placed over the root zone of the trees to be protected. Place one-inch plywood over the mulch to accommodate large truck traffic (cranes, drilling rigs, etc.).

F. Grade Changes:
1. Maintain existing grade within drip line of trees. Cutting soil or filling soil from a tree will change the root system and moisture level. Limit cuts or fill within the drip line. Any cuts or fill over 3” must be approved by the Dir. of Physical Plant Operations.

G. Raising Grades:
1. Minor Fills: Where existing grade is 6” or less below elevation of finish grade shown, use topsoil fill material specified. Place in single layer and do not compact; hand grade to required finish elevations.
2. Moderate Fills: Where existing grade is more than 6” and less than 12” below grade elevation, carefully place 2” above finish grade elevation and extend not less than 18” from tree trunk on all sides. For balance of area within drip line perimeter, place drainage fill to an elevation 6” below grade and complete fill with a layer of topsoil to finish grade elevation. Do not compact drainage fill or topsoil layers; hand grade to required elevations.

H. Lowering Grades:
1. Where existing grade is above new finish grade shown around trees, gradually slope grade away from trees, as recommended by Dir. of Physical Plant Operations. Do not reduce grade within drip line, unless directed by Dir. of Physical Plant Operations.

3.4 PENALTY FOR PROTECTION VIOLATION

A. Contractor shall be aware that the Owner will assess a $1,000 (One Thousand Dollar) penalty for each and every violation of the following list of required tree protection items:
1. Parking over the tree root zone.
2. Noxious materials run-off spilled on tree root zone, including concrete wash-out.
3. Removal of tree protection fence before completion of construction. Owner must be notified prior to removal.
4. Failure to mark trenches within root zone for Dir. of Physical Plant Operations review before trenching.
5. Storage of materials over tree root zone area.
6. Failure to prevent sediment build-up within tree root zone.
7. Burning under or adjacent to trees.
8. Failure to use hand demolition and/or excavation within root zone.
9. Cutting of roots over one-inch in diameter in trenches when root is not crossing at same elevation as pipe or conduit.
10. Failure to use proper fill procedures when filling within a tree protection zone.

3.5 PENALTY FOR IRREPARABLE HARM OR DEATH

A. Should the tree be irreparably harmed or killed by damage caused by the Contractor, the Contractor shall reimburse Lake Land College the value of the tree as determined by the International Society of Arboriculture tree valuation methodology.

END OF SECTION 01 4500

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Temporary Utilities:
   1. Temporary electricity.
   2. Temporary lighting for construction purposes.
   3. Temporary heating.
   4. Temporary ventilation.
   5. Temporary water service.
   6. Temporary sanitary facilities.

B. Construction Facilities:
   1. Field offices and sheds.
   2. Vehicular access.
   3. Parking.
   4. Progress cleaning and waste removal.
   5. Project identification.
   6. Traffic regulation.

C. Temporary Controls:
   1. Barriers.
   2. Enclosures and fencing.
   3. Security.
   4. Water control.
   5. Dust control.
   6. Erosion and sediment control.
   7. Noise control.
   8. Pollution control

D. Removal of utilities, facilities, and controls.

1.2 TEMPORARY ELECTRICITY

A. Provide and pay for power service required from utility source as needed for construction operation. Utilize Owner’s existing power service, provide separate metering and reimburse Owner for cost of energy used.

B. Provide temporary electric feeder from existing electrical service at location as directed by Owner’s Representative. Do not disrupt Owner's use of service.

C. Power Service shall be of phase and volts as required to do the work of this project.

D. Complement existing power service capacity and characteristics as required for construction operations.

E. Provide power outlets, with branch wiring and distribution boxes located as required for construction operations. Provide flexible power cords as required for portable construction tools and equipment. Unplug when not in use. Do not use plug adaptors.

F. Provide main service disconnect and over-current protection at convenient location.

G. Permanent convenience receptacles may be utilized during construction.

H. Provide distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.
   1. Provide 20 ampere duplex outlets, single phase circuits for power tools for every 200 sq.ft. of active work area.
   2. Provide 20 ampere, single phase branch circuits for lighting.

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain movable lighting fixtures for construction operations, as needed to achieve minimum lighting level of 1,000 fc. These fixtures shall only be used at construction areas a minimum of 100 feet from the centerlines of adjacent roads.

B. Provide outdoor outlets from power source to distribution boxes with lighting conductors, pigtails, and lamps for specified lighting levels. No nighttime security lighting is needed.

C. Maintain lighting and provide routine repairs. Lighting shall not shine toward adjacent residences.

D. Permanent building lighting may be utilized during construction.

1.4 TEMPORARY HEATING

A. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations. Lake Land College will not provide additional compensation to the Contractor due to cold or inclement weather conditions for extra measures for cold weather concrete pouring, protection and tenting and/or heating of work areas. It is the responsibility of the contractor to plan for these conditions in his lump sum bid.

B. Prior to operation of permanent equipment for temporary heating purposes, verify installation is approved for operation, equipment is lubricated and filters are in place, as applicable. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

C. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in product sections.

1.5 TEMPORARY VENTILATION

A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

B. Utilize existing ventilation equipment. Extend and supplement equipment with temporary fan units as required to maintain clean air for construction operations.

1.6 TEMPORARY WATER SERVICE

A. Provide and pay for suitable quality water service and water used as needed to maintain specified conditions for construction operations. Connect to existing water source. Provide separate metering to track the amount of water used.

B. Extend branch piping with outlets located so water is available by hoses with threaded connections.

1.7 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required portable facilities and enclosures. Provide facilities at time of project mobilization.

B. At end of construction, return existing site areas and facilities used for construction operations to same or better condition as original condition.

C. Obtain prior approval of Owner for the location of portable sanitary facilities.

1.8 FIELD OFFICES AND SHEDS

A. Do not use existing facilities for field offices or for storage, unless directed by the Owner.

B. Office: Weather tight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with folding chairs and drawing display tables.

C. A space for project meetings, with table and chairs to accommodate 6 persons will be provided within Neil Hall.

D. Locate offices and sheds minimum distance of 50 feet from existing and new structures at level locations to receive compaction and a minimum of 100 feet away from adjacent residences.

E. Construction: Portable or mobile buildings, or buildings constructed with floors raised above ground, securely fixed to foundations with steps and landings at entrance doors.
   1. Construction: Structurally sound, secure, weather tight enclosures for office and storage spaces. Maintain during progress of Work; remove when no longer needed.

2. Temperature Transmission Resistance of Floors, Walls, and Ceilings: Compatible with occupancy and storage requirements.
3. Exterior Materials: Weather resistant, white color. Advertising shall be minimal in size, able to be viewed from a 10-foot distance and no more.
4. Interior Materials in Offices: Sheet type materials for walls and ceilings, pre-finished or painted; resilient floors and bases.
5. Lighting for Offices: 50 fc. at desktop height, exterior lighting at entrance doors.
6. Fire Extinguishers: Appropriate type fire extinguisher at each office and each storage area.
7. Interior Materials in Storage Sheds: As required to provide specified conditions for storage of products.

F. Environmental Control:
1. Heating, Cooling, and Ventilating for Offices: Automatic equipment to maintain comfort conditions. 70 degrees F heating and 76 degrees F cooling.

G. Storage Areas and Sheds: Size to storage requirements for products of individual Sections, allowing for access and orderly provision for maintenance and for inspection of products to requirements of Section 01 6000.

H. Preparation: Fill and grade sites for temporary structures sloped for drainage away from buildings.

I. Installation:
1. Install office spaces ready for occupancy 21 calendar days after date fixed in Owner-Contractor Agreement.
2. Employee Residential Occupancy: Not allowed on Owner's property.

J. Maintenance And Cleaning:
1. Periodic cleaning and maintenance for office areas.
2. Maintain approach walks free of mud, water, and snow.

K. Removal: At completion of Work remove buildings, foundations, utility services, and debris. Restore areas.

1.9 VEHICULAR ACCESS

A. Construct temporary gravel access roads from public thoroughfares at future paved routes to serve construction area, of width and load bearing capacity to accommodate unimpeded traffic for construction purposes.

B. Utilize staging and access areas shown and described on the drawings. Access for large vehicles such as cement trucks may have very limited access to work areas due to the location of recently completed work on in the park.

C. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage. Restore these areas.

D. Extend and relocate vehicular access as Work progress requires, provide detours as necessary for unimpeded traffic flow.

E. Location approved by Owner's Representative.

F. Provide unimpeded access for emergency vehicles. Maintain driveways with turning space between and around combustible materials.

G. Provide and maintain access to fire hydrants and control valves free of obstructions.

H. Provide means of removing mud from vehicle wheels before entering streets.

I. Use designated existing on-site roads for construction traffic.

1.10 PARKING

A. Use of existing on-street parking is permitted for contractor personnel parking. Tracked vehicles not allowed on paved areas unless approved by the Owner.

B. When site space is not adequate, provide additional off-site parking.

C. Use of designated areas of existing parking facilities used by construction personnel is permitted, if coordinated with Lake Land College.

D. Do not allow heavy vehicles or construction equipment in parking areas.

E. Permanent Pavements And Parking Facilities:
1. Bases for permanent roads and parking areas may be used for construction traffic. Verify final elevations are adequate.
2. Avoid traffic loading beyond paving design capacity. Tracked vehicles not allowed.

F. Maintenance:
1. Maintain traffic and parking areas in sound condition free of products, mud, snow, and ice.
2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain drainage in original, or specified, condition.

G. Removal, Repair:
1. Remove temporary materials and construction at Substantial Completion.
2. Remove underground work and compacted materials to depth of two feet; fill and grade site as specified.
3. Repair existing and permanent facilities damaged by use, to original specified condition.

H. Mud From Site Vehicles: Provide means of removing mud from vehicles before entering streets.

1.11 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

B. Remove debris and rubbish from the site construction area.

C. Broom and vacuum clean exterior areas, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from site weekly and dispose off-site.

1.12 PROJECT IDENTIFICATION

A. Project Identification Sign:
   1. One painted sign at location to be determined by Owner.
   2. Content:
      a. Project title, logo and name of Owner as indicated on Contract Documents.
      b. Names and titles of city authorities.
      c. Names and titles of Owner's Representative and Consultants.
      d. Name of Prime Contractor and major Subcontractors.
   3. Graphic Design, Colors, and Style of Lettering to be determined.

B. Design sign and structure to withstand 60 miles/hr wind velocity.

C. Sign Painter: Experienced as professional sign painter for minimum three years.

D. Finishes, Painting: Adequate to withstand weathering, fading, and chipping for duration of construction.

E. Contractor shall provide a proposed sign mock-up on 11 x 17 paper, in color, showing design, text, content, layout, lettering, color, foundation, structure, sizes, and grades of members for approval by Owner prior to fabricating sign.

F. Sign Materials:
   1. Structure and Framing: New, wood, and structurally adequate.
   2. Sign Surfaces: Exterior grade plywood with medium density overlay, minimum 4 x 8 x ¾" thick, standard large sizes to minimize joints.
   3. Rough Hardware: Galvanized.
   4. Sign material: Prefabricated sign on continuous plastic sheet with color graphics imprinted, as indicated.
   5. Lettering: Exterior quality paint, colors as selected.

G. Installation:
   1. Install project identification sign within 21 calendar days after date fixed by Owner-Contractor Agreement.
   2. Erect at location designated by the Owner's Representative.
   3. Erect supports and framing on foundation, rigidly braced and framed to resist wind loadings.

4. Install sign surface plumb and level, with butt joints. Anchor securely to allow less than ¼" front to back or side to side movement.
5. Paint exposed surfaces of sign, supports, and framing.

H. Maintenance: Maintain signs and supports clean, repair deterioration and damage.

I. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore area.

1.13 TRAFFIC REGULATION

A. Signs, Signals, And Devices:
1. Traffic Cones and Drums, Flares and Lights: As approved by authority having jurisdiction.

B. Haul Routes:
1. Consult with Owner's Representative, establish public thoroughfares to be used for haul routes and site access.
2. Utilize paved routes indicated on the drawings or as coordinated with Lake Land College for haul routes for use of construction traffic.
3. Confine construction traffic to designated haul routes.
4. Provide traffic control where haul routes meet with public streets at times of material transport, to minimize interference with public traffic.

C. On-Site Equipment Plan:
1. Contractor shall submit to the Owner's Representative an on-site equipment plan which describes the type and quantity of all construction equipment and machinery to be used on the project.
2. The on-site equipment plan shall also include a description of all proposed access points and routes the equipment will use along with the duration of time the equipment will be on-site, and any temporary storage areas the equipment will require.
3. The purpose of this plan is to insure that the existing environmental conditions, particularly the existing vegetation, will be adequately protected and preserved.

1.14 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas.

B. Provide protection for plants designated to remain. Replace damaged plants.

C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.15 ENCLOSURES AND FENCING

A. Construction: Plastic construction netting.

B. Provide fence around construction sites, as indicated; equip with sections, which may be opened, periodically for contractor movement.

1.16 SECURITY

A. Security Program:
   1. Protect Work, including Owner's occupied areas, from theft, vandalism, and unauthorized entry.

B. Entry Control:
   1. Restrict entrance of persons and vehicles into Project site and existing facilities, except as otherwise noted in Section 01 1000.
   2. Allow entrance only to authorized persons with proper identification to areas under construction.
   3. Maintain log of visitors to the site involved with utilities, inspection and public approval, as well as adjacent neighbors; make available to Owner on request.

1.17 WATER CONTROL

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion and pollution to adjacent sites.

1.18 DUST CONTROL

A. Execute Work by methods to minimize raising dust from construction operations.

B. Provide periodic water spray to prevent air-borne dust from dispersing into atmosphere.

1.19 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Minimize surface area of bare soil exposed at one time.

C. Provide temporary measures including berms, dikes, and drains, and other devices to prevent water flow and ponding.

D. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

E. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

1.20 NOISE CONTROL

A. Provide methods, means, and facilities to minimize noise from noise produced by construction operations.

1.21 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

1.22 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Final Application for Payment inspection.

B. Remove underground installations to minimum depth of two feet. Grade site as indicated on Drawings.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing and permanent facilities used during construction to original condition acceptable to Owner. Restore permanent facilities used during construction to specified condition.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01 5000

SECTION 01 6000 - PRODUCT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Product delivery requirements.

C. Product storage and handling requirements.

D. Product options.

E. Product substitution procedures.

1.2 PRODUCTS

A. Furnish products of qualified manufacturers suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise.

B. Do not use materials and equipment removed from existing premises, except as specifically permitted by Contract Documents.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products in accordance with manufacturers' instructions.

B. Store with seals and labels intact and legible.

C. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.

D. For exterior storage of fabricated products, place on sloped supports above ground.

E. Provide bonded off-site storage and protection when site does not permit on-site storage or protection. Cost for bonded storage shall be included in the lump sum bid price.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

H. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of one of manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for any manufacturer not named in accordance with the following article.

1.6 PRODUCT SUBSTITUTION PROCEDURES

A. Landscape Architect/Engineer will consider requests for Substitutions within 21 calendar days after date of Owner-Contractor Agreement, provided that written information is submitted, including product literature.

B. Substitutions may be considered when a product becomes unavailable through no fault of Contractor.

C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

D. A request constitutes a representation that Contractor:
   1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
   2. Will provide same warranty for Substitution as for specified product.
   3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension which may subsequently become apparent, unless the product is obsolete or no longer available.
   5. Will reimburse Owner and Landscape Architect/Engineer for review or redesign services associated with re-approval by authorities having jurisdiction, unless the product is obsolete or no longer available.

E. Substitutions may not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request, or when acceptance will require revision to Contract Documents that take more than 4 hours time.

F. Substitution Submittal Procedure:
   1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
   2. Submit Shop Drawings, Product Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.
   3. Architect/Engineer will notify Contractor in writing of decision to accept or reject request within 7 business days of receipt.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION 01 6000

SECTION 01 7000 - EXECUTION REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Closeout procedures.

B. Final cleaning.

C. Starting of systems.

D. Demonstration and instructions.

E. Protecting installed construction.

F. Project record documents.

G. Operation and maintenance data.

H. Manual for materials and finishes.

I. Spare parts and maintenance products.

J. Product warranties and product bonds.

1.2 CLOSEOUT PROCEDURES

A. Submit written certification to the Owner's Representative that the Work has been inspected and is complete in accordance with Contract Documents and ready for final review.

B. Provide final submittals to Owner's Representative required by this section and authorities having jurisdiction.

C. Owner's Representative meets with contractor on site for review and decides if the work is substantially complete. If it is substantially complete to the satisfaction of the Owner's Representative, he will submit one copy each to the Owner, Landscape Architect-Engineer and Contractor of a standard AIA Certificate of Substantial Completion, with any applicable final punch list items. If the Owner's Representative decides that the work is not substantially complete, he will submit written notification of outstanding items. The Contractor has a maximum of 21 calendar days, unless agreed upon otherwise, to complete these outstanding items.

D. Once a Substantial Completion Certificate is submitted to the above mentioned parties, submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

E. Notify Owner's Representative when punch list items have been addressed, for an inspection of these items. When, in the opinion of the Owner's Representative, the items have been addressed, he will submit one copy each of written notification signifying final completion. Final acceptance is defined as when all punch list items have been determined to be complete by either the Owner or Owner's Representative and the Contractor is authorized to submit the final pay application.

F. Upon receipt of final completion, submit final application for payment.

1.3 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces.

C. Clean equipment and fixtures to sanitary condition with cleaning materials appropriate to surface and material being cleaned.

D. Clean or Replace filters of operating equipment.

E. Clean debris from roofs, gutters, downspouts, and drainage systems.

F. Clean site; sweep paved areas, rake clean landscaped surfaces.

G. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.4 STARTING OF SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Owner's Representative five calendar days prior to start-up of each item.

C. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.

D. Verify tests, meter readings, and specified electrical characteristics agree with those required by equipment or system manufacturer.

E. Verify wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision as applicable, in accordance with manufacturers' instructions.

1.5 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion final inspection.

B. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment as appropriate.

D. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

E. Required instruction time for each item of equipment and system is specified in individual sections.

1.6 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, building jambs, sills, and soffits of openings, as well as site furnishings. Remove coverings at final completion.

D. Protect finished floors, exterior stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials. Repair or replace at no expense to the Owner.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas. Erect post and rope barriers if requested by Owner’s Representative.

1.7 PROJECT RECORD DOCUMENTS

A. Maintain on site one set of the following record documents; record actual revisions to the Work:
   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed Shop Drawings, Product Data, and Samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.
   4. Provide check marks where specified product is used.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
   1. Measured approximate depths of foundations in relation to finish floor or grade datum.
   2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   4. Field changes of dimension and detail.
   5. Details not on original Contract drawings.

G. Submit documents to Owner’s Representative with claim for final Application for Payment.

1.8 OPERATION AND MAINTENANCE DATA (for Applicable Systems)

A. Submit data bound in 8-1/2 x 11 inch text pages, three D side ring binders with durable plastic covers.

B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project.

C. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

D. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

E. Contents: Prepare Table of Contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Owner’s Representative, Contractor, Subcontractors, and major equipment suppliers.
   2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names,

addresses, and telephone numbers of Subcontractors and suppliers.
Identify the following:
a. Significant design criteria.
b. List of equipment.
c. Parts list for each component.
d. Operating instructions.
e. Maintenance instructions for equipment and systems.
f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.

3. Part 3: Project documents and certificates, including the following:
a. Shop drawings and product data.
b. Applicable reports.
c. Certificates.
d. Photocopies of warranties.

1.9 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products available at the time of construction.

B. Deliver to Project site and place in location as directed; obtain receipt and deliver prior to final payment.

1.10 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work. The start date for all warranties shall be the date indicated on the Certificate of Substantial Completion unless modified by the punch list items or as stated in this section.

B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Submit prior to final Application for Payment.

F. Time Of Submittals:
1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 PRODUCTS AND PART 3 EXECUTION

Not Used.

END OF SECTION 01 7000

SIGNATURE SHEET

The following individuals are responsible for the specification sections indicated to the left of their seal.

DIVISION 26 ELECTRICAL

26 0523	Building Wire & Cable
26 0526	Grounding & Bonding
26 0530	Conduit
26 0533	Boxes
26 0553	Electrical Identification
26 5629	Site Lighting

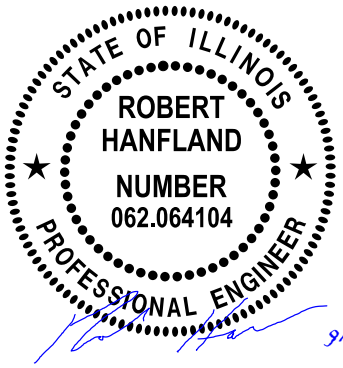
RTM - Electrical

DIVISION 3 **CONCRETE**
03 3000 Cast-in-Place Concrete

DIVISION 4 **MASONRY**
04 2000 Unit Masonry

09/16/2025

CDI - Structural



9/16/2025

EXP:11/30/2005

CDI – Civil

DIVISION 02 EXISTING CONDITIONS
02 4100 Demolition

DIVISION 4 MASONRY
04 7200 Architectural Cast Stone

DIVISION 31 EARTHWORK
31 1000 Site Clearing

DIVISION 32 EXTERIOR IMPROVEMENTS
32 1413 Concrete Paver Materials
32 3119 Decorative Metal Fences and Gates
32 8423 Underground Sprinklers (Alternate Bid #1)
32 9219 Seeding
32 9223 Sodding
32 9300 Plants

END OF SECTION 00000

SECTION 02 4100 - DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Selective demolition of built site elements.

B. Abandonment and removal of some existing utilities and utility structures.

1.2 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

C. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

D. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

E. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

F. Section 31 1000 - Site Clearing: Vegetation and existing debris removal.

G. Section 32 9300 - Plants: Relocation of existing trees, shrubs, and other plants.

1.3 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Site Plan: Indicate:
   1. Areas for temporary construction and field offices.

C. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PART 3 EXECUTION

2.1 DEMOLITION

A. Remove the entire existing pavilion shown on the demolition plans.

B. Remove paving and curbs required to accomplish new work.

C. Remove other items indicated, for salvage, relocation, recycling, and removal.

D. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as specified on the grading plans.

2.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   5. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
   6. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
   7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements to remain in place and not removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

D. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

2.3 EXISTING UTILITIES

A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

2.4 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 02 4100

SECTION 03 3000 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Concrete formwork.
   2. Floors and slabs on grade.
   3. Concrete reinforcement.
   4. Concrete curing.

1.2 REFERENCE STANDARDS

A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.

B. ACI 301 - Specifications for Structural Concrete; 2010 (Errata 2012).

C. ACI 302.1R - Guide for Concrete Floor and Slab Construction; 2004 (Errata 2007).

D. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; 2000.

E. ACI 305R - Hot Weather Concreting; 2010.

F. ACI 306R - Cold Weather Concreting; 2010.

G. ACI 308R - Guide to Curing Concrete; 2001 (Reapproved 2008).

H. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; 2011.

I. ACI 347R - Guide to Formwork for Concrete; 2014.

J. ACI SP-66 - ACI Detailing Manual; 2004.

K. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2015.

L. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2015.

M. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2013.

N. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2015a.

O. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2015a.

P. ASTM C150/C150M - Standard Specification for Portland Cement; 2015.

Q. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2015.

R. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011.

S. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.

T. CRSI (DA4) - Manual of Standard Practice; 2009.

U. CRSI (P1) - Placing Reinforcing Bars; 2011.

1.3 SUBMITTALS

A. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.

B. Mix Design: Submit proposed concrete mix design.
1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.

C. Shop Drawings (Concrete Reinforcing): Comply with requirements of ACI SP 66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

D. Manufacturer's Certificate: Certify that reinforcing steel and accessories supplied for this project meet or exceed specified requirements.

E. Manufacturer's Installation Instructions: For concrete accessories, indicate installation procedures and interface required with adjacent construction.

F. Reports: Submit certified copies of mill test report of reinforcement materials analysis.

G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.4 QUALITY ASSURANCE

A. Perform work of this section in accordance with ACI 301 and ACI 318.

B. Follow recommendations of ACI 305R when concreting during hot weather.

C. Follow recommendations of ACI 306R when concreting during cold weather.

D. Welders' Certificates: Submit certifications for welders employed on the project, verifying AWS qualification within the previous 12 months.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver prefabricated forms and installation instructions in manufacturer’s packaging.

PART 2 PRODUCTS

2.1 REINFORCEMENT

A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi) (420 MPa).
   1. Type: Deformed billet-steel bars.
   2. Finish: Unfinished, unless otherwise indicated.

B. Steel Welded Wire Reinforcement (WWR): Galvanized, plain type, ASTM A1064/A1064M.
   1. Form: Coiled Rolls.
   2. WWR Style: 4 x 8-W6 x W10 (102 x 203-MW39 x MW65).

C. Steel Welded Wire Reinforcement: ASTM A 185/A 185M, plain type.

D. Reinforcement Accessories:
   1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch (1.29 mm).
   2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.2 CONCRETE MATERIALS

A. Cement: ASTM C150/C150M, Type I - Normal Portland type.

B. Fine and Coarse Aggregates: ASTM C 33Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

C. Fly Ash: ASTM C618, Class C or F.

D. Water: Clean and not detrimental to concrete.

2.3 CONCRETE MIX DESIGN

A. Normal Weight Concrete:
   1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days.
   2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.

B. Footings and Pedestals:
   1. Exposure categories: F2, S0, C1, W0
   2. Maximum water-cement ratio = 0.45
   3. Minimum 28-day compressive strength = 4500 psi
   4. Nominal maximum aggregate size = 3/4 inches
   5. Air content = 4.5% +/- 1.5%

1.1 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.

B. Welding of reinforcement is not permitted.

PART 2 EXECUTION

2.1 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

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

B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

D. Do not displace or damage vapor barrier.

2.2 PLACING CONCRETE

A. Place concrete in accordance with ACI 304R.

B. Place concrete for floor slabs in accordance with ACI 302.1R.

C. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

D. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.

E. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.

F. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

2.3 SLAB JOINTING

A. Locate joints as indicated on the drawings.

B. Anchor joint fillers and devices to prevent movement during concrete placement.

C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.

D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch (5 mm) thick blade and cut at least 1 inch (25 mm) deep but not less than one quarter (1/4) the depth of the slab.

2.4 FLOOR FLATNESS AND LEVELNESS TOLERANCES

A. Maximum Variation of Surface Flatness:
   1. Exposed Concrete Floors: 1/4 inch (6 mm) in 10 feet (3 m).
   2. Under Seamless Resilient Flooring: 1/4 inch (6 mm) in 10 feet (3 m).
   3. Under Carpeting: 1/4 inch (6 mm) in 10 feet (3 m).

B. Correct the slab surface if tolerances are less than specified.

C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

2.5 CONCRETE FINISHING

A. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
   1. Other Surfaces to Be Left Exposed: Trowel as described in ACI 302.1R, minimizing burnish marks and other appearance defects.

2.6 CURING AND PROTECTION

A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Surfaces Not in Contact with Forms:
   1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
   2. Final Curing: Begin after initial curing but before surface is dry.

2.7 DEFECTIVE CONCRETE

A. Test Results: The testing agency shall report test results in writing to Architect and Contractor within 24 hours of test.

B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

C. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

2.8 PROTECTION

A. Do not permit traffic over unprotected concrete floor surface until fully cured.

2.9 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

END OF SECTION 03 3000

SECTION 04 2000 – UNIT MASONRY

PART 1 GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Concrete masonry units
   2. Brick masonry units
   3. Mortar and grout
   4. Reinforcement and anchorage
   5. Flashings
   6. Accessories
   7. Joint sealants
   8. Footings

1.2 REFERENCE STANDARDS

A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International; 2013.

B. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement; 2007.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.

D. ASTM A580/A580M - Standard Specification for Stainless Steel Wire; 2012a.

E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon Steel Bars for Concrete Reinforcement; 2012.

F. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire; 2009a.

G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process; 2011.

H. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, And Flat Bar; 2010.

I. ASTM C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile; 2012.

J. ASTM C150/C150M - Standard Specification for Portland Cement; 2012.

K. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes; 2006 (Reapproved 2011).

1.3 SUBMITTALS

A. Product data for masonry units, fabricated wire reinforcement, masonry accessories, and stainless-steel flashing.

B. Samples and Mockup:
   1. Brick samples, showing full color range and texture of brick, bond, and proposed mortar joints.
   2. Provide a mockup of wall installation for approval by Owner's Representative prior to beginning installation. Mockup shall show the full range of brick colors, mortar, cast stone, and joint sealant.

C. Certificates:
   1. Certificates signed by manufacturer, including name and address of contractor, project location, and the quantity and date or dates of shipment of delivery to which certificate applies.
   2. Indicating that the following items meet specification requirements:
      a. Brick masonry units.

D. Manufacturer's certificate: certify that masonry units meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.

B. Mock Up: Provide full size unit(s) for use in construction of sample wall. The approved mock-up shall become the standard for appearance and workmanship for the project.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain materials and surrounding air temperature to minimum 40 degrees F (5 degrees c) prior to, during, and 48 hours after completion of masonry work.

B. Cold weather requirements: comply with recommendations of IMIAWC (CW).

C. Maintain materials and surrounding air temperature to maximum 90 degrees F (32 degrees c) prior to, during, and 48 hours after completion of masonry work.

D. Hot weather requirements: comply with IMIAWC (HW).

PART 2 PRODUCTS

A. Minimum specified compressive strength of CMU at 28 days, f'm=2500 PSI.

2.2 CONCRETE MASONRY UNITS

A. Weight: Normal weight

B. Compressive strength: ASTM C90, Hollow. Unit compressive strength, f'cmu=3250 PSI, Min average net area. Density: normal weight.

C. Nominal size: as indicated on the drawings

D. Actual size: 3/8" less than nominal size

E. Aggregates: Normal weight, ASTM C33

2.3 BRICK MASONRY UNITS

A. Manufacturers:
   1. Midwest Block and Brick, St. Louis, MO. Or approved equal.
   2. Richards Brick, St. Louis, MO. Or approved equal.

B. Pattern: Running bond, or as indicated on the drawings.

C. Facing brick:
   1. ASTM C 216, type FBS, grade SW
   2. To match existing building exterior brick (at Neal Hall)
   3. Modular – 3-5/8" x 7-5/8" x 2-1/4"
   4. Brick when tested in accordance with ASTM C67: classified "not efflorescent".

2.4 MORTAR MATERIALS

A. Manufacturers: Solomon Colors, Inc. Or approved equal

B. Mortar and grout:
   1. Masonry cement: ASTM C 91, Type S:
      a. Cement shall be nonstaining. Nonstaining cement shall contain not more than 0.03% of water soluble alkali when determined in accordance with section 14; ASTM C91-95.

b. Color: match mortar color used on Neal Hall.

2. Portland cement: ASTM C 150 Type I - normal.
   a. Gray. Contractor to submit samples with brick masonry submittal for final approval.
3. Hydrated lime: ASTM C 207, Type S.
4. Mortar aggregate: ASTM C 144.
5. Water: clean and potable.
6. Liquid: acrylic resin:
   a. A formulation of acrylic polymers and modifiers in liquid form designed for use as an additive for mortar to improve the physical properties.
7. Mortar for CMU:
   a. ASTM C270, Type “S”, by proportions
   b. Mortar-Cement mortar or Cement-Lime mortar. Do not use Masonry-Cement mortar for CMU.
   c. Do not use calcium chloride in mix.

C. Mortar mixes
1. Mortar for unit masonry: comply with ASTM C 270, property specification, for job mixed mortar and ASTM C1142-94 for ready mixed mortars of types indicated below.
   a. Masonry below grade and in contact with earth: Type M.
   b. Exterior, non-loadbearing masonry: Type N.
   c. All other masonry work unless specified otherwise: Type S.
   d. Mortar mixing - mix per ASTM C 270 and in quantities needed for immediate use.

D. Grout mixes
1. Bond beams and lintels: 8-10 inches slump; mix in accordance with ASTM C 476.
   a. Fine grout for spaces with smallest horizontal dimension of 2 inches (50 mm) or less.
   b. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches (50 mm).
2. Grout for CMU:
   a. ASTM C476, Coarse.
   b. Average compressive strength at 28 days, f’g=2500 PSI.
   c. Do not use calcium chloride in mix.

2.5 REINFORCEMENT AND ANCHORAGE

A. Manufacturers of joint reinforcement and anchors:
1. Dur-O-Wal: www.dur-o-wal.com.
2. Hohmann & Barnard, Inc: www.h-b.com.
3. Wire-bond: www.wirebond.com.
4. Substitutions: see Section 01 6000 - Product Requirements.

B. Masonry veneer anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, stainless steel.
   1. Anchor plates: not less than 0.075 inch (1.91 mm) thick, 3/4" wide x 9" long with 3/8" offset designed for fastening to backup through sheathing by two fasteners.
   2. Wire ties: trapezoidal, manufacturer's standard shape, 3/16 inch (11.05 mm) thick.
   3. Vertical adjustment: not less than 2 inches (51 mm).

C. Single width joint reinforcement w/adjustable veneer anchors: 2-piece anchor that permits differential movement between masonry veneer and structural backup, contractor to provide stainless steel. Hot dip galvanized to ASTM A153/A153M, Class B as alternate.
   1. 1. Ladder type with winged loops and pintirs.
   2. 2. Same as Hohmann and Barmand, Inc.'s "#265 ladder adjustable reinforcement wire."

2.6 FLASHINGS

A. Stainless steel flashing: ASTM A 666, Type 304, soft temper; 26 gage (0.45 mm) thick; finish 2b to 2d.

B. Lap sealant: mastic or elastic sealant.

2.7 REINFORCEMENT

A. Use wire joint reinforcing.

2.8 ACCESSORIES

A. Joint filler: closed cell polyvinyl chloride; oversized 50 percent to joint width; self expanding.

B. Weep Vent:
   1. One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than the depth of the outer wythe.
   2. Match color selection with mortar color.

C. Cleaning solution: light muriatic acid: "Sure Clean 600" By Persoco.

D. Fasteners:
   1. Concrete: FS FF-P-395, Types I, II or III, Class 1, Style, PC, power actuated pins.
   2. Screws: FS-FF-S-107, Type A, AB, SF thread forming or cutting.

E. Mortar Net:
1. Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
2. Strips, full depth of cavity and 10 inches high, with dovetail-shaped notches 7 inches deep that prevent clogging with mortar droppings.

2.9 JOINT SEALANTS

A. Manufacturers
1. Silicone sealants:
a. Dow Corning Corp.
b. General Electric Company.
c. Pecora Corporation.
d. Tremco, Inc.
2. Polyurethane sealants:
a. Pecora Corp.
b. Sonneborn Building Products.
c. Tremco, Inc.

B. Sealants
1. General requirements
a. Sealant systems shall be compatible with contacting membranes, premolded joint filler, and fluid applied waterproofing systems.
b. Sealant systems shall not stain adjacent exposed surfaces.
c. Manufacturer's standard color range shall permit matching sealants to color of contacting surfaces.
2. Sealant type 2 (typical sealant at wet areas): one part silicone rubber sealant, mildew, mold and fungus resistant, color as selected by owner's representative. Same as GE Silicone's "Sanitary 1700 Silicone Sealant"; or approved equal.
a. Color as selected by owner's representative from manufacturer's standard range.
b. Polyurethane for exterior paving, masonry control joints, etc.
3. Accessories
a. Primer: non-staining type, recommended by sealant manufacturer to suit application.
b. Joint backing: round foam rod compatible with sealant; ASTM D 1667, closed cell PVC; oversized 30 to 50 percent larger than joint width.
c. Bond breaker: pressure sensitive tape recommended by sealant manufacturer to suit application.

2.10 FOOTINGS

A. Footings shall be structurally engineered to meet local codes and site conditions.

PART 3 EXECUTION

3.1 JOB CONDITIONS

A. Protection:
   1. Cover tops of walls with non-staining waterproof covering, when work is not in progress. Secure to prevent wind blow off.
   2. On new work, protect base of wall from mud, dirt, mortar droppings, and other materials that will stain face, until final landscaping or other site work is complete.

B. Cold weather protection:
   1. Masonry may be laid in freezing weather when methods of protection are utilized.
   2. Comply with "Recommended Practices For Cold Weather Construction" (CW) for cold weather masonry construction.

C. Hot weather practices:
   1. Comply with IMIAWC (HW), for hot weather masonry construction.

3.2 CONSTRUCTION TOLERANCES

A. Lay masonry units plumb, level and true to line within the tolerances specified.

B. Maximum variation from plumb:
   1. In 10-feet - 1/4-inch.
   2. In 20-feet - 3/8-inch.
   3. In 40-feet or more - 1/2-inch.

C. Maximum variation from level:
   1. In any bay or up to 20-feet - 1/4-inch.
   2. In 40-feet or more - 1/2-inch.

D. Maximum variation from linear building lines:
   1. In any bay or up to 20-feet - 1/2-inch.
   2. In 40-feet or more - 3/4-inch.

E. Maximum variation in cross-sectional dimensions of columns and thickness of walls from dimensions shown:
   1. Minus 1/4-inch.
   2. Plus 1/2-inch.

3.3 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.4 PREPARATION

A. Layout fountain wall in advance for accurate spacing of bond patterns, with uniform joint widths and to properly locate openings, expansion joints, and offsets.

B. Direct and coordinate placement of metal anchors supplied to other sections.

C. The contractor is responsible to design, provide, and install bracing that will ensure stability of masonry during construction. Maintain in place until building structure provides permanent bracing.

D. Remove laitance, loose aggregate, and anything else that would prevent mortar from bonding to the foundation.

E. Clean all reinforcement by removing mud, oil, or other materials.

3.5 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.

3.6 PLACING AND BONDING

A. Unless noted otherwise, construct masonry in running bond pattern.

B. Lay hollow masonry units with face shell bedding on head and bed joints.

C. Bed and head joints:
1. Unless otherwise required, construct 3/8 inch thick bed and head joints.
2. At foundation, construct bed joint of the starting course a thickness not less than 1/4 inch, and not more than 3/4 inch.
3. Unless otherwise noted, tool joint with a round jointer when the mortar is thumbprint hard.

D. Collar joints:
1. Unless otherwise required, solidly fill collar joints less than 3/4 inch wide with mortar as the job progresses.

E. Place hollow units as follows:
1. With face shells of bed joints fully mortared.

2. With webs fully mortared in:
   a. In the starting course on foundations.
   b. When necessary to confine grout or loose fill.
   c. When otherwise required.
3. With head joints mortared, a minimum distance from each face equal to the face shell thickness of the unit.

F. Place solid units as follows:
1. Unless otherwise required, solidly fill bed and head joints with mortar.
2. Do not fill head joints by grouting with mortar.
3. Construct head by shoving mortar tight against the adjoining unit.
4. Do not deeply furrow bed joints.

G. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.

H. Remove excess mortar as work progresses.

I. Interlock intersections and external corners.

J. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.

K. Perform job site cutting of masonry units with proper tools to provide straight, clean, undamaged edges. Prevent broken masonry unit corners or edges.

L. Isolate masonry partitions from vertical structural framing members with a control joint.

M. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.

3.7 HORIZONTAL REINFORCEMENT AND ANCHORS

A. Install horizontal joint reinforcement as follows:
1. Exterior walls - 16 inches on center vertically.

B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.

C. Place joint reinforcement continuous in first and second joint below top of columns.

D. Lap joint reinforcement ends minimum 6 inches. Extend minimum 16 inches each side of openings.

E. Place joint reinforcement so longitudinal wires are embedded in mortar with a minimum cover of 1/2 inch when not exposed to weather or earth, and 5/8 inch when exposed to weather or earth.

F. Anchor masonry to structural members where masonry abuts or faces such members.

G. Wall ties:
1. Embed the ends of wall ties in mortar joints. Embed wall tie ends at least ½" into the outer face school of hollow units. Embed wire wall ties at least 1-1/2" into the mortar bed of solid masonry units or solid grouted hollow units.
2. Do not bend wall ties after embedded in grout or mortar.
3. Unless otherwise required, install adjustable ties in accordance with the following requirements.
   a. One tie for each 1.77 square feet of wall area.
   b. Do not exceed 16 inches horizontal or vertical spacing.
   c. The maximum misalignment of bed joints from one wythe to the other is 1-1/4"
   d. The maximum clearance between connecting parts of the ties is 1/16"
   e. When pintle legs are used, provide ties with at least two legs made of wire size W2.8.
   f. Install wire ties perpendicular to a vertical line on the face of the wythe from which they protrude. Where one-piece ties or joint reinforcement is used, the bed joints of adjacent wythes shall align.
   g. Unless otherwise required, provide additional unit ties around all openings larger than 16 inches in either dimension. Space ties around perimeter of opening at a maximum of 3 feet on center. Place ties within 12 inches of opening.

H. Veneer anchors:
1. Embed veneer anchors in mortar joint and extend into the veneer a minimum of 1-1/2 inch at least 5/8 inch cover to the outside face.
2. Install adjustable veneer anchors as follows:
   a. The maximum misalignment of bed joints from one wythe to the other is 1-1/4 inch.
   b. The maximum clearance between connecting parts of the ties is 1/16 inch.
   c. When pintle legs are used, provide anchors with at least two legs made of wire size w2.8.
   d. Provide at least one adjustable two-piece anchor of wire size W1.7 or 22 gauge corrugated sheet metal anchor for each 2.67 square feet of wall area.
3. Install non-adjustable veneer anchors for each 3.5 square feet of wall area.
4. Space anchors at a maximum of 32 inches horizontally and 16 inches vertically.
5. Provide additional anchors around all openings larger than 16 inches in either

6. Dimension. Space anchors around the perimeter of opening at a maximum of 3 feet on center.

3.8 VERTICAL REINFORCEMENT

A. Support and secure reinforcing bars from displacement beyond the tolerances allowed by construction loads or by placement of grout or mortar. Maintain position within 1/2 inch of masonry unit or formed surface, but not less than 1/4 inch (only when fine grout is used).
   1. Use rebar positioners to secure reinforcing.

B. Lap splices minimum 48 bar diameters.

C. Dowels in footings shall be set to align with cores containing reinforcing steel.

D. Place and consolidate grout fill without displacing reinforcing. Completely embed reinforcing bars in grout.

E. All cells containing reinforcing in concrete blocks shall be filled solid with grout.

F. Do not bend reinforcement after it is embedded in grout or mortar.

G. Reinforce masonry unit cores and cavities with vertical reinforcement bars and grout as indicated on drawings. Place reinforcements and ties in grout spaces prior to grouting.

H. Retain vertical reinforcement in position at top and bottom of cells and at intervals not exceeding 192 bar diameters.

I. Place steel in walls and flexural elements within 1/2 inch of required location.

J. Place vertical bars within 2 inches of the required location along the length of the wall.

3.9 CONCRETE UNIT MASONRY

A. Lay masonry units with core cells vertically aligned clear of mortar dropping, debris, loose aggregates, and any material deleterious to masonry grout.

B. Do not place grout until height of masonry to be grouted has attained sufficient strength to resist grout pressure.

C. Do not wet concrete masonry units before laying.

D. Grout spaces less than two inches in width with fine grout using low lift grouting techniques. Grout spaces two inches or greater in width with course grout using high lift or low lift grouting techniques.

E. When grouting is stopped for more than one hour, terminate grout 1-1/2 inch below top of upper masonry unit to form a positive key for subsequent grout placement.

F. Grouting:
1. Place grout in lifts not to exceed five feet. Consolidate grout at time of placement.
   a. Consolidate grout pours 12 inches or less in height by mechanical vibration or by puddling.
   b. Consolidate grout pours exceeding 12 inches in height by mechanical vibration and reconsolidate by mechanical vibration after initial water loss and settlement has occurred.
2. When the grout pour height exceeds 5 feet 4 inches, provide clean out opening no less than 3 inches high at the bottom of each cell to be grouted by cutting one ace shell of masonry unit. Opening should be sufficient size to permit removal of debris.
3. Clean out masonry cells with high-pressure water spray. Permit complete water drainage.
4. After cleaning seal openings in grout with masonry units braced to resist grout pressure.
5. Pump grout into spaces. Maintain water content in grout to intended slump without aggregate segregation.
6. Limit grout lift to 60 inches

3.10 GROUTING REINFORCED CONCRETE BLOCK

A. Provide reinforcing bars at indicated spacing and grout bars and voids solid with grout.

3.11 MASONRY FLASHING

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
1. Extend flashings full width at such interruptions and at least 4 inches (100 mm) into adjacent masonry or turn up at least 4 inches (100 mm) to form watertight pan at non-masonry construction.
2. Remove or cover protrusions or sharp edges that could puncture flashings.
3. Seal lapped ends and penetrations of flashing before covering with mortar.

B. Extend metal flashings through exterior face minimally. Reference architectural detail for conditions.

C. Lap end joints of flashings at least 4 inches (100 mm) and seal watertight with mastic or elastic sealant.

3.12 EXPANSION / CONTROL JOINTS

A. Provide stone control joints (CJ) where shown on drawings and as follows:
   1. Vertical expansion joints shall not exceed 30 feet O.C.
   2. Expansion joints at external corners shall not exceed 2-feet in each direction from corner.
   3. Expansion joints at offsets and set backs shall be placed to allow parallel walls to expand.

B. Keep joint free of mortar and other debris

C. Where joints occur in masonry walls.
   1. Install preformed compressible joint filler in brick wythe.
   2. Install cross shaped shear keys in concrete masonry unit wythe with preformed compressible joint filler on each side of shear key.
   3. Install filler, backer rod, and sealant at exposed faces.

D. Interrupt steel joint reinforcement at expansion and control joints unless otherwise shown.

E. Fill opening in exposed face of expansion and control joints with sealant as specified.

3.13 BUILDING EXPANSION

A. Keep joint free of mortar. Remove mortar and other debris.

B. Install non-combustible, compressible type joint filler to where joints are on exposed faces, provide depth for backer rod and sealant.

3.14 TOLERANCES

A. Maximum variation from alignment of columns and pilasters: ¼ inch (6 mm).

B. Maximum variation from unit to adjacent unit: 1/16 inch (1.6 mm).

C. Maximum variation from plane of wall: 1/4 inch in 10 ft (6 mm/3 m) and 1/2 inch in 20 ft (13 mm/6 m) or more.

D. Maximum variation from plumb: 1/4 inch (6 mm) per story non-cumulative; 1/2 inch (13 mm) in two stories or more.

E. Maximum variation from level coursing: 1/8 inch in 3 ft (3 mm/m) and 1/4 inch in 10 ft (6 mm/3 m); 1/2 inch in 30 ft (13 mm/9 m).

3.15 CLEANING AND REPAIR

A. General:
   1. Clean exposed masonry surfaces on completion.

2. Protect adjoining construction materials and landscaping during cleaning operations.
3. Cut out defective exposed new joints to depth of approximately 3/4-inch and repoint.
4. Remove mortar droppings and other foreign substances from wall surfaces.

B. Stone work:
1. First wet surfaces with clean water, then wash down with a solution of soapless detergent.
2. Brush with stiff fiber brushes while washing, and immediately thereafter hose down with clean water.
3. Free clean surfaces of traces of detergent, foreign streaks, or stains of any nature.

C. Replace defective mortar. Match adjacent work.

D. Clean soiled surfaces with cleaning solution.

3.16 PROTECTION

A. Without damaging completed work, provide protective boards at exposed external corners which are subject to damage by construction activities.

END OF SECTION 04 2000

SECTION 04 7200 – ARCHITECTURAL CAST STONE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Scope - Cast Stone shown on architectural drawings and as described in this specification.
   1. Manufacturer shall furnish Cast Stone covered by this specification.

1.2 RELATED SECTIONS

A. Section 03 3000 – Cast-in-Place Concrete

B. Section 04 2000 – Unit Masonry

1.3 REFERENCES

A. ACI 318 – Building Code Requirements for Reinforced Concrete.

B. ASTM A615/A615M – Standard Specification for Deformed and Plain Billet-Steel Bars for Reinforced Concrete.

C. ASTM A1064 / A1064M – Standard Specification for Carbon Steel Wire and Welded Wire

D. ASTM C33 – Standard Specification for Concrete Aggregates. ASTM C150 – Standard Specification for Portland Cement.

E. ASTM C595/C595M – Specification for Blended Hydraulic Cements ASTM C1157/C1157M – Performance Specification for Hydraulic Cement

F. ASTM C173 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Volume Method.

G. ASTM C231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.

H. ASTM C260 – Standard Specification for Air-Entrained Admixtures for Concrete. ASTM C270 – Standard Specification for Mortar for Unit Masonry.

I. ASTM C426 – Standard Test Method for Linear Shrinkage of Concrete Masonry Units. ASTM C494/C494M – Standard Specification for Chemical Admixtures for Concrete.

J. ASTM C618 – Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.

K. ASTM C666/666M – Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing.

L. ASTM C979 – Standard Specification for Coloring Pigments for Integrally Colored Concrete. ASTM C989 – Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete.

M. ASTM C1116 – Standard Specification for Fiber Reinforced Concrete and Shotcrete.

N. ASTM C1194 – Standard Test Method for Compressive Strength of Architectural Cast Stone.

O. ASTM C1195 – Standard Test Method for Absorption of Architectural Cast Stone.

P. ASTM C1364 – Standard Specification for Architectural Cast Stone.

Q. ASTM D1729 – Practice for Visual Appraisal of Colors and Color Differences of Diffusely-Illuminated Opaque Materials.

R. ASTM D2244 – Standard Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.

S. ASTM D7957/D7957M – Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bars for Concrete Reinforcement

T. TMS 404-504-604 – Standards for Architectural Cast Stone Design – Fabrication – Installation

1.4 DEFINITIONS

A. Cast Stone - a refined architectural concrete building unit manufactured to simulate natural cut stone, used in Division 4 masonry applications.

1. Dry Cast – manufactured from zero slump concrete.
    a. Vibrant Dry Tamp (VDT) casting method: Vibratory ramming of earth moist, zero-slump concrete against a rigid mold until it is densely compacted.
    b. Machine casting method: Manufactured from earth moist, zero-slump concrete compacted by machinery using vibration and pressure against a mold until it becomes densely consolidated.
2. Wet Cast – Manufactured from measurable slump concrete.
    a. Wet casting method: Manufactured from measurable slump concrete and vibrated into a mold until it becomes densely consolidated.
3. Specifier Note: Slump, manufacturing method, and apparatus shall be selected by the manufacturer and not specified by the purchaser.

1.5 SUBMITTAL PROCEDURES

A. Comply with Section 01 3300 – Submittal Procedures.

B. Samples: Submit pieces of the Cast Stone that are representative of the general range of finish and color proposed to be furnished for the project.

C. Test results: Submit manufacturers test results of Cast Stone previously made by the manufacturer.

D. Shop Drawings: Submit manufacturers shop drawings including profiles, cross-sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, annotation of stone types and their location.

E. Warranty: Submit Cast Stone Institute Member Limited Warranty.

F. Certification: Submit valid Cast Stone Institute Plant Certification.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications:
   1. Cast Stone shall be produced in a plant certified by the Cast Stone Institute.
   2. Manufacturer shall have sufficient plant facilities to produce the shapes, quantities and size of Cast Stone required in accordance with the project schedule.
   3. Manufacturer shall submit a written list of projects similar in scope and at least three (3) years of age, along with owner, architect and contractor references.

B. Standards: Comply with the requirements of the Cast Stone Institute Technical Manual and the project specifications. Where a conflict may occur, the contract documents shall prevail.

C. Mock-up: Provide full size unit(s) for use in construction of sample wall. The approved mock-up shall become the standard for appearance and workmanship for the project.

D. Warranty Period: 10 years.

PART 2 PRODUCTS

2.1 ARCHITECTURAL CAST STONE

A. Comply with current version ASTM C1364

B. Physical properties: Provide the following:
   1. Compressive Strength - ASTM C1194: 6,500 psi minimum at 28 days.

2. Absorption – ASTM C1195: 6.0% maximum at 28 days.
3. Air Content – Provide sufficient air content to meet the freeze-thaw requirements for wet cast products, when the air content is tested in accordance with Test Method C173/C173Mor Test Method C231/C231M. Air entrainment is not required for Vibrant Dry Tamp (VDT)products.
4. Freeze-thaw – ASTM C666/C666M in accordance with ASTM C1364. The CPWL shall be less than 5.0% after 300 cycles of freezing and thawing.
5. Linear Drying Shrinkage – ASTM C426: Test and report in accordance with ASTM C1364.

C. Job site testing – One sample from production units may be selected at random from the field for each 500 cubic feet (14 m 3) delivered to the job site.
1. Three field cut cube specimens from each of these samples shall have an average minimum compressive strength of not less than 85% with no single specimen testing less than 75% of design strength as allowed by ACI 318.
2. Three field cut cube specimens from each of these samples shall have an average maximum cold-water absorption of 6.0%.
3. Field specimens shall be tested in accordance with ASTM C1194 and C1195.

2.2 RAW MATERIALS

A. Portland cement – Type I or Type III, white and/or grey, ASTM C150 or ASTM C595 Blended Hydraulic Cement (Type 1L).

B. Coarse aggregates - Granite, quartz or limestone, ASTM C33, except for gradation, and are optional for the Vibrant Dry Tamp (VDT) casting method.

C. Fine aggregates - Manufactured or natural sands, ASTM C33, except for gradation.

D. Colors - Inorganic iron oxide pigments, ASTM C979 except that carbon black pigments shall not be used.

E. Admixtures - Comply with the following:
1. ASTM C260 for air-entraining admixtures.
2. ASTM C494/C495M Types A - G for water reducing, retarding, accelerating, and high range admixtures.
3. Other admixtures: Integral water repellents and other chemicals, for which no ASTM Standard exists, shall be previously established as suitable for use in concrete by proven field performance or through laboratory testing.
4. ASTM C618 mineral admixtures of dark and variable colors shall not be used in surfaces intended to be exposed to view.
5. ASTM C989 granulated blast furnace slag may be used to improve physical properties. Tests are required to verify these features.

F. Water – Potable Reinforcing bars:

1. ASTM A615/A615M: Grade 40 or 60.
2. ASTM D7957/D7957M: Standard Specification for Solid Round Glass Fiber Reinforced Polymer Bars for Concrete Reinforcement
3. Welded Wire Fabric: ASTM A1064 / A1064M where applicable for wet cast units.

G. Fiber reinforcement (optional): ASTM C1116

H. All anchors, dowels and other anchoring devices and shims shall be standard building stone anchors commercially available in a non-corrosive material such as zinc plated, galvanized steel, brass, or stainless steel Type 302, 304 or 316.

2.3 COLOR AND FINISH

A. Match cast stone on Lake Land College Neal Hall.

B. All surfaces intended to be exposed to view shall have a fine-grained texture similar to natural stone, with no air voids in excess of 1/32 in. and the density of such voids shall be le ss than 3 occurrences per any 1 $in.^2$ and not obvious under direct daylight illumination at a 5 ft distance.

C. Units shall exhibit a texture approximately equal to the approved sample when viewed under direct daylight illumination at a 10 ft distance.
1. ASTM D2244 permissible variation in color between units of comparable age subjected to similar weathering exposure.
   a. Total color difference – not greater than 6 units.
   b. Total hue difference – not greater than 2 units.

D. Minor chipping resulting from shipment and delivery shall not be grounds for rejection. Minor chips shall not be obvious under direct daylight illumination from a 20 ft distance.

E. The occurrence of crazing or efflorescence shall not constitute a cause for rejection.

F. Remove cement film, if required, from exposed surfaces prior to packaging for shipment.

2.4 REINFORCING

A. Reinforce the units as required by the drawings and for safe handling and structural stress.

B. Minimum reinforcing shall be 0.25 percent of the cross-section area.

C. Reinforcement shall be noncorrosive where faces exposed to weather are covered with less than 1.5 in. of concrete material. All reinforcement shall have minimum coverage of twice the diameter of the bars.

D. Panels, soffits and similar stones greater than 24 in. (600 mm) in one direction shall be reinforced in that direction. Units less than 24 in. (600 mm) in both their length and width dimension shall be non-reinforced unless otherwise specified.

E. Welded wire fabric reinforcing shall not be used in dry cast products.

2.5 CURING

A. Cure units in a warm curing chamber approximately 100ºF (37.8ºC) at 95 percent relative humidity for approximately 12 hours, or cure in a 95 percent moist environment at a minimum 70ºF (21.1ºC) for 16 hours after casting. Additional yard curing at 95 percent relative humidity shall be 350 degree-days (i.e. 7 days @ 50°F (10°C) or 5 days @ 70°F (21°C)) prior to shipping. Form cured units shall be protected from moisture evaporation with curing blankets or curing compounds after casting.

2.6 MANUFACTURING TOLERANCES

A. Minimum Thickness shall be 2.5” to facilitate testing for compressive strength and absorption as specified in ASTM C-1364 Standard Specification for Architectural Cast Stone. Cross section dimensions shall not deviate by more than ±1/8 in. from approved dimensions.

B. Length of units shall not deviate by more than length/ 360 or ±1/8 in., whichever is greater, not to exceed ±1/4 in.

C. Maximum length of any unit shall not exceed 15 times the average thickness of such unit unless otherwise agreed by the manufacturer.

D. Warp, bow or twist of units shall not exceed length/ 360 or ±1/8 in., whichever is greater.

E. Location of dowel holes, anchor slots, flashing grooves, false joints and similar features – On formed sides of unit, 1/8 in., on unformed sides of unit, 3/8 in. maximum deviation.

2.7 PRODUCTION QUALITY CONTROL

A. Testing:
   1. Test compressive strength and absorption from specimens taken from every 500 cubic feet of product produced.
   2. Perform tests in accordance ASTM C1194 and C1195.

3. Have tests performed by an independent testing laboratory every six months.
4. New and existing mix designs shall be tested for strength and absorption compliance prior to producing units.
5. Retain copies of all test reports for a minimum of two years.

2.8 DELIVERY, STORAGE AND HANDLING

A. Mark production units with the identification marks as shown on the shop drawings. Package units and protect them from staining or damage during shipping and storage. Provide an itemized list of product to support the bill of lading.

PART 3 EXECUTION

3.1 EXAMINATION

A. Installing contractor shall check Cast Stone materials for fit and finish prior to installation. Unacceptable units shall not be set.

3.2 SETTING TOLERANCES

A. Comply with Cast Stone Institute Technical Manual.

B. Set stones 1/8 in. or less, within the plane of adjacent units.

C. Joints, plus - 1/16 in., minus - 1/8 in.

3.3 JOINTING

A. Joint size:
1. At stone/brick joints 3/8 in.
2. At stone/stone joints in vertical position 1/4 in. (3/8 in. optional).
3. Stone/stone joints exposed on top 3/8 in.

B. Joint materials:
1. Mortar, Type N, ASTM C270.
2. Use a full bed of mortar at all bed joints.
3. Flush vertical joints full with mortar.
4. Leave all joints with exposed tops or under relieving angles open for sealant.
5. Leave head joints in copings and projecting components open for sealant.

C. Location of joints:
1. As shown on shop drawings.
2. At control and expansion joints unless otherwise shown.

3.4 SETTING

A. Drench units with clean water prior to setting.

B. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.

C. Set units in full bed of mortar, unless otherwise detailed.

D. Rake mortar joints 3/4 in. in for pointing.

E. Remove excess mortar from unit faces immediately after setting.

F. Tuck point unit joints to a slight concave profile.

3.5 JOINT PROTECTION

A. Prime ends of units, insert properly sized backing rod and install required sealant.

3.6 REPAIR AND CLEANING

A. Repair chips with touchup materials furnished by manufacturer.

B. Saturate units to be cleaned prior to applying an approved masonry cleaner.

C. Consult with the manufacturer for appropriate cleaners.

3.7 INSPECTION AND ACCEPTANCE

A. Inspect finished installation according to Cast Stone Institute Technical Bulletin #36.

B. Do not field apply water repellent until repair, cleaning, inspection and acceptance is completed.

3.8 Water Repellent (Optional)

A. Apply water repellent in accordance with Cast Stone Institute Technical Bulletin #35 or water repellent manufacturer’s directions.

END OF SECTION 04 7200

SECTION 26 0523 - BUILDING WIRE & CABLE

PART 1 GENERAL

1.1 WORK INCLUDES

A. Contractor Provide:
   1. Building wire and cable as shown on drawings or specified including feeders, branch circuit power, lighting systems and other systems specified.
   2. Wiring connectors and connections.

1.2 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code 2020.

1.3 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum 3 years experience.

1.4 SUBMITTALS

A. Submit shop drawings and product data.

B. Indicate material specifications, dimensions, capacities and color coding.

C. Provide product data for all wire and cable.

D. Submit manufacturers' installation instructions.

1.5 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories, Inc. or testing firm acceptable to authority having jurisdiction as suitable for purpose specified and shown.

1.6 REFERENCES

A. If conflict between referenced standards and contract documents, notify Architect/Engineer immediately. Do not proceed with the work until the Architect/Engineer issues instructions.

B. National Electrical Manufacturers Association (NEMA):
   1. WC 3 - Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

2. WC 5 - Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.
3. WC 7 - Cross-Linked-Thermosetting-Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy.

C. National Fire Protection Association (NFPA): NFPA 70- National Electrical Code.

D. Underwriters laboratories, Inc. (UL): Listed and labeled materials.

E. Manufacturers' Catalogs: Specified manufacturers' catalogs are incorporated by reference to same force and effect as if repeated herein full.

1.7 PROJECT CONDITIONS

A. Verify that field measurements are as shown on Drawings.

B. Conductors shall be copper.

C. Where wire and cable routing is not shown, and destination only is indicated, determine exact routing and lengths required.

1.8 COORDINATION

A. Determine required separation between cable and other work.

B. Determine cable routing to avoid interference with other work.

PART 2 PRODUCTS

2.1 BUILDING WIRE AND CABLE

A. Thermoplastic insulated building wire: NEMA WC 5, UL-83 ICEA S-61-402 or S-66-524.

B. Exterior, underground feeders and branch circuits larger than 8 AWG: Copper, stranded conductor, 600 volt insulation XHHW.

C. Exterior, underground feeders and branch circuits 8 AWG and smaller: Copper conductor, 600 volt insulation THHN/THWN, solid or stranded conductor.

D. Control Circuits: Copper, stranded conductor, 600 volt insulation THW, THHN/THWN.

2.2 JOINTS AND SPLICES

A. Make terminations, taps and splices with an indent type pressure connector with insulating cover for 8 AWG and smaller.

B. Instead of indent type connectors insulated spring compression connectors may be used for 10 AWG and smaller.

C. Use mechanical compression or bolted type connector for 6 AWG or larger. Cover connector with insulating type or heat shrinkable insulation equivalent to 150% conductor insulation.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that mechanical work likely to damage wire and cable has been completed.

3.2 PREPARATION

A. Completely and thoroughly swab raceway before installing wire.

3.3 WIRING METHODS

A. Wet or Damp Interior Locations: Use only building wire, in raceway.

B. Exterior Locations: Use only building wire, in raceway.

C. Underground Installations: Use only building wire, in raceway.

3.4 INSTALLATION

A. Install products in accordance with manufacturers' instructions.

B. Use conductor not smaller than 12 AWG for power and lighting circuits.

C. Use conductor not smaller than 14 AWG for control circuits.

D. Use 10 AWG conductors for 20 ampere, 120volt branch circuits longer than 75 feet.

E. Pull all conductors into raceway at same time.

F. Use suitable wire pulling lubricant for building wire 4 AWG and larger.

G. Protect exposed cable from damage.

H. Use suitable cable fittings and connectors.

I. Neatly train and lace wiring inside boxes, equipment, and panel boards.

J. Clean conductor surfaces before installing lugs and connectors.

K. Make splices, taps and terminations to carry full ampacity of conductors with no perceivable temperature rise.

L. Place an equal number of conductors for each phase of a circuit in same raceway or cable.

M. Splice only in accessible junction, outlet boxes, cable tray or surface metal raceway.

N. Make conductors equal lengths for parallel circuits.

O. Provide dedicated neutral conductors for all circuits.

3.5 IDENTIFICATION

A. Identify wire and cable under provisions of Section 26 05 53.

B. Identify each conductor with its circuit number or other designation.

3.6 FIELD QUALITY CONTROL

A. Inspect wire and cable for physical damage and proper connection.

B. Measure tightness of bolted connections and compare torque measurements with manufacturer's recommended values.

C. Verify continuity of each branch circuit conductor.

END OF SECTION 26 0523

SECTION 26 0526 – GROUNDING AND BONDING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Contractor Provide:
   1. Bonding.
   2. Grounding.

1.2 DEFINITIONS

A. Equipment Ground Conductor:
   1. The conductor that connects the noncurrent-carrying metal parts of equipment to the grounding electrode system or ground bus.

B. Grounding Electrode Conductor:
   1. The conductor that connects the ground electrodes to the grounded circuit conductor and/or the equipment grounding conductor.

C. Grounded Circuit Conductor:
   1. A circuit conductor, usually the neutral that is intentionally connected to ground.

D. Made Electrode:
   1. Any item, such as a ground rod, which is solely used to provide a ground connection.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements:
   1. Comply with National Electric Code 2020.
   2. Comply with Public Authorities having jurisdiction.
   3. Comply with Motorola R56 Standard.

B. Source Quality Control
   1. The authority having jurisdiction will inspect the installation for compliance with governing codes.

1.4 REFERENCES. Specified references, or cited portions thereof, current at date of bidding documents unless otherwise specified, govern the work. In conflict between referenced standards and contract documents, notify Architect/Engineer immediately. Confirm notification in writing. Do not proceed with the work until the Architect/Engineer issues written instructions.

A. National Fire Protection Association (NFPA): NFPA 70 - National electrical Code (NEC).

B. Furnish products listed and classified by a Nationally Recognized Testing Laboratory (NRTL) as suitable for purpose specified and shown.

C. Manufacturers' Catalogs: Specification manufacturers' catalogs are incorporated by reference to same force and effect as if repeated herein in full.

D. ANSI C2 - National Electrical Safety code.

1.5 SUBMITTALS

A. Submit Product Data: Provide data for grounding electrodes and connections.

PART 2 PRODUCTS

2.1 MATERIALS

A. Connections:
1. All rod to rod, rod to cable, cable to cable, and cable to structural steel connections shall be by an approved exothermic or mechanical weld process.
2. Connections to metallic pipe may be by either exothermic weld or approved ground clamp.
3. Any splices to ground electrode conductors shall be exothermic weld only.

B. Terminating Lugs:
1. Exothermic weld, mechanical weld, or crimp compression type.

C. Wire:
1. Equipment grounding conductors shall be insulated. Insulation shall be 600 volt, same type as phase conductors, green in color. Use yellow tracer stripes to distinguish different grounding systems.
2. Ground electrode conductors shall be bare annealed copper.

D. Rod Electrode:
1. Material: Copper-Clad Steel.
2. Diameter: 3/4 inch.
3. Length: 10 feet.

PART 3 EXECUTION

3.1 INSTALLATION

A. Provide a separate equipment grounding conductor in all feeders and branch circuits, unless indicated otherwise on the drawings. Terminate each end on grounding lug, bus or busing.

B. Bond all raceways, cabinet enclosures, and non-current carrying parts of equipment to grounding system. Bond raceways such that a continuous path for current flow is maintained.

C. Bond all grounding systems together. Size of bonding conductor shall be at least the size of the largest grounding electrode conductor.

D. Ground electrode conductors shall be run exposed whenever possible. If conduit is needed for protection, Schedule 40 conduit shall be used. All cable clamps and conduit supports shall be designed so they do NOT totally encircle conduit or cable in metal.

E. All connections to the metallic water piping shall be made using either approved ground clamps. All connections to structural steel shall be by the exothermic weld process.

END OF SECTION 26 0526

SECTION 26 0530 - CONDUIT

PART 1 GENERAL

1.1 WORK INCLUDES

A. Contractor Provide:
   1. Flexible metal conduit.
   2. Electrical metallic tubing.
   3. Rigid steel conduit.
   4. Rigid aluminum conduit.
   5. Electrical non-metallic tubing.
   6. Fittings and conduit bodies.
   7. Fire seal of all conduits passing through fire partitions.

1.2 REFERENCES

A. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.

B. ANSI C80.3 - Electrical Metallic Tubing, Zinc Coated.

C. ANSI C80.5 - Rigid Aluminum Conduit.

D. ANSI/NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

E. ANSI/NFPA 70 - National Electrical Code, 2020 Edition.

F. NECA "Standard of Installation."

G. NEMA TC 2 - Electrical Plastic Tubing (EPT) and Conduit (EPC-40 and EPC-80).

H. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

I. NEMA TC 13 – Electrical Non Metallic Tubing.

J. IBC 2015 – International Building Code: seismic hazard and performance.

1.3 DESIGN REQUIREMENTS

A. Conduit Size: ANSI/NFPA 70.

1.4 SUBMITTALS

A. Submittals for approval by the engineer are not required for this section. Un-requested submittals will not be processed or reviewed. Non-requirement of submittals is not to be construed as an allowance for substitutions and does not relieve the contractor from full compliance with the plans and specifications.

1.5 PROJECT RECORD DOCUMENTS

A. Submit Project Record Documents.

B. Accurately record actual routing of conduits.

1.6 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories, Inc. or other testing firm acceptable to authority having jurisdiction as suitable for purpose specified and shown.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Accept conduit on site. Inspect for damage.

B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

1.8 PROJECT CONDITIONS

A. Verify that field measurements are as shown on Drawings.

B. Verify routing and termination locations of conduit prior to rough-in.

C. Provide conduit as required to complete wiring system. All 120V and above wiring shall be provided in conduit.

PART 2 PRODUCTS

2.1 CONDUIT REQUIREMENTS

A. Minimum Size: 3/4 inch unless otherwise specified.

B. Outdoor Locations, Above Grade: Use rigid steel or aluminum conduit.

C. In Slab Above Grade: **No conduit shall be installed in slab.** All conduit installed below slab shall be in rock base.

D. Wet and Damp Locations above Finish Floor/Grade: Use rigid steel or aluminum conduit.

E. Dry Locations:
   1. Concealed: Use electrical metallic tubing or MC Cable, refer to 26 05 19.
   2. Exposed: Use EMT where not prone to damage, where prone to damage use RGS.

F. Below grade, interior and exterior: Use schedule 40 PVC.

2.2 METAL CONDUIT

A. Rigid Steel Conduit: ANSI C80.1.

B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; material to match conduit.

2.3 FLEXIBLE METAL CONDUIT

A. Description: Interlocked steel construction.

B. Fittings: ANSI/NEMA FB 1.

2.4 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Description: Interlocked steel construction with PVC jacket.

B. Fittings: ANSI/NEMA FB 1.

2.5 ELECTRICAL METALLIC TUBING (EMT)

A. Description: ANSI C80.3; galvanized tubing.

B. Fittings and Conduit Bodies: ANSI/NEMA FB 1; steel compression type.

2.6 NONMETALLIC CONDUIT

A. Description: NEMA TC 2; Schedule 40 PVC.

B. Fittings and Conduit Bodies: NEMA TC 3.

2.7 SEALING

A. Fire Seal
   1. Seal penetrations of fire-rated walls, floors or ceilings by raceways for compliance with NEC 300.21. Fill void around raceway. Use heavy wall steel pipe sleeves, anchored to building construction and finished plumb with wall ceiling or floor lines. Acceptable products:
      a. Spec-Seal - SSS
      b. T & B - Flamesafe
      c. 3M - Fire Barrier
   2. Smoke and fire stop fittings may be used in lieu of sealant. Acceptable products:
      a. OZ-Gedney, series CFS

B. Water Seal
   1. Seal penetrations of perimeter walls or floors below grade to prevent entry of water. Seal both exterior of conduit and interior of conduit around cables. Use materials compatible with wall or floor construction and approved by Architect/Engineer.
   2. Seal penetrations of roof with flashing compatible with roof design and approved by Roofing System Manufacturer and Architect/Engineer.

2.8 SUPPORTING DEVICES

A. Suspended conduits less than 1 inch.
   1. For exposed construction, provide strap type hangers supported from beam clamps or threaded rods. Hangers manufactured by Minerallac, Midwest Electric, Crouse-Hinds, T & B or B-Line are acceptable. Hangers will be required to suspend below the drywall ceiling fire barrier. Coordinate installation with the drywall installation. Provide fire seal at all drywall penetrations.
   2. For conduits suspended above ceilings, anchor to building structural steel or hat channels above drywall, seal all fire rated drywall penetrations. When span exceeds NEC limits, provide channel steel between framing members. Tie wiring of conduit to air ducts, structural steel, piping or other elements not permitted. Plumber's perforated strap not permitted. Do not attach conduit to ceiling support wires.

B. Surface Mounted Conduit
   1. Provide one-hole galvanized steel straps for conduits one inch or less manufactured by Appleton, Steel City, B-Line or Raco. Provide clamp backs on exterior walls below grade or in wet areas.
   2. For conduit larger than one inch and all exterior surfaces, use galvanized, malleable iron pipe straps.
   3. For multiple conduits, provide channel anchored to wall with conduit attached to channel with split pipe clamps. Provide space for 25% additional conduits.

C. All conduit shall be supported in accordance with Specification Section 26 05 48 Seismic Protection.

PART 3 EXECUTION

3.1 INTERFERENCES

A. Coordinate work with other contractors so that interference between piping, equipment, structural and electrical work will be avoided.

B. If interference develops, A/E will decide which equipment will be relocated; regardless of which apparatus was installed first.

3.2 INSTALLATION

A. Install conduit in accordance with NECA "Standard of Installation."

B. Install nonmetallic conduit in accordance with manufacturer's instructions. Nonmetallic conduits, fittings and accessories shall be of same manufacturer.

C. Arrange supports to prevent misalignment during wiring installation.

D. Group related conduits; support using conduit rack. Construct rack using steel channel; provide space on each for 25 percent additional conduits.

E. Fasten conduit supports to building structure and surfaces under provisions of Section 26 05 29.

F. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports

G. Do not attach conduit to ceiling support wires.

H. Arrange conduit to maintain headroom and present neat appearance.

I. Route exposed conduit parallel and perpendicular to walls.

J. Route conduit installed above accessible ceilings parallel and perpendicular to walls.

K. Route conduit under slab from point-to-point.

L. Maintain adequate clearance between conduit and piping.

M. Maintain 12 inches clearance between conduit and surfaces with temperatures exceeding 104 degrees F.

N. Cut conduit square using saw or pipe-cutter; de-burr cut ends.

O. Bring conduit to shoulder of fittings; fasten securely.

P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.

Q. Use conduit hubs or sealing lock nuts to fasten conduit to sheet metal boxes in damp and wet locations.

R. Install no more than equivalent of three 90-degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one-shot bender to fabricate or factory elbows for bends in metal conduit larger than 2 inches size.

S. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.

T. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control and expansion joints.

U. Provide suitable pull-string in each empty conduit except sleeves and nipples. Provide bushings on all conduit terminations.

V. Use suitable caps to protect installed conduit against entrance of dirt and moisture.

W. Rigid Steel Conduit will be required when penetrating the floor slab, unless conduit penetrates floor slab into masonry wall. Transition to PVC below the floor slab.

X. Ground and bond conduit under provisions of Section 26 05 26.

Y. Identify conduit under provisions of Section 26 05 53.

3.3 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements.

B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket.

C. Install conduits to preserve moisture barriers of partitions and other elements.

END OF SECTION 26 0530

SECTION 26 0533 - BOXES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Contractor Provide:
   1. Wall and ceiling outlet boxes.
   2. Pull and junction boxes.

1.2 REFERENCES

A. NECA - Standard of Installation.

B. NEMA FB 1 - Fittings and Supports for Conduit and Cable Assemblies.

C. NEMA OS 1 - Sheet-steel Outlet Boxes, Device Boxes, Covers, and Box Supports.

D. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers and Box Supports.

E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

F. NFPA 70 - National Electrical Code, 2020 Edition.

1.3 SUBMITTALS

A. Submit under provisions of Division 01.

B. Record actual locations and mounting heights of outlet, pull, and junction boxes on project record documents.

1.4 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 70.

B. Provide Products listed and classified by Underwriters Laboratories, Inc. or other testing firm acceptable to the authority having jurisdiction as suitable for the purpose specified and indicated.

PART 2 PRODUCTS

2.1 OUTLET BOXES

A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.

1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; include 1/2 inch male fixture studs where required.

B. Masonry Boxes may be used in tilt-up construction.

C. Cast Boxes: NEMA FB 1, Type FD, aluminum or cast ferroalloy. Provide gasketed cover by box manufacturer. Provide threaded hubs.

D. Wall Plates for Finished Areas: As specified in Section 26 27 26.

2.2 PULL AND JUNCTION BOXES

A. Interior Dry Locations
1. Metal Boxes: NEMA OS 1, galvanized steel.
2. Install cast boxes in pre-cast tilt up concrete walls.
3. Size pull or junction boxes to comply with NEC.

B. Interior Wet Locations
1. Surface-Mounted Cast Metal Box: NEMA 250, Type 4 and 6; flat-flange, surface-mounted junction box.
a. Material: Galvanized cast iron.
b. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.

C. Exterior Locations
1. In-grade:
a. Polymer concrete with reinforced heavy-weave fiberglass with neoprene gasket and cover and stainless steel tamper proof hardware.
b. Label cover with service provided. (i.e.: “Power” or “Communications”)
c. Boxes located in vehicular traffic areas to have 15,000 lb rated lids.
2. Above ground surface mounted:
a. Use cast box with gasket or NEMA rated enclosure.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify locations of floor boxes and outlets prior to rough-in.

3.2 INSTALLATION

A. Install boxes in accordance with NECA "Standard of Installation."

B. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections and compliance with regulatory requirements.

C. Set wall mounted boxes at elevations to accommodate mounting heights specified in section for outlet device.

D. Electrical boxes are shown on Drawings in approximate locations unless dimensioned. Adjust box location up to 10 feet if required to accommodate intended purpose.

E. Maintain headroom and present neat mechanical appearance.

F. Install boxes to preserve fire resistance rating of partitions and other elements.

G. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan.

H. Support boxes independently of conduit.

I. Use gang box where more than one device is mounted together. Do not use sectional box.

J. Use cast outlet box in exterior locations exposed to the weather and wet locations.

3.3 COORDINATION

A. Coordinate installation of outlet box for equipment indicated on drawings.

3.4 ADJUSTING

A. Install knockout closures in unused box openings.

3.5 CLEANING

A. Clean interior of boxes to remove dust, debris, and other material.

B. Clean exposed surfaces and restore finish.

END OF SECTION 26 0533

SECTION 26 0553 - ELECTRICAL IDENTIFICATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Contractor Provide:
1. Wire and cable markers to indicate the breaker on which cable is terminated.
2. Nameplates for disconnects and transformers.
3. Nameplates for switchboards and panelboards.
4. Conduit marking.

1.2 QUALITY ASSURANCE

A. Comply with:
1. ANSI A 13.1. Identification of Piping Systems.
2. National Electrical Code 2020. (NEC)

1.3 REFERENCES. Specified references, or cited portions thereof, current at date of bidding documents unless otherwise specified, govern the work. In conflict between referenced standards and contract documents, notify Architect/Engineer immediately. Confirm notification in writing. Do not proceed with the work until the Architect/Engineer issues written instructions.

A. American National Standards Institute (ANSI): ANSI A13.1 - Identification of Piping Systems.

B. National Fire Protection Association (NFPA): NFPA 70 - National Electrical Code (NEC), 2020 Edition.

C. Underwriters Laboratories, Inc. (UL): All products UL listed and labeled.

D. Manufacturers' Catalogs: Specification manufacturers' catalogs are incorporated by reference to same force and effect as if repeated herein in full.

1.4 SUBMITTALS

A. Submit product data under provisions of Section 01 33 00.

B. Submit list of wording, symbols, letter size, and color coding for each piece of equipment specified.

C. Submit manufacturer's installation instruction under provisions of Section 01 33 00.

PART 2 PRODUCTS

2.1 NAMEPLATES AND LABELS

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

B. Locations:
1. Panelboards.
2. Switchboards.
3. Disconnect Switches.
4. Transformers
5. Locations indicated on plans.

C. Size of plate shall be commensurate with lettering thereon.

D. Lettering for disconnect switches, shall be 1/4" in height.

E. Wording on plate shall contain the following information as appropriate.
1. Drawing nomenclature, such as Panel LP1.
2. Voltage.
3. Panel fed from.

2.2 WIRE IDENTIFICATION

A. Provide wire markers on each conductor in panel board gutters, pull boxes, outlet and junction boxes, and at load connection. Identify with branch circuit or feeder

number and source panel for power and lighting circuits. Provide wire markers for all new and existing cables.

B. Wire Insulation Color:

Conductor	120/208V, 3 Phase	277/480V, 3 Phase
Phase A	Black	Brown
Phase B	Red	Orange
Phase C	Blue	Yellow
Neutral	White	Gray
Ground	Green	Green

1. Equipment Ground: Green

C. Code all wire and cable larger than color coded sizes available from manufacturer by application of electrical plastic tape in colors specified. Apply tape in uniform manner circling wire or cable. Half-lap tape for length of cable as required by the NEC. Tape shall be 3M, Plymouth or Permacel.

D. Maintain consistent coding throughout installation to ensure proper phase and system identification. If existing cables do not meet this standard, the contractor shall provide colored tape within 6 inches of the termination to indicate the above referenced standard.

2.3 WIRING DEVICE COVERPLATES

A. **The panel name and circuit number serving the wiring device shall be clearly written with indelible marker on the back of each coverplate.**

PART 3 EXECUTION

3.1 APPLICATION

A. Permanently mark all junction boxes with the panel and circuit number.

END OF SECTION 26 0533

SECTION 26 5629 - SITE LIGHTING

PART 1 GENERAL

1.1 WORK INCLUDES

A. Contractor Provide:
   1. Exterior luminaries and accessories.

1.2 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code, 2020 Edition.

B. IBC 2015 - International Building Code; seismic hazard and performance.

C. IES LM79 and LM80

1.3 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of each luminaire.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years documented experience.

1.5 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories, Inc. or other testing firm acceptable to authority having jurisdiction as suitable for purpose specified and shown.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Accept products on site. Inspect for damage.

PART 2 PRODUCTS

2.1 LUMINAIRES

A. Exterior lighting shall be as specified within and located as shown on the drawings.

2.2 LED DRIVERS

A. LED driver:
1. U.L. listed
2. Minimum 0.9% power factor.
3. Less than 20% THD.
4. Minimum 9kV surge suppression protection.

B. Voltage: match luminaire voltage.

2.3 LAMPS

A. Provide lamp type specified for luminaire.

B. All lamps shall be EISA compliant.

C. LED lamps:
1. Color temperature (per fixture): Binning shall be +/- 50K from specified fixture color temperature. Provide color temperature as indicated in luminaire schedule.
2. Minimum 80 CRI.
3. Standard(s) LM79 and LM80 compliant.
4. Alternate lumen outputs to those specified on the drawings will not be considered.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine each luminaire to determine suitability for lamps specified.

3.2 INSTALLATION

A. Install in accordance with manufacturers' instructions.

B. Install lamps in each luminaire.

C. Bond luminaires and metal accessories to branch circuit equipment grounding conductor.

3.3 FIELD QUALITY CONTROL

A. Operate each luminaire after installation and connection. Inspect for improper connections and operation.

3.4 GROUNDING

A. Ground fixture and pole bases per details on drawings.

3.5 ADJUSTING

A. Aim and adjust luminaires to provide illumination levels and distribution as directed.

B. Relamp luminaires which have failed lamps at Date of Substantial Completion.

3.6 CLEANING

A. Clean electrical parts to remove conductive and deleterious materials.

B. Remove dirt and debris from enclosure.

C. Clean photometric control surfaces as recommended by manufacturer.

D. Clean finishes and touch up damage.

END OF SECTION 26 5629

SECTION 31 1000 – SITE CLEARING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract

1.2 SUMMARY

A. This section includes the following:
   1. Clearing and grubbing.
   2. Tree and other vegetation removals.
   3. Disconnecting, capping and/or removing below grade utilities.
   4. General surface site improvement removals

1.3 MATERIALS OWNERSHIP

A. Except for materials indicated to be stockpiled or to remain Owner's property, removed, demolished and/or cleared materials shall become the property of the Contractor and shall be removed from the site.

1.4 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, weeds, roots, toxic materials, or other non-soil materials.

B. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

1.5 SUBMITTALS

A. Copy of dump site license.

B. Existing conditions photographs or videotape: Sufficiently detail all existing site conditions. This includes the condition of trees and plants to remain, adjoining construction, and any other site conditions that might be misconstrued as damage caused by construction. Submit to the Owner’s Representative for verification and agreement prior to the start of any construction operations.

C. Copy of Illinois JULIE request: Submit a paper copy of the JULIE (Illinois utility locate) electronic request for public utility locates.

D. Topsoil Testing: Soil analysis of existing topsoil. Furnish soil analysis and a written report with amendment recommendations for lawn and planting beds by a qualified soil-testing laboratory stating percentages of organic matter; gradation

of sand, silt, and clay content; cat ion exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of the soil.

1. Testing methods and written recommendations shall comply with USDA's Handbook No. 60.
2. A minimum of three representative samples shall be taken from existing topsoil to be used or amended for planting purposes.
3. Report suitability of tested soil for plant growth.
    a. Based upon the test results, state recommendations for soil treatments and soil amendments to be incorporated. State recommendations in weight per 1000 sq. ft. or volume per cu. yd. for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
    b. Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action.

E. Construction Erosion Control Policy: Contractor shall abide by all local codes regarding storm water control measures.

1.6 PROJECT CONDITIONS

A. Contractor shall contact JULIE Illinois One-Call System to have all public utilities within the project area located before starting any construction operations.

B. It is the responsibility of the Contractor to provide any and all necessary surveying for this project.

C. Private site utilities are shown, to the best of the Owner’s knowledge, on the topographic survey and plan drawings. It is the Contractor’s responsibility to verify that these utilities exist, and are field located before starting any construction operations.

D. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during construction operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the Owner’s Representative.
2. When closures and/or obstructions must occur, and is approved by the Owner’s Representative, provide alternate routes around all closed or obstructed traffic ways and pedestrian paths.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag trees scheduled for removal as shown on the construction drawings. Install orange plastic safety fencing at the drip line of all trees marked to remain.

C. Install erosion control measures in order to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties, walkways and streets. Refer to plan drawings and erosion control details on the plan drawings for specifics on locations and placement of erosion control measures.

D. Protect all existing site features to remain from damage during construction. If damage occurs to any existing site features scheduled to remain, the Contractor shall immediately contact the Owner's Representative. Restore damaged features to their original condition, as acceptable to the Owner's Representative, and at no additional cost.

E. Remove all trees and vegetation shown to be removed. This includes any and all tree stumps and roots encountered. Strip topsoil and test per the landscape specification.

F. Carefully remove all items indicated to be salvaged on the plan drawings and store within construction staging area.

3.2 UTILITIES

A. Do not interrupt existing utilities serving facilities occupied by adjacent property Owners. If services must be temporarily disconnected, Contractor shall obtain a letter of written permission from the utility owner to interrupt service prior to starting any utility work, and Contractor shall submit letter to the Owner's Representative.

B. Identify, locate, disconnect and cap off utilities indicated to be removed and/or abandoned.

C. Remove all existing above and below grade utilities as indicated on the plan drawings and as necessary to facilitate new construction.

3.3 SITE IMPROVEMENTS

A. Remove all existing above and below grade site improvements as indicated on the construction drawings and as necessary to facilitate new construction.

3.4 DISPOSAL

A. Disposal: Remove surplus soil materials, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner's property.

END OF SECTION 31 1000

SECTION 31 16 00 - SITE PREPARATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. All work, installation, procedures, materials, etc. shall be in conformance with the Standard Specifications for Road and Bridge Construction, adopted January 1, 2022, along with all Supplemental Specifications and Recurring Special Provisions, by the Illinois Department of Transportation (herein referred to as the Standard Specifications) except as modified by this Specification.
   1. In the event of a conflict between the Contract Documents and the IDOT Standard Specifications or IDOT Standard Drawings, the IDOT Standard Specifications and IDOT Standard Drawings shall govern.
   2. Where the Contract Documents provide additional detail or more stringent requirements than the IDOT Standard Specifications or IDOT Standard Drawings, the more stringent requirement shall apply.

1.2 SUMMARY

A. The CONTRACTOR shall furnish all labor, materials, equipment and means to clear and prepare the project site as shown on the Contract Drawings or required to permit the installation of the facilities, and dispose of the materials. CONTRACTOR shall pay for all permits required under this specification.

B. This section includes the following:
   1. Temporary erosion and sediment control measures.
   2. Clearing and grubbing.
   3. Disconnecting, capping or sealing, and/or removing site utilities.
   4. Removing existing pavement, sidewalk, curbs and any other above and below grade site structures and appurtenances.
   5. Stripping and stockpiling topsoil.
   6. Protecting existing vegetation to remain.
   7. Removing existing vegetation, trees, grasses, shrubs, and plants.

C. Related sections include the following:
   1. Section 312300 - Excavation and Fill for soil materials, excavating, backfilling, and site grading.

1.3 QUALITY ASSURANCE

A. Contractors Organization
   1. CONTRACTOR shall have a competent supervisor on-site throughout the duration of the work who shall act for the CONTRACTOR in all matters

concerning the scope of work. This person shall have the authority to receive and to act upon directions from the A/E and the OWNER.

1.4 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, weeds, roots, toxic materials, or other non-soil materials.

B. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

1.5 MATERIALS OWNERSHIP & CONSTRUCTION WASTE MANAGEMENT

A. Except for stripped topsoil and any other materials indicated to be stockpiled or to remain OWNER's property, all demolished and/or cleared materials shall become the property of the CONTRACTOR, and shall be removed from the site.

1.6 UNDERGROUND FACILITIES

A. Underground Facilities
   1. The information and data shown or indicated in the Construction Drawings 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 or by others. The OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data. The cost of all of the following will be included in the Contract Price and CONTRACTOR shall have full responsibility for:
      i. Reviewing and checking all such information and data;
      ii. Locating all Underground Facilities shown or indicated in the Contract Documents;
      iii. Coordinating the Work with the owners of such Underground Facilities during construction; and,
      iv. Maintaining the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.
      v. Not interrupting existing utilities serving facilities occupied by adjacent property Owners. If services must be temporarily disconnected, Contractor shall obtain a letter of written permission from the utility owner to interrupt service prior to starting any utility work, and Contractor shall submit letter to the Owner's Representative.
   2. Utility Locator Service: Notify J.U.L.I.E. for public utility location marking before site clearing.
      CONTRACTOR shall employ Private Utility Locating Service for marking utilities onsite that are private.

1.7 SUBMITTALS

A. Existing conditions photographs or videotape: Sufficiently detail all existing site conditions. This includes the condition of trees and plants to remain, adjoining construction, and any other site conditions that might be misconstrued as damage caused by construction. Submit to the Owner's Representative for verification and agreement prior to the start of any construction operations.

B. Illinois One-Call contact confirmation letter: Submit a letter, on Contractor's company letterhead, stating that Illinois One-Call has been contacted, and that, to the best of the Contractor's knowledge, all public utilities have been marked. Submit to the Owner's Representative for verification prior to the start of any construction operations.

C. Product Data: Erosion Control Measures.

1.8 PROJECT CONDITIONS

A. Contractor shall contact J.U.L.I.E. Illinois One-Call System (800-892-0123) to have all public utilities within the project area located before starting any construction operations.

B. It is the responsibility of the Contractor to provide any and all necessary surveying and construction layout staking for this project.

C. Private site utilities are shown, to the best of the Owner's knowledge, on the topographic survey and plan drawings. It is the Contractor's responsibility to verify that all private utilities exist, and are field located before starting any construction operations.

D. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during construction operations.

E. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the Owner's Representative.

F. When closures and/or obstructions must occur, and is approved by the Owner's Representative, provide alternate routes around all closed or obstructed traffic ways and pedestrian paths.

G. Do not commence site clearing operations until project erosion and sedimentation control measures are in place.

H. Fires or burning will not be permitted.

PART 2 - PRODUCTS

2.1 EROSION CONTROL MEASURES

A. Contractor shall follow the Temporary Erosion Control Systems drawing details, IDOT Standard 280001-07, for proper materials and installation of erosion control measures. This includes, but is not limited to, the following:

B. Siltation Control Fencing

C. Inlet Sedimentation Traps.

D. When local and/or state land disturbance codes and ordinances require more stringent erosion control methods, products, or installation, the more stringent codes shall be followed.

2.2 MATERIALS

A. The CONTRACTOR shall provide all materials and equipment necessary to complete all site clearing in accordance with this Section.

B. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

A. Contractor is responsible for providing any and all surveying/staking needed to place site improvements in correct locations, as outlined on the construction drawings. Protect and maintain survey benchmarks and survey control points from disturbance during construction.

B. Install erosion and sedimentation control measures as outlined on the construction drawings.

C. Locate and clearly flag all trees scheduled for removal as shown on the construction drawings. Install orange plastic safety fencing at the drip line of all trees marked to remain.

D. Protect all existing site features to remain from damage during construction. If damage occurs to any existing site features scheduled to remain, the Contractor shall immediately contact the Owner's Representative. Restore damaged features to their original condition, as acceptable to the Owner's Representative, and at no additional cost.

E. Carefully remove all items indicated to be salvaged on the plan drawings and store within construction staging area.

B. CLEARING AND GRUBBING, TREE REMOVAL, & PROTECTION OF EXISTING TO REMAIN

A. Strip and clear all ground cover, grass, trees, shrubs, roots, obstructions, waste materials in planned disturbance areas as shown on the construction drawings. All cleared items shall not be reused or incorporated into fill materials. All cleared materials shall be hauled off-site and disposed on in a legal manner.

B. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.

C. 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.

D. Completely remove all below grade stumps and roots of trees scheduled to be removed.

E. Immediately after clearing of surface vegetation, Contractor shall have the topsoil tested for suitability of reuse. If tested topsoil is suitable for re-use, Contractor shall strip topsoil and stockpile within the project limits in an area designated by the Owner's Representative. Any topsoil tested and deemed not suitable for re-use can be then either classified as either satisfactory or unsatisfactory soil material for fill/backfill purposes. All topsoil deemed unsuitable for topsoil use and deemed unsuitable for soil fill purposes shall be hauled off-site. Any additional topsoil import obtained from off-site sources needed to complete the project must also be tested and deemed suitable for use.

F. Fill depressions caused by clearing and grubbing operations with satisfactory soil material in fill areas only.

G. Protect curbs, structures, utilities, sidewalks, pavements, trees, buildings, playground equipment, and other facilities within the project limits from damage. CONTRACTOR shall replace / repair damage in kind at no additional cost to the OWNER.

3.2 SITE IMPROVEMENTS

A. Remove all existing above and below grade site improvements as indicated on the construction drawings and as necessary to facilitate new construction.

3.3 UTILITIES

A. Do not interrupt existing utilities serving facilities occupied by adjacent property Owners. If services must be temporarily disconnected, Contractor shall obtain a letter of written permission from the utility owner to interrupt service prior to starting any utility work, and Contractor shall submit letter to the Owner's Representative.

B. Identify, locate, disconnect and cap off utilities indicated to be removed and/or abandoned.

C. Remove all existing above and below grade utilities as indicated on the plan drawings and as necessary to facilitate new construction.

3.4 DISPOSAL

A. Disposal: Remove surplus soil materials, unsuitable topsoil, obstructions, demolished materials, and waste materials, including trash and debris, and legally dispose of them off the Owner's property.

END OF SECTION 31 16 00

SECTIONS 31 23 00 – Excavation and Fill

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. All work, installation, procedures, materials, etc. shall be in conformance with the Standard Specifications for Road and Bridge Construction, adopted January 1, 2022, along with all Supplemental Specifications and Recurring Special Provisions, by the Illinois Department of Transportation (herein referred to as the Standard Specifications) except as modified by this Specification.
   1. In the event of a conflict between the Contract Documents and the IDOT Standard Specifications or IDOT Standard Drawings, the IDOT Standard Specifications and IDOT Standard Drawings shall govern.
   2. Where the Contract Documents provide additional detail or more stringent requirements than the IDOT Standard Specifications or IDOT Standard Drawings, the more stringent requirement shall apply.

1.2 SUMMARY

A. Earthwork shall consist of all work required to construct the earth grade to the lines, grade, and cross sections called for on the Contract Drawings and Specifications. Earthwork shall consist of, but is not limited to, excavation, removal, and satisfactory disposal of all materials and seeding; and the removal and satisfactory disposal of unstable and unsuitable materials and the replacement with satisfactory materials where required. All costs for obtaining materials from an off-site borrow area, a site for dumping waste materials, the hauling of materials to and from these areas, and erosion control shall be the CONTRACTOR's responsibility. The CONTRACTOR shall pay for all permits required under this Specification.

B. Section includes the following:

   1. Excavating and filling for rough grading the Site.
   2. Preparing subgrades for slabs-on-grade, walks, pavements, turf and grasses, and plants.
   3. Excavating and backfilling for buildings and structures.
   4. Drainage course for concrete slabs-on-grade.
   5. Subbase course for concrete walks and pavements.
   6. Subbase course and base course for concrete and asphalt paving.
   7. Subsurface drainage backfill for trenches.
   8. Excavating and backfilling trenches for utilities and pits for buried utility structures.

C. Related sections include the following:

1. Section 31 16 00 Site Preparation for all site preparation operations.

1.3 DEFINITIONS

A. Aggregate Base: Layer of rock placed above prepared subgrade for slabs-on-grade and pavements.

B. Backfill: Soil materials used to fill an excavation.

C. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.

D. Final Backfill: Backfill placed over initial backfill to fill a trench.

E. Bedding: Layer placed over the excavated subgrade in a trench before laying pipe.

F. Borrow: Satisfactory soils imported from off-site for use as fill or backfill.

G. Deleterious material: Glass, fabric, wood, organics, rubble larger than 6 inches in any dimension, or any other compressible material.

H. Drainage Backfill: Rock placed in areas to specifically drain water.

I. Drainage Fabric: Nonwoven geotextile specifically designed for subsurface drainage and soil separation.

J. Excavation: Removal of material encountered above planned subgrade elevations.

K. Additional Excavation: Excavation below planned subgrade elevations due to encountered unsuitable materials. Additional excavation and replacement material will be paid for according to the Contract provisions for changes in the Work. Unsuitable materials can only be classified by the GEOTECHNICAL ENGINEER. The OWNER will not pay for additional excavation that has not been approved in writing by the GEOTECHNICAL ENGINEER.

L. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated dimensions without direction by the GEOTECHNICAL ENGINEER. Unauthorized excavation shall be without additional compensation.

M. Fill: Soil materials used to raise existing grades.

N. Geotechnical Testing Agency: Individual or company who will be providing geotechnical testing responsibilities for this project.

O. Over-excavation: Excavation below planned subgrade elevations.

P. Prepared Subgrade: Subgrade that has been proof-rolled according to this specification, compacted according to this specification, and approved by the Geotechnical Testing Agency.

Q. Rock: Material defined as and including all solid rock in ledges, embedded deposits, in unstratified masses, in conglomerate deposits or boulders so firmly cemented as to present all the characteristics of solid rock, stratified in layers greater than 4" thick between seams of ledge rock, and any material where each piece is greater than one cubic yard in volume such as boulders, detached pieces of limestone, hard sandstone, most shales, soft sandstone or rubble, and which require the use of drilling, blasting, or continued use of pneumatic jackhammers, 3/4 cubic yards or more in volume. All material which can be removed and loaded with normal power operating excavation equipment, including bulldozers and front end loaders, shall not be classified as rock.
   1. Class I: Field Rock
   2. Class II: Trench Rock

R. Satisfactory soils: Materials consisting of low plasticity, cohesive soils or well graded granular materials. Satisfactory soils shall include non-organic materials designated in soil classification groups CL, ML, CL-ML, SW, GW, and GM by ASTM D 2487. Satisfactory soils shall not contain debris/waste of any kind, frozen materials, vegetation, and other deleterious matter.

S. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

T. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill.

U. Unclassified Excavation: Excavation beyond subgrade that has been determined by the Geotechnical Testing Agency as unsatisfactory soils, and that has been authorized to be removed by the OWNER’s Representative

V. Unsatisfactory soils: All soils not defined as Satisfactory Soils using the definition above.

W. Utilities: above or below ground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.4 QUALITY ASSURANCE

A. Installation by a contractor specializing in the work, and with a minimum of ten (10) years of documented experience for successful, high quality installations of excavation and fill specified herein.

B. Geotechnical Testing Agency Qualifications: The Owner will engage an independent testing agency qualified according to ASTM E 329 to conduct soil materials, rock-definition testing and compaction testing as documented according to ASTM D 3740 and ASTM E 548. The Contractor is responsible for giving the Owner or their Testing Agency 24 hour prior notification of when work is ready to be tested for approval.

1.5 SUBMITTALS

A. Samples:
   1. 60-lb soil samples, sealed in airtight containers, of each proposed fill soil material from on-site or borrow sources. Submit samples to the Geotechnical Testing Agency for testing.

B. Product Data:
   1. Detectable utility trench warning tape. Submit product data to the CIVIL ENGINEER.

C. Material Test Reports: From the Geotechnical Testing Agency, indicating and interpreting test results for compliance with the following requirements indicated: (submit test reports to the OWNER's Representative and CIVIL ENGINEER.
   1. Classification according to ASTM D 2487 of each on-site soil material and/or borrow site soil material proposed for use as fill and/or backfill.
   2. Laboratory compaction curves according to ASTM D 698 (Standard Proctor) for each on-site soil material or borrow site soil material proposed for use as fill and/or backfill. This test may require 3 to 4 business days to complete. This test must be completed prior to commencing earthwork.

D. Test Reports: From the Geotechnical Testing Agency, indicating and interpreting test results for compliance with the following requirements indicated: (The Geotechnical Testing Agency shall submit test reports to the OWNER's Representative, CIVIL ENGINEER and Contractor no more than 24 hours after the test results are known.)
   1. Test Reports as indicated in "Field Quality Control" section of this specification.

1.6 PROJECT CONDITIONS

A. Do not interrupt existing utilities serving facilities occupied by the OWNER or others unless permitted by the OWNER's representative or the utility owner. Contractor shall obtain written permission from the utility owner to interrupt service prior to starting any utility work.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide off-site borrow soil materials when sufficient satisfactory soil materials are not available from on-site project areas.

B. Satisfactory Soils: Existing excavated satisfactory soil materials can be reused provided that any compressible or other deleterious materials (debris, waste, frozen materials, vegetation, wood, metals, etc.) have been removed.

C. Unsatisfactory Soils: Soils not meeting the definition of Satisfactory Soil Materials as mentioned above. When unsatisfactory soil materials are

encountered, they shall be treated as waste materials. Soil materials classified as unsatisfactory soil materials may only be reused after a soil remediation plan has been specifically authorized and/or approved by the Geotechnical Testing Agency.

D. Backfill and Fill: Satisfactory soil materials, or remediated Unsatisfactory Soils as directed by the Geotechnical Testing Agency.

E. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

F. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2- inch sieve and 0 to 5 percent passing a No. 8 sieve.

G. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand with 100 percent passing the 1-inch sieve.

H. Impervious Fill: Silty clay or clay soil capable of compaction to a dense state.

2.2 ACCESSORIES

A. Detectable utility trench warning tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, minimum 6 inches wide and 4 mils thick, continuously inscribed with a description of utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector with tape is buried up to 36 inched deep, with colors as follows:
   1. Red: Electric.
   2. Yellow: Gas, oil, steam.
   3. Orange: Telephone and other communications.
   4. Blue: Water systems.
   5. Green: Sewer systems.

PART 3 EXECUTION

3.1 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. Prevent surface water and ground water from entering excavations, from ponding on prepared sub-grades, and from flooding project site and surrounding area.

C. Protect and maintain benchmarks and survey control points from disturbance during construction.

D. Verify that all erosion control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust has been installed properly, and in the locations and methods shown on the construction drawings.

E. Protect sub-grades from softening, undermining, washout, and damage by rain or water.

F. Stockpile borrow materials and satisfactory soil materials, without intermixing, in shaped, graded, drained, and covered stockpiles. Stockpile soil materials away from edge of excavations and outside drip line of remaining trees.

G. Fill and backfill: Place backfill and fill materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.

H. Subgrades: Uniformly moisten or aerate subgrade before compaction to within 2 percent of optimum moisture content. Remove and replace, or scarify and air-dry, soil materials that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight. Compact subgrade as indicated in 3.1.H. Once subgrade has been compacted, proof roll subgrades with heavy pneumatic-tired equipment under supervision of the OWNER's Representative to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities.

I. Compaction: Compact fill, backfill, and prepare subgrades to not less than the following percentages of maximum dry density as determined by the modified Proctor test, according to ASTM D 1557:
   1. Under structures, building slabs, steps, pavements, and sidewalks compact and prepare subgrade and each layer of backfill or fill material to 95 percent of the standard Proctor maximum dry density.
   2. Under lawn or unpaved areas, compact and prepare subgrade and each layer of backfill or fill material to 85 percent of the standard Proctor maximum dry density.

J. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled or where they lose compaction.

K. Grading tolerances: Uniformly grade areas to smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated. Grade lawns, walks, and unpaved subgrades to tolerances of plus or minus 1 inch (25 mm) and pavements and areas within building lines to plus or minus 1/2 inch (13 mm). Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled or where they lose compaction.

L. Where settling occurs, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

M. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off OWNER's property.

N. Protect all structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations. If damage occurs, the contractor shall restore damaged features to their original condition, as acceptable to the OWNER's Representative, and at no additional cost.

3.2 STORAGE OF SOIL MATERIALS

A. Stockpiles borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust. Place erosion control measures at the base of all soil stockpile areas.

B. Stockpile soil materials away from edges of construction. Do not store stockpile materials within the drip line of trees to remain.

3.3 DEWATERING

A. Prevent surface water and ground water from entering excavations, ponding on prepared subgrades, and flooding Project site and surrounding area by rerouting surface water away from excavated areas. Do not use excavated trenches as temporary drainage ditches.

B. Do not allow water to accumulate in excavations or on prepared subgrades. Install pumps or dewatering systems to keep excavations and subgrades dry. Convey water away from project area, and filter discharge water to prevent soil-bearing water runoff. Maintain dewatering methods until no longer needed.

C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

3.4 EXPLOSIVES

A. Explosives: Explosives are not permitted on the jobsite. Do not use explosives.

3.5 GRADING

A. General: Uniformly grade areas to a smooth surface, free from 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 (25 mm).
2. Walks: Plus or minus 1/2 inch (13 mm).
3. Pavements: Plus or minus 1/2 inch (13 mm).

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch (13 mm) when tested with a 10-foot (3-m) straightedge.

3.6 EXCAVATION

A. It is the Contractor's responsibility to follow all local, state, federal and OSHA regulations with regards to excavation and trench safety. Brace and/or shore all excavations and utility trenches as required by all local, state, federal and OSHA regulations. Excavations and/or utility trenches left open for any amount of time shall be barricaded. Do not leave open excavations or utility trenches unattended.

B. Excavate to final elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.

C. If excavated materials are intended for fill and backfill, have the Geotechnical Testing Agency classify and approve excavated materials for reuse. Discard any deleterious materials or unsatisfactory soil materials and/or waste off-site. Deleterious materials include glass, fabric, wood, cinders, organics, rubble larger than 6 inches in any dimension, or any other compressible material.

D. Excavation for Structures, Footings and Foundations: Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm) for subgrade preparation. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction and for inspections.

E. Excavation for Pavements and Walks: Excavate to indicated elevations and dimensions for subgrade preparation. Extend excavations a sufficient distance from structures for placing and removing formwork, for installing services and other construction, and for inspections.

F. Excavation for Utility Trenches: Excavate trenches to 4 inches (100 mm) deeper, or as shown on the project plans, than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.
   1. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

G. Excavation for Lawn and Landscaped areas: Excavate areas under lawn and landscape areas to indicated final grades minus 6 inches. Place 4 inches of topsoil on the top of excavated lawn and landscape areas to accept 2 inch thick sod lawns.

3.7 FILL AND BACKFILL

A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.

B. For placing fills on existing areas sloped steeper than 1 vertical to 4 horizontal, contact Geotechnical Testing Agency and obtain instructions on how to place fill.

C. Place and compact fill materials to required elevations as follows: (Refer to "COMPACTION" section of this specification for proper compaction requirements.)
   1. Under lawn and landscape areas, use satisfactory soil material.
   2. Under walks and pavements, use satisfactory soil material.
   3. Under steps and ramps, use satisfactory or engineered fill material.
   4. Under building slabs, footings, and foundations, use satisfactory or engineered fill material.

3.8 SUBGRADE PREPARATION

A. Notify Geotechnical Testing Agency when excavations for footings, foundations, slabs-on-grade and pavements have reached required subgrade.

B. If Geotechnical Testing Agency determines that satisfactory soils are present, proof roll subgrade with a fully loaded tandem axle dump truck in order for Geotechnical Testing Agency to observe. If proof roll is satisfactory according to the Geotechnical Testing Agency, proceed with compaction as specified in "COMPACTION" section of this specification. In some cases, due to the nature of the soil materials, the Geotechnical Testing Agency may waive the need for proof rolling and compaction of the subgrade, in which case, Contractor shall proceed with placing fill as specified in the "FILL AND BACKFILL" section of this specification.

C. If Geotechnical Testing Agency determines that unsatisfactory soils are present, overexcavate to depths recommended by the Geotechnical Testing Agency. Continue this procedure until Geotechnical Testing Agency has approved that overexcavated grade is suitable. Proof roll excavated subgrades with a fully loaded tandem axle dump truck in order for Geotechnical Testing Agency to observe. If proof roll is satisfactory according to the Geotechnical Testing Agency, proceed with compaction as specified in "COMPACTION" section of this specification. In some cases, due to the nature of the soil materials, the Geotechnical Testing Agency may waive the need for proof rolling and compaction of the subgrade, in which case, Contractor shall proceed with placing fill as specified in the "FILL AND BACKFILL" section of this specification.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, as directed by the Geotechnical Testing Agency. Contractor shall be responsible for rebuilding damaged subgrades at no additional cost to the OWNER.

E. The Contractor is responsible for limiting the amount of heavy vehicle construction traffic on planned subgrades. Contractor shall be responsible for

rebuilding damaged subgrades as a result of excessive construction traffic at no additional cost to the OWNER.

3.9 BACKFILL FOR STRUCTURES

A. Place and compact backfill in excavations using satisfactory soil materials according to the “COMPACTION” section of this specification, but not before completing the following:
   1. Surveying locations of underground utilities for record documents.
   2. Inspecting and testing underground utilities.
   3. Removing concrete formwork and inspecting footings and foundations.
   4. Removing trash and debris from the formwork excavations.

3.10 BACKFILL FOR UTILITY TRENCHES

A. Place and compact bedding course on trench bottoms where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

B. Coordinate backfilling with utilities testing. Test utilities and confirm positive test results prior to backfilling utility trenches.

C. Initial backfill: Place and compact backfill materials, as specified in the utility trench details on the plan drawings. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system. Compact initial backfill as specified in “COMPACTION” section of this specification.

D. Final backfill: Place and compact final backfill materials under both lawn/landscape area and pavement area as shown in the utility trench details on the plan drawings. Compact final backfill as specified in “COMPACTION” section of this specification.

E. Install utility warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements.

3.11 COMPACTION

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 4 percent of optimum moisture content.
   1. Do not place backfill or fill 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 percent and is too wet to compact to specified dry unit weight.

B. Place backfill and fill materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.

C. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

D. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 698 (Standard Proctor Test):
   1. Building and pavement subgrades: compact to 95 percent.
   2. Fill and backfill under areas of building pads and pavements: compact each 8 inch layer to 95 percent.
   3. Fill and backfill under areas of lawn and landscaping: compact each 8 inch layer to 85 percent.

3.12 FIELD QUALITY CONTROL

A. Fill and Backfill courses: Geotechnical Testing Agency shall inspect and test each fill or backfill layer with the frequency of at least one test for every 10,000 sq. ft., but in no case fewer than 2 tests. Proceed with placing next earthwork fill or backfill layer only after test results for previously completed work complies with requirements.

B. Building and Pavement Subgrades: The Geotechnical Testing Agency shall test compaction of soils in place, according to ASTM D 698 (Standard Proctor Test). Tests will be performed at the following locations and frequencies:
   1. Building Footing Subgrade Areas: At least one test for every 50 sq. ft. but in no case fewer than 1 test per building side
   2. Pavement Areas: At least one test for every 2000 sq. ft. of paved area or building slab, but in no case fewer than three tests.
   3. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet of wall length, but in no case fewer than two tests.
   4. Trench Backfill: At each compacted backfill layer, at least one test for each 150 feet of trench length, but no fewer than two tests.

C. When the Geotechnical 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. The OWNER is not responsible for any costs associated with retesting previously failed areas.

3.13 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 GEOTECHNICAL ENGINEER; 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 the greatest extent possible.

3.14 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal:
   1. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off OWNER's property.

END OF SECTION 31 23 00

SECTION 31 25 00 - STORM WATER POLLUTION PREVENTION PLAN

PART 1 GENERAL

1.1 PURPOSE

A. In general, construction activities produce many kinds of pollutants which may cause storm water contamination problems. Grading activities remove grass, rock, pavement, and other protective ground covers resulting in the exposure of underlying soils to the elements. Since the soil surface is unprotected, soil particles are easily picked up by wind and rain. This process is called erosion. The water carrying these particles eventually slows down enough and causes the soils to come out of suspension in sewer pipes, sewer structures, storm water ditches, river and stream beds, and lakes. Gradually, layers of these soils build up in stream beds, choking the river and stream channels and covering the areas where fish spawn and plants grow. This process is called sedimentation. The suspended soil particles also cloud waters causing aquatic respiration problems, killing fish and plants. Muddy storm water deposits at the project site can also be a messy nuisance, causing storm pipe blockages and in some cases, cause delays in construction activities. The construction of buildings and roads may also require the use of toxic or hazardous materials such as petroleum products, pesticides, herbicides, asphalt, sealants, etc. which may pollute storm water running off the construction site. These types of pollutants often contain small amounts of metals and other toxic materials which may be harmful to humans, fish and plants. The goal of this storm water pollution prevention plan (SWPPP) is to improve water quality by reducing pollutants associated with the construction storm water discharge.

1.2 RELATED DOCUMENTS

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

B. All work, installation, procedures, materials, etc. shall be in conformance with the Standard Specifications for Road and Bridge Construction, adopted January 1, 2022, and the Supplemental Specifications and Recurring Special Provisions, adopted January 1, 2022, by the Illinois Department of Transportation (herein referred to as the Standard Specifications) except as modified by this Specification, and the Illinois Urban Manual.

C. CONTRACTOR(s) shall be familiar with the current edition of the Illinois Urban Manual, as developed by the Natural Resources Conservation Service and the Illinois Environmental Protection Agency, available for viewing at:
http://www.aiswcd.org/illinois-urban-manual/
The Illinois Urban Manual list of standard drawings can be viewed at:
http://www.aiswcd.org/wp-content/uploads/2013/06/urbstls11.pdf

1.3 CERTIFICATIONS

A. OWNER - "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

1. Owner Name:
2. Address:
3. Phone:
4. Authorized Representative Name:
5. Title:
6. Signature:
7. Date:

B. CONTRACTOR – This certification statement is part of the Storm Water Pollution Prevention Plan, in accordance with the General NPDES Permit No. ILR10 issued by the Illinois Environmental Protection Agency. "I certify under penalty of law that I understand the terms of the general National Pollutant Discharge Elimination System (NPDES) permit ILR10) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification. In addition, I have read and understand all of the information and requirements stated in the Storm Water Pollution Prevention Plan for this project; I have provided all documentation required to be in compliance with the ILR10 and Storm Water Pollution Prevention Plan and will provide timely updates to these documents as necessary."

1. Contractor Name:
2. Address:
3. Phone:
4. Authorized Representative Name:
5. Title:
6. Signature:
7. Date:

1.4 SITE DESCRIPTION

A. Nature of Construction Activity - The project will consist of widening on US 45 in order to construct a turn lane, constructing and we entrance off of US 45 to connect with Podesta Drive, constructing new shoulders on US 45, paving, seeding, and additional landscaping improvements.

B. Sequence
   1. Install soil erosion and sediment control measures
   2. Strip and stockpile topsoil / protect with temporary seeding and silt fence
   3. Clear and grade site
   4. Apply temporary seeding
   5. Construct all sewers and utilities
   6. Complete pavements and buildings.
   7. Apply final seeding

C. Site Area
   1. Disturbed Area: 2.75 acres

D. Receiving Waters
   1. The drainage shall continue to flow to predevelopment areas during construction and following completion of the project

E. Site Features and Sensitive Areas to be Protected
   1. Special care is requested of the CONTRACTOR to prevent sediment runoff into downstream drainage facilities.

F. Potential Sources of Pollution (sediment to storm water runoff):
   1. Clearing and grubbing
   2. Grading and excavating
   3. Topsoil Stripping and Stockpiling
   4. Utility Installation
   5. Paving

G. Potential pollutants and sources (other than sediment) to storm water runoff
   1. Combined Staging Area - small fueling activities, minor equipment maintenance, and sanitary facilities
   2. Materials Storage Area - general building materials, solvents, adhesives, paving materials, paints, aggregates, and trash.
   3. Construction Activity - paving, curbing installation, and concrete pouring.
   4. Concrete Washout Area

PART 2 PRODUCTS

2.1 SILT FENCE

A. Provide in accordance with Section 280 and 1080.02 of the Standard Specifications and the IDOT Highway Standard 280001-07 as shown on the plans or the Illinois Urban Manual Standard Drawing IUM-620A.

2.2 DITCH CHECKS

A. Rolled Excelsior per Section 280 of the Standard Specifications; or

B. Urethane Foam / Geotextile per Plans or IL Urban Manual Standard IL-542.

2.3 INLET PROTECTION

A. Provide in accordance with the IDOT Highway Standard 280001-07.

2.4 MULCH, EROSION CONTROL BLANK, AND TURF REINFORCEMENT MAT

A. Provide in accordance with Section 251 of the IDOT Standard Specifications or the Illinois Urban Manual Standard Drawing IUM-530.

2.5 OPERATION CONTROLS

This section of the plan addresses the controls that will be implemented for each of the major construction activities described above. For each measure discussed, the contractor will be responsible for its implementation as indicated. The contractor shall provide a plan for the implementation of the measures indicated, and keep at the jobsite. The contractor, and subcontractors, shall update the plan with any proposed changes, maintenance, or modifications to keep construction activities compliant with the permit. Each such contractor shall sign the required certification on forms which are part of this plan.

A. Erosion and Sediment Controls – The controls utilized for this project will at a minimum provide the following:
   1. Control storm water volume and velocity within the site to minimize soil erosion;
   2. Control storm water discharges, including both peak flow rates and total storm water volume, to minimize erosion at outlets and to minimize downstream channel and stream bank erosion;
   3. Minimize the amount of soil exposed during construction activity;
   4. Minimize the disturbance of steep slopes;
   5. Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting storm water runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site;
   6. Provide and maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal and maximize storm water infiltration, unless infeasible; and
   7. Minimize soil compaction and, unless infeasible, preserve topsoil.

B. Stabilization Practices - Provided below is a description of interim and permanent stabilization practices, including site specific scheduling of the implementation of the practices. Site plans will ensure that existing vegetation is preserved where attainable and disturbed portions of the site will be stabilized. The following Stabilization Practices will be used for this project:
   1. Phase Construction Activity

a. Temporary erosion and sedimentation controls shall be placed prior to commencement of construction grading.
b. Minimize disturbance of areas until it is necessary for construction to proceed.

2. Control Storm Water Flowing onto and through the Project
   a. CONTRACTOR shall be responsible for controlling surface water during the course of the construction activities. Surface water may need to be diverted through the site via CONTRACTOR determined means and methods. Water ponding in excavation areas may be removed in accordance with project specifications for dewatering; however, discharge from these activities shall comply with sediment capture standards applicable to this project.
3. Provide Temporary and Permanent Seeding
   a. CONTRACTOR shall be responsible for placing temporary and permanent seeding in accordance with the NPDES permit. The seeding shall be covered with mulch, erosion control blanket or turf reinforcement mat as shown on the plans and in accordance with Section 250 of the Standard Specifications.

C. Structural Practices: Provided below is a description of structural practices that will be implemented, to the degree attainable, to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include but are not limited to: perimeter erosion barrier, earth dikes, drainage swales, sediment traps, ditch checks, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions, and temporary or permanent sediment basins. The following Structural Practices will be used for this project:

1. Protect Storm Drain Inlets
   a. Inlet Protection shall be used to capture sediment at the inlet to a storm drain, allowing full use of the drain system during the construction period.
   b. Ditch Checks shall be used to trap sediment from disturbed areas by reducing the velocity of flow in drainage swales. The ditch checks capture sediment by ponding water to allow deposition, not by filtration.
2. Establish Perimeter Controls and Sediment Barriers
   a. Silt Fence shall be used to trap sediment from disturbed areas by reducing the velocity of sheet flow. Silt fences capture sediment by ponding water to allow deposition, and not by filtration (IUM Code 920).
3. Establish Stabilized Construction Exits
   a. Stabilized Construction Entrance (Illinois Urban Manual IL-630)
   b. Construction Road Stabilization (Illinois Urban Manual Code 930)

D. Other Controls:

1. Vehicle Entrances and Exits - Stabilized construction entrances and exits must be constructed to prevent tracking of sediments onto roadways.

2. Material Delivery, Storage, and Use - The following BMPs shall be implemented to help prevent discharges of construction materials during delivery, storage, and use:
   a. All products delivered to the project site must be properly labeled.
   b. Water tight shipping containers and/or semi trailers shall be used to store hand tools, small parts, and most construction materials that can be carried by hand, such as paint cans, solvents, and grease.
   c. A storage/containment facility should be chosen for larger items such as drums and items shipped or stored on pallets. Such material is to be covered by a tin roof or large sheets of plastic to prevent precipitation from coming in contact with the products being stored.
   d. Large items such as light stands, framing materials and lumber shall be stored in the open in a general storage area. Such material shall be elevated with wood blocks to minimize contact with storm water runoff.
   e. Spill clean-up materials, material safety data sheets, an inventory of materials, and emergency contact numbers shall be maintained and stored in one designated area and each CONTRACTOR is to inform his/her employees and the OWNER of this location.
3. Waste Disposal. No materials, including building materials, shall be discharged into Waters of the State, except as authorized by a Section 404 permit.
4. The provisions of this plan shall ensure and demonstrate compliance with applicable State and/or local waste disposal, sanitary sewer or septic system regulations.
5. The CONTRACTOR shall provide a written and graphic plan to the OWNER identifying where each of the above areas will be located and how they are to be managed.

E. Approved State or Local Laws
1. The management practices, controls and provisions implemented in this plan shall be in accordance with IEPA's Illinois Urban Manual and / or IDOT specifications, which are at least as protective as the requirements contained in the Illinois Environmental Protection Agency's Illinois Urban Manual.

PART 3 EXECUTION

3.1 MAINTENANCE

The following is a description of procedures that will be used to maintain, in good and effective operating conditions, the vegetation, erosion and sediment control measures and other protective measures identified in this plan.

A. Silt Fence
1. Install prior to beginning any construction activity which will potentially create erodible conditions. Damaged silt fence shall be removed and

replaced as needed. Excess sediment behind silt fences shall be removed and property disposed when sediment reaches one-third the height of the fabric.

B. Stabilized Access
1. The exit shall be maintained in its original installation condition to prevent tracking of sediment on public right-of-way. Restoring the exit to its original condition may be accomplished by top dressing with additional rock, removing and replacing the top layer of rock, or washing the entrance. Sediment washed onto public right-of-way shall be removed immediately.

C. Ditch Checks
1. Install immediately upon completion of the excavation and grading work to establish the proper grade of each channel for which at least one ditch check has been specified. Contractor to remove sediment that accumulates behind the ditch check.

D. Inlet and Pipe Protection
1. For storm sewers and inlets, place prior to any construction activity that will potentially create erodible conditions. Protection shall be inspected frequently, and removed and replaced as necessary.

3.2 INSPECTIONS

Qualified personnel (provided by the GENERAL CONTRACTOR) shall inspect disturbed areas of the construction site which have not yet been finally stabilized, structural control measures, and locations where vehicles and equipment enter and exit the site. Such inspections shall be conducted at least once every seven (7) calendar days and within 24 hours of the end of a storm or by the end of the following business or work day that is 0.5 inches or greater or equivalent snowfall. Inspections forms (attached to this document) must be completed at the above mentioned inspection intervals by the qualified personnel. Inspections may be reduced to once per month when construction activities have ceased due to frozen conditions. Weekly inspections shall recommence when construction activities are conducted, or if there is 0.5” or greater rain event, or a discharge due to snowmelt occurs.

A. Disturbed areas, use areas (storage of materials, stockpiles, machine maintenance, fueling, etc.), borrow sites, and waste sites shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the plan shall be observed to ensure that they are operating correctly. Discharge locations or points that are accessible, shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles enter or exit the site shall be inspected for evidence of offsite sediment tracking.

B. If any violation of the provisions of this plan is identified during the conduct of the construction work covered by this plan, the GENERAL CONTRACTOR shall notify the appropriate IEPA Field Operations Section office by email at:

epa.swnoncomp@illinois.gov, telephone or fax within 24 hours of the incident. The GENERAL CONTRACTOR shall then complete and submit an “Incidence of Noncompliance” (ION) report for the identified violation within 5 days of the incident. The GENERAL CONTRACTOR shall use forms provided by the Illinois Environmental Protection Agency and shall include specific information on the cause of noncompliance, actions which were taken to prevent any further causes of noncompliance, and a statement detailing any environmental impact which may have resulted from the noncompliance. All reports of noncompliance shall be signed by a responsible authority in accordance with Part VI.G of the NPDES General Permit ILR10.

1. The Incidence of Non-Compliance (ION) can be downloaded at: http://www.epa.state.il.us/water/permits/storm-water/storm-water-forms.html
2. The ION form should be completed by the GENERAL CONTRACTOR and forwarded to the CIVIL ENGINEER for review and IEPA agency submittal.

3.3 DURATION OF EROSION CONTROL MEASURES

A. The Contractor will be responsible for the continued and proper maintenance of all erosion control measures until the vegetative ground surface cover has been established such that further presence of the measures is not required to protect against erosion.

B. The Contractor shall be responsible for the removal of all erosion control measures but only after the Engineer has approved removal of such.

C. The Contractor shall be responsible for the proper and lawful disposal of all materials used for the temporary erosion control measures.

3.4 NON-STORM WATER DISCHARGES

Except for flows from firefighting activities, sources of non-storm water that is combined with storm water discharges associated with the industrial activity addressed in this plan must be described below. Appropriate pollution prevention measures, as described below, will be implemented for the non-storm water component(s) of the discharge.

A. Spill Prevention and Control - BMPs shall be implemented to contain and clean-up spills and prevent material discharges to the storm drain system. The CONTRACTOR shall produce a written plan stating how his/her company will prevent, report, and clean up spills and provide a copy to all of his/her employees and the OWNER. The CONTRACTOR shall notify all of his/her employees on the proper protocol for reporting spills. The CONTRACTOR shall notify OWNER of any spills immediately.

B. Concrete Residuals and Washout Wastes - The following BMPs shall be implemented to control residual concrete, concrete sediments, and rinse water:
   1. The CONTRACTOR shall have the location of temporary concrete washout facilities approved by the OWNER or designated representative.
   2. Concrete waste solids/liquids shall be disposed of properly.

C. Vehicle and Equipment Cleaning - Vehicles and equipment are to be cleaned in designated areas only, preferably off site. Onsite maintenance must be performed in accordance with all environmental laws such as proper storage and no dumping of old engine oil or other fluids on site.

3.5 RECORDKEEPING / RETENTION OF RECORDS

A. The following is a list of records that shall be kept at the project site, available for viewing and for inspectors to review.
   1. Dates of Construction Activity
   2. Dates of Stabilization
   3. Inspection Reports

B. CONTRACTOR shall retain copies of storm water pollution prevention plans and all records, reports and notices required by this plan, for a minimum period of at least 3 years after the permit is terminated.

3.6 FINAL STABILIZATION / NOTICE OF TERMINATION

A. Upon final stabilization of the project site, the CONTRACTOR shall notify the OWNER of this project milestone. The Contractor shall then coordinate with the Owner the completion of a Notice of Termination.
   1. The Notice of Termination (NOT) can be downloaded at:

https://www2.illinois.gov/epa/topics/forms/water-permits/storm-water/Pages/construction.aspx

   2. The NOT form should be completed by the CONTRACTOR and forwarded to the CIVIL ENGINEER for review and IEPA agency submittal.

Erosion Control Inspection Report

Date of Inspection: _____

Name of Inspector: _____

Type of Inspection: Weekly ☐

>0.5" Precip. ☐ Precip. Amt: _____ "

Contractor: _____

Subs: _____

_____

NPDES Permit No: _____

Erosion and Sediment Control Practices

Item # / BMP			YES	NO	N/A
1.	**Slopes:**	Do all slopes and exposed areas where soil disturbing activities have temporarily or permanently ceased, and not permanently stabilized, have adequate temporary seed or other stabilization in accordance with the NPDES permitted 7 and 14 day rule?	☐	☐	☐
2.	**Ditches**	Are all ditches (existing and temporary) clear of sediment and/or debris?	☐	☐	☐
		Do all ditches have adequate stabilization and structural practices in place?	☐	☐	☐
3.	**Perimeter Erosion Barrier:**	Are all perimeter erosion barriers in good working order?	☐	☐	☐
		Has perimeter barrier no longer needed been removed and the area stabilized?	☐	☐	☐
4.	**Temporary Ditch Checks:**	Are all temporary ditch checks in good working order?	☐	☐	☐
		Are the current ditch checks adequate to control erosion?	☐	☐	☐
5.	**Temp Diversions/ Slope Drains:**	Are all Temporary Diversions and Slope Drains functioning properly?	☐	☐	☐
6.	**Inlet Protection:**	Are ALL inlet protection devices in good working order?	☐	☐	☐
		Are ALL inlet filters less than 25% full and fabric unobstructed?	☐	☐	☐
7.	**Sediment Basins/Traps:**	Are ALL sediment basins/traps in good working order?	☐	☐	☐
		Does sufficient capacity exist for the design stormwater event?	☐	☐	☐
8.	**Areas of Interest – Wetland/Prairie/Tree Preservation:**				
		Has the contractor remained clear of all designated "no entry" areas?	☐	☐	☐
		Are all "no intrusion" areas adequately marked to prevent accidental entry?	☐	☐	☐
9.	**Stock Piles:**	Are all stockpiles properly situated and maintained to prevent runoff and protected to minimize discharge of materials or residue in case of erosion?	☐	☐	☐
10.	**Borrow/Waste Sites:**	Are all borrow and waste locations, including those located offsite, in compliance with NPDES requirements?	☐	☐	☐
11.	**Other Installations:**	Are all other BMP installations shown in the plans properly functioning? (note in comments)	☐	☐	☐

General Site Maintenance Required of the Permit

12.	**Vehicle Tracking:**	Is the site free from mud, sediment and debris from the vehicles entering/leaving off road areas throughout the site?	☐	☐	☐
		Are Stabilized Construction field entrances properly located?	☐	☐	☐
		Are Stabilized Construction field entrances in good working condition?	☐	☐	☐

Item # / BMP			YES	NO	N/A
13.	**Concrete Washout Areas:**	Are concrete washout areas adequately signed and maintained? Has all washout occurred only at designated washout locations?	☐ ☐	☐ ☐	☐ ☐
14.	**Staging/Storage Areas:**	Are all staging/storage facilities free of litter, leaking containers, leaking equipment, spills, etc?	☐	☐	☐
15.	**Fuel/Chemical Storage:**	Are all fuels and chemicals stored only in designated locations? Are all designated locations free of evidence of leaks and or spills?	☐ ☐	☐ ☐	☐ ☐
16.	**Previous Inspection Follow Up:**	Have all corrections from the last report been properly completed? If not, has a NPDES/ESC Deficiency Deduction been assessed?	☐ ☐	☐ ☐	☐ ☐
17.	**Update SWPPP:**	Have all changes to the projects SWPPP been noted on the graphic site plan, signed and dated?	☐	☐	☐
18.	**Off-site Dischare of Sediment:**	Has sediment or other pollutants of concern been released from the project site? If Yes, has the Illinois Environmental Protection Agency been notified within 24 hours of your observation of the discharge and an Incidence of Non-Compliance (ION) mailed within 5 days?	☐ ☐	☐ ☐	☐ ☐

Specific Instructions Related to "No" Answers From Above:

Item #	Station or Station to Station	Practice	Comments/Actions Required	Time for Repair

Other Comments:

Additional Pages (Attached As Needed)

☐ Outfalls / Receiving Waters
☐ Drainage Structure/Ditch Check Locations
☐ Additional Instructions to Contractor

Other: _____

If the answer to any of Items 1-16 above is "No", the contractor is hereby ordered to correct the deficiency. Repairs and stabilization are to be completed within 24 hours of this report (or as indicated above) or the DAILY NPDES/ESC Deficiency Deduction will be assessed for each noted deficiency until the required action is completed.

Inspector's Signature _____ Date/Time: _____

Contractor's Signature _____ Date/Time: _____

Section 31 50 00 - Excavation Support and Protection

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. All work, installation, procedures, materials, etc. shall be in conformance with the Standard Specifications for Road and Bridge Construction, adopted January 1, 2022, along with all Supplemental Specifications and Recurring Special Provisions, by the Illinois Department of Transportation (herein referred to as the Standard Specifications) except as modified by this Specification.
   1. In the event of a conflict between the Contract Documents and the IDOT Standard Specifications or IDOT Standard Drawings, the IDOT Standard Specifications and IDOT Standard Drawings shall govern.
   2. Where the Contract Documents provide additional detail or more stringent requirements than the IDOT Standard Specifications or IDOT Standard Drawings, the more stringent requirement shall apply.

1.2 SUMMARY

A. Section includes temporary excavation support and protection systems.

B. Related sections include the following:
   1. Section 31 23 00 – Excavation and Fill

1.3 FIELD CONDITIONS

A. Interruption of Existing Utilities: Do not interrupt any utility serving facilities occupied by OWNER or others unless permitted under the following conditions and then only after arranging to provide temporary utilities according to requirements indicated:
   1. Notify A/E and OWNER no fewer than seven days in advance of proposed interruption of utility.
   2. Do not proceed with interruption of utility without OWNER’s written permission.

B. Project-Site Information: A geotechnical report has **NOT** been prepared for this Project.
   1. If necessary, the Contractor may make additional test borings and conduct other exploratory operations necessary for excavation support and protection according to the performance requirements at his/her own expense.

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Provide, design, monitor, and maintain excavation support and protection systems capable of supporting excavation sidewalls and of resisting earth and hydrostatic pressures and superimposed dead loads.
   1. CONTRACTOR Design: Design excavation support and protection system, including comprehensive engineering analysis with calculations signed and sealed by an Illinois Licensed Structural ENGINEER.
   2. Prevent surface water from entering excavations by grading, dikes, or other means.
   3. Install excavation support and protection systems without damaging existing buildings, structures, utilities, and other site improvements adjacent to the excavation.
   4. Continuously monitor vibrations, settlements, and movements to ensure stability of excavations and slopes and to ensure that damage to permanent structures is prevented.

PART 3 EXECUTION

3.1 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.
   1. Shore, support, and protect utilities encountered.

B. Install excavation support and protection systems to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
   1. Do not close or obstruct streets, walks, parking lots, or other adjacent occupied or used facilities without permission from OWNER and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

C. Locate excavation support and protection systems clear of permanent construction so that construction and finishing of other work is not impeded.

3.2 FIELD QUALITY CONTROL

A. Promptly correct detected bulges, breakages, or other evidence of movement to ensure that excavation support and protection system remains stable throughout construction.

B. Promptly repair damages to adjacent facilities caused by installation or faulty performance of excavation support and protection systems.

3.3 REMOVAL AND REPAIRS

A. Remove excavation support / protection systems when construction has progressed sufficiently to support excavation and earth and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils and rock or damaging structures, pavements, utilities, and facilities.
   1. Fill voids immediately with backfill compacted to a proper density approved by the A/E.
   2. Repair or replace, as approved by A/E, adjacent work damaged or displaced by removing excavation support and protection systems.

END OF SECTION 31 50 00

SECTION 32 11 23 - AGGREGATE BASE COURSES

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. All work, installation, procedures, materials, etc. shall be in conformance with the Standard Specifications for Road and Bridge Construction, adopted January 1, 2022, along with all Supplemental Specifications and Recurring Special Provisions, by the Illinois Department of Transportation (herein referred to as the Standard Specifications) except as modified by this Specification.
   1. In the event of a conflict between the Contract Documents and the IDOT Standard Specifications or IDOT Standard Drawings, the IDOT Standard Specifications and IDOT Standard Drawings shall govern.
   2. Where the Contract Documents provide additional detail or more stringent requirements than the IDOT Standard Specifications or IDOT Standard Drawings, the more stringent requirement shall apply.

1.2 SUMMARY

A. This section includes the following:
   1. Aggregate material requirements for base courses and utility trench backfill.

1.3 DEFINITIONS

A. Base Course: Layer placed between the subgrade and paving materials.

B. Geotechnical Testing Agency: Individual or company who will be providing geotechnical testing responsibilities for this project.

C. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

1.4 SUBMITTALS

A. Material Test Certifications: Written documentation from the manufacturing source certifying that each specified aggregate meets IDOT requirements.

B. Test Reports: From the Geotechnical Testing Agency, indicating and interpreting test results for compliance with the following requirements indicated: (Geotechnical Testing Agency shall submit test reports to the Owner's Representative, Civil Engineer and Contractor no more than 24 hours after the test results are known.)

1. Test Reports as indicated in “FIELD QUALITY CONTROL” section of this specification.

1.5 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: The Owner will engage an independent testing agency qualified according to ASTM E 329 to conduct soil materials, rock-definition testing and compaction testing as documented according to ASTM D 3740 and ASTM E 548. The Contractor is responsible for giving the Owner or their Testing Agency 24 hour prior notification of when work is ready to be tested for approval.

PART 2 PRODUCTS

2.1 MATERIALS

A. Base Courses: Materials shall be Coarse Aggregate as specified in Article/Section 1004.04 of the IDOT Standard Specifications.

PART 3 EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

C. Verify that all erosion control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust has been installed properly. Refer to plan drawings and erosion control details in the construction drawings for specifics on location and placement of erosion control measures.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. 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

3.3 EXCAVATION

A. Excavation for pavement areas: Excavate areas under pavement roadway areas to indicated subgrade elevations as shown on the plan drawings and detail sheet of the construction drawings.

3.4 STORAGE OF SOIL MATERIALS

A. Aggregates shall be produced, handled and stockpiled to minimize segregation, degradation and contamination. Regardless of the method of storage and handling, all aggregate that is segregated, degraded or contaminated to the extent that the aggregate does not meet specifications, will be considered unacceptable.

B. Stockpile aggregate materials away from edges of construction. Do not store within drip line of remaining trees.

3.5 COMPACTION

A. Only place aggregate bases on prepared subgrades.

B. Place aggregate base 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.

C. Compact each layer of aggregate base material to not less than the following percentages of maximum dry density as determined by the Standard Proctor test, according to ASTM D 698.
   1. Compact each layer of aggregate material by compacting to 100 percent of the maximum dry unit weight according to ASTM D 698 (Standard Proctor Test).

3.6 FIELD QUALITY CONTROL

A. Aggregate Base: The Geotechnical Testing Agency shall test compaction of the aggregate base in place, according to ASTM D 698 (Standard Proctor Test). Tests will be performed at the following locations and frequencies:
   1. Building Slabs and Pavement Areas: At least one test for every 2000 sq. ft. but in no case fewer than 3 tests.

B. When the Geotechnical Testing Agency reports that aggregate bases have not achieved degree of compaction specified, remove and replace aggregates, as required. Recompact and retest until specified compaction is obtained. The Owner is not responsible for any costs associated with retesting previously failed areas.

C. The Contractor is responsible for limiting the amount of heavy vehicle construction traffic on aggregate bases. Contractor shall be responsible for rebuilding damaged aggregate bases as a result of excessive construction traffic at no additional cost to the Owner.

3.7 PROTECTION

A. Protect newly placed aggregate bases from freezing and erosion. Keep free of trash and debris.

3.8 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal:
   1. Dispose of waste material and debris legally off Owner's property.

END OF SECTION 32 11 23

SECTION 32 12 16 – Hot-Mix Asphalt Paving

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Hot-Mix Asphalt Paving
   2. Pavement Markings
   3. Raised Reflective Pavement Markers

1.2 REFERENCES

A. All work, installation, procedures, materials, etc. shall be in conformance with the Standard Specifications for Road and Bridge Construction, adopted January 1, 2022, and the Supplemental Specifications and Recurring Special Provisions, adopted January 1, 2025 by the Illinois Department of Transportation (herein referred to as the Standard Specifications) except as modified by this Specification.

1.3 DEFINITIONS

A. Hot-Mix Asphalt Binder Course – Layer of asphalt placed above sub-base granular material and below asphalt surface.

B. Hot-Mix Asphalt Surface Course – Top layer of Hot-Mix Asphalt

C. Bituminous Materials, Prime Coat – Bituminous Materials applied to sub-base granular material before the first lift of Binder Course.

D. Bituminous Materials, Tack Coat – Bituminous Materials applied between Hot-Mix Asphalt lifts of binder and surface.

E. IDOT – Illinois Department of Transportation

F. LA-15 – IDOT form that is a suppliers certification indicating material is from approved stock. Form should include supplier, proper contract/job designation, material description, manufacturer, specific approved material (test ID number, lots, or batches), and quantity.

G. ILOK – Material is stamped by an IDOT inspector with an “ILL OK” stamp indicating prior inspection and acceptance.

1.4 SUBMITTALS

A. Hot-Mix Asphalt Mix Designs

B. Test Reports from testing as stated in this specification

C. LA-15 for pavement markings.

D. Material Packing with ILOK stamp.

1.5 QUALITY CONTROL / QUALITY ASSURANCE

A. Quality Control / Quality Assurance shall be in accordance with Section 1030 of Standard Specifications for Road and Bridge Construction.

1.6 QUALIFICATIONS

A. All Contractors shall be from the Illinois Department of Transportation's Prequalified Contractor Listing.

1.7 PRE-INSTALLATION MEETINGS

A. Notify Owner's Representative a minimum of 48 hours prior to any phase of work.

1.8 COORDINATION

A. Coordinate work with other trades on site.

1.9 WARRANTY

A. The CONTRACTOR shall warranty all construction materials and workmanship associated with the pavements for this CONTRACT to be free from defects for a period of one (1) year from the date of final acceptance by the OWNER. Any cracks, flaws, etc. in the paving or markings shall be sealed by the CONTRACTOR at his/her own expense during the one (1) year guarantee period.

PART 2 PRODUCTS

2.1 HOT-MIX ASPHALT PAVING

A. All materials shall be from Produces/Suppliers on IDOT's current List of producers and/or Suppliers list.

B. Materials shall be in accordance with section 406.02 of Standard Specifications for Road and Bridge Construction

2.2 PAVEMENT MARKINGS AND RAISED REFLECTIVE PAVEMENT MARKERS

A. All materials shall be from Produces/Suppliers on IDOT's current List of producers and/or Suppliers list.

B. Pavement Markings on Hot-Mix Asphalt Pavement shall be Thermoplastic and in accordance with section 1095.01 of the Standard Specifications for Road and Bridge Construction.

C. Pavement Markings on Concrete Pavement shall be Modified Urethane and in accordance with section 1095.09 of the Standard Specifications for Road and Bridge Construction.

D. Raised Reflective Pavement Markers shall be in accordance with section 1096.01 of the Standard Specifications for Road and Bridge Construction.

PART 3 EXECUTION

3.1 HOT-MIX ASPHALT PAVING

A. All work shall be in accordance with Section 406 of the Standard Specifications for Road and Bridge Construction.

3.1 PAVEMENT MARKINGS AND RAISED REFLECTIVE PAVEMENT MARKERS

A. All work shall be in accordance with Section 780 and 781 of the Standard Specifications for Road and Bridge Construction.

END OF SECTION 32 1216

SECTION 32 13 13 - CONCRETE PAVING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

B. All work, installation, procedures, materials, etc. shall be in conformance with the Standard Specifications for Road and Bridge Construction, adopted January 1, 2022, along with all Supplemental Specifications and Recurring Special Provisions, by the Illinois Department of Transportation (herein referred to as the Standard Specifications) except as modified by this Specification.
   1. In the event of a conflict between the Contract Documents and the IDOT Standard Specifications or IDOT Standard Drawings, the IDOT Standard Specifications and IDOT Standard Drawings shall govern.
   2. Where the Contract Documents provide additional detail or more stringent requirements than the IDOT Standard Specifications or IDOT Standard Drawings, the more stringent requirement shall apply.

1.2 SUMMARY

A. This Section includes exterior cement concrete pavement for the following:
   1. Curbs and Gutter.
   2. Pavement.
   3. Walkways.
   4. Site lighting, bollards, and misc. foundations.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, expansive hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.4 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Design Mixes: For each concrete pavement mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials. Testing requirements are listed in Section 1020 of the IDOT Standard Specifications.

D. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:
   1. Cementitious materials and aggregates.
   2. Steel reinforcement and reinforcement accessories.
   3. Admixtures.
   4. Curing compounds.
   5. Joint fillers.

1.5 QUALITY ASSURANCE

A. Quality Control / Quality Assurance shall be in accordance with Section 1020 of the IDOT Standard Specifications.

1.6 QUALIFICATIONS

A. All Contractors shall be from the Illinois Department of Transportation's Prequalified Contractor Listing.

1.7 PRE-INSTALLATION MEETINGS

A. Notify Owner's Representative a minimum of 48 hours prior to any phase of work.

1.8 COORDINATION

A. Coordinate work with other trades on site.

1.9 WARRANTY

A. The CONTRACTOR shall warranty all construction materials and workmanship associated with the pavements for this CONTRACT to be free from defects for a period of one (1) year from the date of final acceptance by the OWNER. Any cracks, flaws, etc. in the paving or markings shall be sealed by the CONTRACTOR at his/her own expense during the one (1) year guarantee period.

PART 2 PRODUCTS

2.1 CONCRETE PAVING

A. All materials shall be from Producers/Suppliers on IDOT's current list of producers and/or Suppliers List.

B. Materials shall be in accordance with Section 420.02 of the IDOT Standard Specifications.

2.2 CONCRETE MIXES

A. Proportion mixes to provide concrete with the following properties:

1. IDOT Class SI, per Std. Spec's., for sidewalks, and light pole foundations.
2. IDOT Class PV, per Std. Spec's.,for vehicular pavements.
3. Compressive Strength (14 Days): 3500 psi.
4. Maximum Water-Cementitious Materials Ratio: 0.44 for Class SI, 0.42 for Class PV
5. Slump Limit: 2" to 4".

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:
   1. Fly Ash: 15 percent.
   2. Ground Granulated Blast-Furnace Slag: 50 percent.
   3. Flint and chert: 1 percent by weight of the course aggregate.
   4. Lignite: 0.07 percent by weight of the fine aggregate.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows:
   1. Air Content: 5.0 to 8.0 percent air entrained for 3/4-inch maximum aggregate.

PART 3 EXECUTION

3.1 CONCRETE PAVING

A. All work shall be in accordance with Section 420 of the IDOT Standard Specifications.

END OF SECTION 32 13 13

SECTION 32 1413
CONCRETE PAVER MATERIALS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes the following:
   1. Concrete Pavers
   2. Joint Sand
   3. Setting Bed Sand
   4. Base Aggregate

1.2 REFERENCES

A. ASTM International, latest edition:
   1. C 33, Standard Specification for Concrete Aggregates.
   2. C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   3. C 140, Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.
   4. C 144 Standard Specifications for Aggregate for Masonry Mortar.
   5. D 448, Standard Classification for Sizes of Aggregate for Road and Bridge Construction.
   6. C 936, Standard Specification for Solid Concrete Interlocking Paving Units.
   7. C 979, Standard Specification for Pigments for Integrally Colored Concrete.
   8. D 698 Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 5.5 lb (24.4 N) Rammer and 12 in. (305 mm) drop.
   9. D 1557 Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures Using a 10-lb (44.5 N) Rammer and 18 in. (457 mm) drop.
   10. C1645 Standard Test Method for Freeze-thaw and De-icing Salt Durability of Solid Concrete Interlocking Paving Units
   11. D 2940 Graded Aggregate Material for Bases or Subbases for Highways or Airports.
   12. D 4632, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
   13. D 4533, Standard Test Method for Index Trapezoidal Tearing Strength of Geotextiles
   14. D 4833, Standard Test Method for Index Puncture Resistance of Geotextiles, Geomembranes and Related Products
   15. D 4491, Standard Test Method for Water Permeability of Geotextiles by Permittivity
   16. D 4751, Standard Test Method for Determining Apparent Opening Size of a Geotextile

1.3 SUBMITTALS

A. Concrete Pavers:
   1. Samples for verification: Three representative full-size samples of each paver type, thickness, color and finish that indicate the range of color variation and texture expected upon project completion.
   2. Accepted samples become the standard of acceptance for the product produced.
   3. Test results from an independent testing laboratory for compliance of concrete pavers with ASTM C 936.
   4. Manufacturer's catalog product data, installation instructions, and material safety data sheets for the safe handling of the specified materials and products.

B. Joint and Setting Bed Sand:
   1. Provide three representative one pound samples in containers of Joint Sand materials.
   2. Provide three representative one pound samples in containers of Setting Bed Sand materials.
   3. Test results from an independent testing laboratory for sieve analysis per ASTM C 136 conforming to the grading requirements of ASTM C 144.

C. Base and Subbase Aggregate:
   1. Test results from an independent testing laboratory for sieve analysis per ASTM C 136.

D. Paving Installation Contractor:
   1. Job references from a minimum of three projects similar in size and complexity. Provide Owner/Client/General Contractor names, postal address, phone, fax, and email address.

1.4 QUALITY ASSURANCE

A. Utilize a Manufacturer having at least ten years of experience manufacturing concrete pavers on projects of similar nature or project size.

B. Source Limitations:
   1. Obtain Concrete Pavers from one source location with the resources to provide products of consistent quality in appearance and physical properties.
   2. Obtain Joint and Setting Bed Sands from one source with the resources to provide materials and products of consistent quality in appearance and physical properties.

C. Paving Contractor Qualifications:
   1. Utilize an installer having successfully completed concrete paver installation similar in design, material, and extent indicated on this project.

D. Mockups:
   1. Install a 5 ft x 5 ft paver area per each paving pattern.
   2. Use this area to determine surcharge of the Setting Bed Sand layer, joint sizes, lines, laying pattern(s) and levelness. This area will serve as the standard by which the workmanship will be judged.
   3. Subject to acceptance by owner, mock-up may be retained as part of finished work.
   4. If mock-up is not retained, remove and dispose legally.

1.5 DELIVERY, STORAGE & HANDLING

A. In accordance Division 01 6000 Product Requirement Section.

B. Deliver Concrete Pavers in manufacturer's original, unopened and undamaged container packaging with identification labels intact.
   1. Coordinate delivery and paving schedule to minimize interference with normal use of streets and sidewalks adjacent to paver installation.
   2. Deliver Concrete Pavers to the site in steel banded, plastic banded or plastic wrapped packaging capable of transfer by forklift or clamp lift.
   3. Unload Concrete Pavers at job site in such a manner that no damage occurs to the product or adjacent surfaces.

C. Store and protect materials free from mud, dirt and other foreign materials.

D. Prevent Joint and Setting Bed Sand from exposure to rainfall or removal by wind with secure, waterproof covering.

1.6 PROJECT/SITE CONDITIONS

A. Environmental Requirements:
   1. Install Concrete Pavers only on unfrozen and dry Setting Bed Sand.
   2. Install Setting Bed Sand only on unfrozen and dry Base or Subbase Aggregate materials.
   3. Install Base or Subbase Aggregates only over unfrozen subgrade.
   4. Install Setting Bed Sand or Concrete Pavers when no heavy rain or snowfall are forecast within 24 hours.

1.7 CONCRETE PAVER OVERAGE AND ATTIC STOCK

A. Provide a minimum of 5% additional material for overage to be used during construction.

B. Contractor to provide 100 square feet of each product and size used to owner for maintenance and repair. Furnish Pavers from the same production run as installed materials.

C. Manufacture to supply maintenance and reinstatement manuals for Concrete Paver units.

PART 2 PRODUCTS

2.1 CONCRETE PAVERS

A. Manufacturers:
   1. Unilock, or approved equal
   2. Contact: Brad Swanson – brad.swanson@unilock.com 630-742-4168

B. Product requirements:
   1. Concrete Paver Type 1: Holland Premier
   2. Finish: Smooth Premier
   3. Color 1 (double border course and field): To be selected from standard colors
   4. Color 2 (border course): To be selected from standard colors
   5. Size: Manufacture the sizes indicated with a maximum tolerance of plus or minus 1/16 inch for length and width. Maximum height tolerance of plus or minus 1/8 inch.
      a. 3 7/8 x 7 7/8 x 2 3/8" (100 x 200 x 60mm)

C. Provide pavers meeting the minimum material and physical properties set forth in ASTM C 936, Standard Specification for Interlocking Concrete Paving Units. Efflorescence is not a cause for rejection.
   1. Average compressive strength 8000 psi (55MPa) with no individual unit under 7,200 psi (50 MPa).
   2. Average absorption of 5% with no unit greater than 7% when tested according to ASTM C 140.
   3. Conforming to ASTM C 1645 when tested for freeze-thaw requirements.
   4. Height tolerances +/- 3.2 mm (1/8 in).

D. Accept only pigments in concrete pavers conforming to ASTM C 979.

E. Maximum allowable breakage of product is 5%.

2.2 JOINT SAND

A. Provide natural Joint Sand as follows:
   1. Washed, clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.
   2. Do not use limestone screenings, stone dust, or sand for the Joint Sand material that does not conform to conform to the grading requirements of ASTM C 33.
   3. Utilize sands that are as hard as practically available where concrete pavers are subject to vehicular traffic.
   4. Gradation as shown in Table 1 below:

TABLE 1 – JOINT SAND
GRADATION REQUIREMENTS FOR JOINT SAND

ASTM C 144		
Sieve Size	**Natural Sand Percent Passing**	**Manufactured Sand Percent Passing**
No. 4 (4.75 mm)	100	100
No. 8 (2.36 mm)	95 to 100	95 to 100
No. 16 (1.18 mm)	70 to 100	70 to 100
No. 30 (0.600 mm)	40 to 75	40 to 75
No. 50 (0.300 mm)	10 to 30	20 to 40
No. 100 (0.150 mm)	2 to 15	10 to 25
No. 200 (0.075)	0 to 1	0 to 10

2.3 SETTING BED SAND

A. Provide Setting Bed Sand as follows:
   1. Washed, clean, non-plastic, free from deleterious or foreign matter, symmetrically shaped, natural or manufactured from crushed rock.
   2. Do not use limestone screenings, stone dust, or sand material that does not conform to conform to the grading requirements of ASTM C 33.
   3. Do not use mason sand or sand conforming to ASTM C 144.
   4. Utilize sands that are as hard as practically available where concrete pavers are subject to vehicular traffic.
   5. Conform to the grading requirements of ASTM C 33 with modifications as shown in Table 2 below:

TABLE 2 – SETTING BED SAND
GRADATION REQUIREMENTS FOR SETTING BED SAND

ASTM C 33	
Sieve Size	**Percent Passing**
3/8 in (9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (0.600 mm)	25 to 60
No. 50 (0.300 mm)	10 to 30
No. 100 (0.150 mm)	2 to 10
No. 200 (0.075)	0 to 1

Note: Coarser sand than that specified in Table 1 above may be used for joint sand including C 33 material as shown in Table 2. Use material where the largest sieve size easily enters the smallest joints. For example, if the smallest paver joints are 2 mm wide, use sand 2 mm and smaller in particle size. If C 33 sand is used for joint sand, extra

effort may be required in sweeping material and compacting the pavers in order to completely fill the joints.

2.4 BASE AGGREGATE

A. Provide Base Aggregate materials conforming to ASTM D 2940 and gradation requirements as presented in Table 3.

TABLE 3 – BASE AGGREGATE GRADATION REQUIREMENTS

ASTM D 2940	
Sieve Size	**Percent Passing**
2 in (50 mm)	100
1-1/2 in (37.5 mm)	95 to 100
3/4 in (19 mm)	70 to 92
3/8 in (9.5 mm)	50 to 70
No. 4 (4.75 mm)	35 to 55
No. 30 (600 µm)	12 to 25
No. 200 (75 µm)	0 to 8*

* In order to prevent damage by frost heaving, it may be necessary to limit the percentages of material passing the No. 200 sieve to less than shown in the tables.

2.5 EDGE RESTRAINTS

A. Concrete Edge Restraint as indicated.

B. Metal Edge Restraints:
   1. Permaloc
      a. Material Type: Aluminum
      b. Model No.: StructurEdge, 3/16” thickness, color: black

2.6 GEOTEXTILE

A. Provide Geotextile material conforming to the following performance characteristics, measured per the test methods referenced:
   1. 4 oz., nonwoven needle punched geotextile composed of 100% polypropylene staple fibers that are inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.
   2. Grab Tensile Strength: ASTM D 4632: 115 lbs.
   3. Grab Tensile Elongation: ASTM D 4632: 50%
   4. Trapezoidal Tear: ASTM D 4533: 50 lbs.
   5. Puncture: ASTM D 4833: 65 lbs.
   6. Apparent Opening Size: ASTM D 4751: 0.212 mm, 70 U.S. Sieve
   7. Permittivity: ASTM D 4491: 2.0 sec -1
   8. Flow Rate: ASTM D 4491: 140 gal/min/s.f.

2.7 SEALER

A. UniCare NatMatte Sealer by Unilock

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine areas indicated to receive paving for compliance with requirements for installation tolerances and other conditions affecting performance for the following items before placing the Concrete Pavers.
   1. Verify that subgrade preparation, compacted density and elevations conform to specified requirements.
   2. Verify that Geotextiles, if applicable, have been placed according to drawings and specifications.
   3. Verify that the Base and Subbase Aggregate materials, thickness, compacted density, surface tolerances and elevations conform to specified requirements.
   4. Provide written density test results for soil subgrade, Base and Subbase Aggregate materials to the Owner, General Contractor and paver installation subcontractor.
   5. Verify location, type, and elevations of edge restraints, concrete curbing, concrete collars around utility structures, and drainage inlets.

B. Proceed with installation only after unsatisfactory conditions have been corrected.
   1. Beginning of Bedding Sand and Concrete Paver installation signifies acceptance of Base and edge restraints.

3.2 PREPARATION

A. Verify that the subgrade soil is free from standing water.

B. Stockpile Setting Bed Sand, Joint Sand, Base Aggregate materials such that they are free from standing water, uniformly graded, free of any organic material or sediment, debris, and ready for placement.

C. Remove any excess thickness of soil applied over the excavated soil subgrade to trap sediment from adjacent construction activities before placing the Geotextile and Aggregate materials.

D. Keep area where pavement is to be constructed free from sediment during entire job. Remove and replace all Geotextile, Joint Sand, Setting Bed Sand, and Base Aggregate materials contaminated with sediment with clean materials.

E. Compact soil subgrade uniformly to at least 95 percent of Standard Proctor Density per ASTM D 698 for pedestrian areas. Compact soil subgrade uniformly to at least 98 percent Modified Proctor per ASTM D 1557 for vehicular areas.

Stabilization of the subgrade and/or base material may be necessary with weak or saturated subgrade soils.

F. Backfill all service trenches within the pavement area to the sub- grade level with approved material placed in uniform lifts not exceeding 4 in. (100 mm) loose thickness. Compact each lift to at least 100 percent Standard Proctor Density as specified in ASTM D 698.

G. Trim the subgrade to within 0 to ½ in. (0 to 13mm) of the specified grades. Do not deviate the surface of the prepared subgrade by more than 3/8 in. (10mm) from the bottom edge of a 39 in. (1m) straight edge laid in any direction.

H. Proof-roll prepared subgrade according to requirements in Division 31 Section "Excavation and Fill" to identify soft pockets and areas of excess yielding. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting and replace with compacted backfill or fill as directed.

3.3 INSTALLATION

A. EDGE RESTRAINTS
   1. Provide concrete edge restraints as indicated.
      a. Install job-built concrete edge restraints to comply with requirements in Division 3 Section "Cast-in-Place Concrete."
      b. Provide concrete edge restraint along the perimeter as indicated on the drawings. Install the face of the concrete edge restraint, where it abuts pavers vertical down to the subbase.
      c. Construct concrete edge restraint to dimensions and level specified and support on a compacted subbase not less than 6 in (150 mm) thick.
   2. Provide metal edge restraints as indicated.
      a. Provide metal edge restraints along the perimeter as indicated and supported on a minimum of 6 inches (150 mm) of Base Aggregate.
      b. Provide 10” spiral galvanized or stainless steel spike to fasten metal or plastic edge restraint at 24 inches on center for straight sections and 12 inches on center for curved sections.

B. GEOTEXTILES
   1. Provide separation geotextile on bottom and sides of prepared soil subgrade. Secure in place to prevent wrinkling or folding from equipment tires and tracks.
   2. Overlap ends and edges a minimum of 18 in. (450 mm) in the direction of drainage.

C. BASE AND SUBBASE AGGREGATE
   1. Provide the Base Aggregate material in uniform lifts not exceeding 6 in. (150 mm) over the compacted Subgrade material and compact to at least 100 percent Standard Proctor Density as per ASTM D 698.

2. Compact the Base Aggregate material with at least two passes in the vibratory mode then at least two in the static mode with a minimum 10 ton vibratory roller until there is no visible movement. Do not crush aggregate with the roller.
3. Tolerance: Do not exceed the specified surface grade of the compacted Base Aggregate material more than ±3/8 in. (10 mm) over a 10 ft. (3 m) long straightedge laid in any direction.
4. Compact and grade the upper surface of the base sufficiently to prevent infiltration of the bedding sand into the base both during construction and throughout its service life. Blend segregated areas of the granular base by the application of crushed fines that have been watered and compacted into the surface.

D. SETTING BED SAND
1. Provide, spread and screed Setting Bed Sand evenly over the compacted Base Aggregate course.
   a. Protect screeded Setting Bed Sand from being disturbed by either pedestrian or vehicular traffic.
   b. Screed only the area which can be covered by pavers in one day.
   c. Do not use Setting Bed Sand material to fill depressions in the base surface.
2. Keep moisture content constant and density loose and constant until Concrete Pavers are set and compacted.
3. Screed Setting Bed Sand using either an approved mechanical spreader (e.g.: an asphalt paver) or by the use of screed rails and boards. Maintain in a loose condition slightly ahead of the paving units and fully protect against incidental compaction following screeding. Loosen compacted sand by rain or screeded sand left overnight before further paving units are placed.
4. Inspect the Setting Bed Sand course prior to commencing the placement of the Concrete Pavers. Acceptance of the Setting Bed Sand occurs with the initiation of Concrete Paver placement.

E. CONCRETE PAVERS
1. Replace Concrete Pavers with chips, cracks, voids, discolorations, and other defects that might be visible in finished work.
2. Mix Concrete Pavers from a minimum of three (3) bundles simultaneously drawing the paver vertically rather than horizontally, as they are placed, to produce uniform blend of colors and textures. (Color variation occurs with all concrete products. This phenomenon is influenced by a variety of factors, e.g. moisture content, curing conditions, different aggregates and, most commonly, from different production runs. By installing from a minimum of three (3) bundles simultaneously, variation in color is dispersed and blended throughout the project).
3. Exercise care in handling face mix concrete pavers to prevent surfaces from contacting backs or edges of other units.
4. Provide Concrete Pavers using laying pattern as indicated. Adjust laying pattern at pavement edges such that cutting of edge pavers is minimized.

Cut all pavers exposed to vehicular tires no smaller than one-third of a whole paver.

5. Use string lines or chalk lines on Setting Bed Sand to hold all pattern lines true.
6. Set paver surface elevation a minimum of 1/8 inch to a maximum of 1/4 inch above adjacent drainage inlets, concrete collars or channels (provided the change in slope does not impede or alter the drainage or direction of flow).
7. Place units hand tight against spacer bars. Adjust horizontal placement of laid pavers to align straight.
   a. When installation is performed with mechanical equipment, use only unit pavers with spacer bars on sides of each unit.
8. Provide space between paver units of 1/32 in. (1 mm) wide to achieve straight bond lines.
9. Prevent joint (bond) lines from shifting more than ±1/2 in. (±13 mm) over 50 ft. (15 m) from string lines.
10. Fill gaps between units or at edges of the paved area that exceed 3/8 inch (10 mm) with pieces cut to fit from full-size unit pavers.
11. Cut Concrete Pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
12. Prevent all traffic on installed Concrete Pavers until Joint Sand has been vibrated into joints. Keep skid steer and forklift equipment off newly laid Concrete Pavers that have not received initial compaction and Joint Sand material.
13. Vibrate Concrete Pavers into leveling course with a low-amplitude plate vibrator capable of a to 5000-lbf (22-kN) compaction force at 80 to 90 Hz. Perform at least three passes across paving with vibrator. Vibrate under the following conditions:
    a. After edge pavers are installed and there is a completed surface or before surface is exposed to rain.
    b. Compact installed Concrete Pavers to within 6 feet (2 meters) of the laying face before ending each day's work. Cover Concrete Pavers that have not been compacted and leveling course on which pavers have not been placed, with nonstaining plastic sheets to prevent Setting Bed Sand from becoming disturbed.
14. Protect face mix Concrete Paver surface from scuffing during compaction by utilizing a urethane pad.
15. Remove any cracked or structurally damaged Concrete Pavers and replace with new units prior to installing Joint Sand material.

F. JOINT SAND
1. Provide, spread and sweep dry Joint Sand into joints immediately after vibrating pavers into Setting Bed Sand course until full. Vibrate pavers and add Joint Sand material until joints are completely filled, then remove excess material. This will require at least 4 passes with a plate compactor.

2. Leave all work to within 3 ft. of the laying face fully compacted with sand-filled joints at the completion of each day.
3. Remove excess Joint Sand broom clean from surface when installation is complete.

3.4 FIELD QUALITY CONTROL

A. Verify final elevations for conformance to the drawings after sweeping the surface clean.
   1. Prevent final Concrete Paver finished grade elevations from deviating more than ±3/8 in. (±10 mm) under a 10 ft (3 m) straightedge or indicated slope, for finished surface of paving.

B. Lippage: Paver-to-Paver Lippage:
   1. No greater than 3 mm (1/8 inch) difference in height between adjacent pavers.

3.5 REPAIRING, CLEANING AND SEALING

A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.

B. Cleaning: Remove excess dirt, debris, stains, grit, etc. from exposed paver surfaces; wash and scrub clean.
   1. Clean Concrete Pavers in accordance with the manufacturer’s written recommendations.

C. Seal:
   1. Apply Sealer for Permeable Concrete Pavers in accordance with the sealer and paver manufacturer’s written recommendations.

3.6 PROTECTION

A. Protect completed work from damage due to subsequent construction activity on the site.

END OF SECTION 32 1413

SECTION 32 3119 – DECORATIVE METAL FENCES AND GATES

PART 1 GENERAL

1.1 WORK INCLUDED

A. The contractor shall provide all labor, materials and appurtenances necessary for installation of the welded ornamental steel fence system defined herein at Lake Land College.

1.2 RELATED WORK

A. Section 03 3000 – Cast-in-Place Concrete

1.3 SYSTEM DESCRIPTION

A. The manufacturer shall supply a total fence system of Montage II Welded and Rackable (ATF – All Terrain Flexibility) Ornamental Steel, Genesis design, or approved equal. The system shall include all components (i.e., panels, posts, gates and hardware) required.

1.4 QUALITY ASSURANCE

A. The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.5 REFERENCES

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.

B. ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus.

C. ASTM D523 - Test Method for Specular Gloss.

D. ASTM D714 - Test Method for Evaluating Degree of Blistering in Paint.

E. ASTM D822 - Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.

F. ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.

G. ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.

H. ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).

I. ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.

J. ASTM F2408 – Ornamental Fences Employing Galvanized Steel Tubular Pickets.

1.6 SUBMITTAL

A. The manufacturer's literature shall be submitted prior to installation.

1.7 PRODUCT HANDLING AND STORAGE

A. Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

1.8 PRODUCT WARRANTY

A. All structural fence components (i.e. rails, pickets, and posts) shall be warranted within specified limitations, by the manufacturer for a period of 20 years from date of original purchase. Warranty shall cover any defects in material finish, including cracking, peeling, chipping, blistering or corroding.

B. Reimbursement for labor necessary to restore or replace components that have been found to be defective under the terms of manufactures warranty shall be guaranteed for five (5) years from date of original purchase.

PART 2 MATERIALS

2.1 MANUFACTURER

A. The fence system shall conform to Montage II Welded and Rackable (ATF – All Terrain Flexibility) Ornamental Steel, Genesis design, extended picket bottom rail treatment, 3-Rail style manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma, or approved equal.

2.2 MATERIAL

A. Steel material for fence panels and posts shall conform to the requirements of ASTM A653/A653M, with a minimum yield strength of 45,000 psi (310 MPa) and a minimum zinc (hot-dip galvanized) coating weight of 0.90 oz/ft2 (276 g/m2), Coating Designation G-90.

B. Material for pickets shall be 1” square x 14 Ga. tubing. The rails shall be steel channel, 1.75” x 1. 75” x .105”. Picket holes in the rail shall be spaced 4.715” o.c. Fence posts and gate posts shall meet the minimum size requirements of Table 1.

2.3 FABRICATION

A. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-punched to accept pickets.

B. Pickets shall be inserted into the pre-punched holes in the rails and shall be aligned to standard spacing using a specially calibrated alignment fixture. The aligned pickets and rails shall be joined at each picket-to-rail intersection by Ameristar’s proprietary fusion welding process, thus completing the rigid panel assembly (Note: The process produces a virtually seamless, spatter-free good-neighbor appearance, equally attractive from either side of the panel).

C. The manufactured panels and posts shall be subjected to an inline electrodeposition coating (E-Coat) process consisting of a multi-stage pretreatment/wash, followed by a duplex application of an epoxy primer and an acrylic topcoat. The minimum cumulative coating thickness of epoxy and acrylic shall be 2 mils (0.058 mm). The color shall be Black. The coated panels and posts shall be capable of meeting the performance requirements for each quality characteristic shown in Table 2 (Note: The requirements in Table 2 meet or exceed the coating performance criteria of ASTM F2408).

D. The manufactured fence system shall be capable of meeting the vertical load, horizontal load, and infill performance requirements for Industrial weight fences under ASTM F2408.

PART 3 EXECUTION

3.1 PREPARATION

A. All new installation shall be laid out by the contractor in accordance with the construction plans.

3.2 FENCE INSTALLATION

A. Fence post shall be spaced according to Table 3, plus or minus ½". For installations that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade. Fence panels shall be attached to posts with brackets supplied by the manufacturer. Posts shall be set in concrete footers having a minimum depth of 36" (Note: In some cases, local restrictions of freezing weather conditions may require a greater depth). The "Earthwork" and "Concrete" sections of this specification shall govern material requirements for the concrete footer. Posts setting by other methods such as plated posts or grouted core-drilled footers are permissible only if shown by engineering analysis to be sufficient in strength for the intended application.

3.3 FENCE INSTALLATION MAINTENANCE

A. When cutting/drilling rails or posts adhere to the following steps to seal the exposed steel surfaces; 1) Remove all metal shavings from cut area. 2) Apply zinc-rich primer to thoroughly cover cut edge and/or drilled hole; let dry. 3) Apply 2 coats of custom finish paint matching fence color. Failure to seal exposed surfaces per steps 1-3 above will negate warranty. Ameristar spray cans or paint pens shall be used to prime and finish exposed surfaces; it is recommended that paint pens be used to prevent overspray. Use of non-Ameristar parts or components will negate the manufactures' warranty.

3.4 CLEANING

A. The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

Table 1 – Minimum Sizes for Montage II Posts

Fence Posts	Panel Height
2-1/2" x 12 Ga.	Up to & Including 6' Height
3" x 12 Ga.	Over 6' Up to & Including 8' Height

Table 2 – Coating Performance Requirements		
Quality Characteristics	ASTM Test Method	Performance Requirements
Adhesion	D3359 – Method B	Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).
Corrosion Resistance	B117, D714 & D1654	Corrosion Resistance over 1,500 hours (Scribed per D1654; failure mode is accumulation of 1/8" coating loss from scribe or medium #8 blisters).
Impact Resistance	D2794	Impact Resistance over 60 inch lb. (Forward impact using 0.625" ball).
Weathering Resistance	D822 D2244, D523 (60˚ Method)	Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).

	Table 3 – Montage II – Post Spacing By Bracket Type									
Span	For INVINCIBLE® 8' Nominal (91-1/2" Rail)				For CLASSIC, GENESIS, & MAJESTIC 8' Nominal (92-5/8" Rail)					
Post Size	2-1/2"	3"	2-1/2"	3"	2-1/2"	3"	2-1/2"	3"	2-1/2"	3"
Bracket Type	Industrial Flat Mount (BB301)*		Industrial Line 2-1/2" (BB319) 3" (BB320)		Industrial Universal 2.5" (BB302) 3" (BB303)		Industrial Flat Mount (BB301)		Industrial Swivel (BB304)*	
Post Settings ± ½" O.C.	94-1/2"	95"	94-1/2"	95"	96"	96-1/2"	96"	96-1/2"	*96"	*96-1/2"
*Note: When using BB304 swivel brackets on either or both ends of a panel installation, care must be taken to ensure the spacing between post and adjoining pickets meets applicable codes. This will require trimming one or both ends of the panel. When using the BB301 flat mount bracket for Invincible style, rail may need to be drilled to accommodate rail to bracket attachment.										

END OF SECTION 32 3119

SECTION 32 8423 - UNDERGROUND SPRINKLERS (ALTERNATE BID #1)

PART 1 GENERAL

1.1 SUMMARY

A. The scope of work required is indicated on the drawings and includes, but is not limited to, the design, installation and maintenance of lawn and shrub irrigation systems, backflow prevention devices, automatic controller, rain sensors, remote control valves, quick coupler valves, and water and electric services.

B. Coordinate with the College for the placement, type and water requirements for all plant material.

C. Areas which are to be irrigated are shown on the drawings. The drawings are intended to be schematic only. The contractor shall provide the design of the specific systems. The system shall be in accordance with the following design criteria:

1. Irrigation System Design:
    a. All irrigation systems shall be designed to minimize vandalism.
    b. For each point of connection, submit pressure calculations for the system(s) with the highest psi requirement to operate properly allowing for friction losses within the system. Water velocity within the system shall not exceed 5 fps.
    c. Incorporate the following design requirements:
        1) All irrigation systems shall have the design capability of delivering 1.5” water in a 5-day period. Watering time shall be between the hours of 12 a.m. and 8 a.m.
    d. Irrigation water shall be applied at a rate, which does not exceed the infiltration rate of the soil, and systems shall be programmed to prevent ponding and minimize runoff.
    e. Irrigation system shall be scheduled to meet the peak moisture demand of all plant materials used within the design area. Separate zones shall be used for ground cover, flowerbeds, shrubs, turf, sun or shaded areas, where applicable.
    f. Irrigation system shall be designed and operated to minimize fogging, overspray and discharge onto areas not under control of the user. (Including streets and sidewalks).
    g. All sprinkler heads shall be pop-up type, unless otherwise noted.
    h. Maximum spacing of heads shall be as follows:
        1) Mid-range rotors: 30-40 feet
        2) Small turf rotors: 20-25 feet
        3) Spray heads: 15 feet
    i. Irrigation systems shall be designed for winterization procedures. Provide blowout points near point-of-connection, with strategically placed isolation valves.

j. System pressure: Design systems to lowest available pressure per local water company's records.
k. Provide construction details for any components not in accordance with details as shown.
l. Valves: Gate valves shall be provided to allow shutting down various sections of the system independent of the entire system.
m. Backflow Prevention:
   1) All backflow prevention devices must comply with requirements set forth by the local health department and city water departments. Prevent any back siphonage after sectional valves are closed. Backflow prevention devices are not permitted on irrigation systems using reclaimed water.
   2) All backflow prevention devices shall be enclosed with a "Lok Box" Model #2, or approved equal.
n. Remote Control Valves: Locate remote control valves in shrub planting areas when possible. All valves to be in green Carson boxes or approved equal. Remote control valves shall be located outside of storm water detention areas or designated athletic play areas (where applicable).
o. Quick Coupling Valves: Provide quick coupler 200 feet on center in general landscaped areas. Quick coupler valves shall be installed in green round Carson plastic gate valve boxes or approved equal. Boxes to be set at finish grade with tops of quick coupler valves 2-inches below top of box cover.

D. Related Sections:
1. Section 31 2300 – Site Excavation and Fill
2. Section 33 1116 – Site Water Utility Distribution Piping
3. Section 32 9219 – Seeding
4. Section 32 9233 -- Sodding
5. Section 32 9300 -- Plants

1.2 REFERENCES

A. American Society for Testing and Materials:
1. ASTM B32-00 – Standard Specification for Solder Metal
2. ASTM B42-98 – Standard Specification for Seamless Copper Pipe, Standard Sizes
3. ASTM B88-99e1 – Standard Specification for Seamless Copper Water Tube.
4. ASTM D2235-01 – Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings
5. ASTM D2241-00 – Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series)
6. ASTM D2282-99 – Standard Specification for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (SDR-PR)
7. ASTM D2466-01 – Standard Specification for Poly (Vinyl Chloride) PVC) Plastic Pipe Fittings, Schedule 40

8. ASTM D2564-96 – Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems
9. ASTM D2672-96 – Standard Specification for Joints for IPS (PVC) Pipe Using Solvent Cement

B. National Electrical Manufacturers Association:
1. NEMA 250 – Enclosures for Electrical Equipment (1000 Volts Maximum)

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Provide underground irrigation system as a complete unit produced by one manufacturer, including heads, valves and controller.

B. Contractor Qualifications: Irrigation work to be completed by an installer with a minimum of 3 years documented experience, single firm specializing in irrigation design, installation and operations, and licensed in a nearby local jurisdiction.

1.4 SUBMITTALS

A. Shop Drawings: Submit shop drawings showing locations and depths of the following items:
1. Point of connection (water & electric)
2. Routing of main and lateral lines (include all pipe sizes)
3. Locations and sizes of all isolation valves
4. Locations and sizes of all control valves
5. Locations of all quick coupling valves
6. All related equipment (backflow prevention devices, etc.)
7. Routing of all control wires, and wire splices
8. Sprinkler heads and coverage arcs
9. Pressure loss calculations for the largest and most remote zones on the system
10. Location of controller

B. Product Data
1. Submit a complete material list prior to performing any work. Catalog data and full descriptive literature must be submitted for every product used.

C. As-Built Drawings:
1. Record accurately on one set of contract drawings, or previously submitted shop drawings, all changes in the work constituting departures from the original contract drawings.
2. The changes and dimensions shall be recorded in a legible and workmanlike manner to the satisfaction of the Owner’s Representative. Submit record drawings prior to final inspection of work.
3. Dimensions shall be from three permanent points of reference (buildings, monuments, sidewalks, curbs, pavements, etc.) Data to be shown on record drawings shall be recorded day to day as the project is being

installed. No final payment without “as-built”. A 10% retainer will be withheld until the as-built is approved.

4. Show locations and depths of the following items:
   a. Point of connection
   b. Routing of main and lateral lines (dimension maximum 100 feet along routing)
   c. Isolation valves
   d. Control valves
   e. Quick coupling valves
   f. All related equipment (backflow prevention devices, air-relief valve(s), flow sensors, rain sensors, etc.)
   g. Control wires and wire splices
5. Maintain record drawings on site at all times.
6. Four copies of the following charts, manuals and equipment shall be turned over to the Owner’s Representative no later than 10 days prior to the final inspection at the end of the maintenance period. These copies shall be separately bound and are to include the Contractor’s address and telephone number, along with local equipment distributors.
   a. Irrigation Layout and Routing Plan
      1) Record drawings must be approved by the Owner’s Representative before charts are prepared.
   b. Controller Schedule: Submit a schedule indicating the controller, the station number, the valves controlled by the station, and the length of time each valve is to be open to produce 1.5 inches of precipitation per week.
   c. Provide one controller chart (sized to fit on the inside of the controller door) for each automatic controller. Chart shall show the area covered by controller.
      1) The chart is to be a reduced copy of the actual “record” drawing. In the event the controller sequence is not legible when the drawing is reduced, it shall be enlarged to a readable size.
      2) Chart shall be a blackline print with different color used to show the area of coverage for each station/valve.
      3) When completed and approved, the chart shall be hermetically sealed between pieces of plastic, each piece being a minimum 20 mil. in thickness.
      4) Controller charts shall be completed and installed prior to final acceptance.

D. Operation and Maintenance Manuals
   1. Two individually bound copies of operation and maintenance manuals shall be delivered to the Owner’s Representative 10 calendar days prior to final acceptance inspection. The manuals shall describe the material installed.
   2. Each complete, bound manual shall include the following information:

a. Index sheet stating Contractor's address and telephone number, duration of guarantee period, list of equipment including names and addresses of local manufacturer representatives.

3. Complete operating and maintenance instructions for all equipment.
4. Spare parts list and related manufacturer information.

1.5 EQUIPMENT – SUPPLY AS PART OF THIS CONTRACT THE FOLLOWING ITEMS:

A. Two keys for each automatic controller.

B. Three couplers and matching hose swivels.

C. One valve box cover key or wrench.

D. One 5-foot tee wrench for operating gate valves 2-1/2" larger.

The above equipment shall be turned over to the Owner's Representative at final inspection.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

The materials chosen for the design of the sprinkler system have been specifically referred to by manufacturer, enabling the Owner to establish the level of quality and performance required by the system design. After award of contract and prior to beginning work, the contractor shall submit for approval three copies of the complete list of materials to be installed. No deviations from the specifications will be allowed. Manufacturers include the following, which shall match College's existing irrigation systems:

A. The Rain Bird Corporation

2.2 MATERIALS

A. PVC Pipe: Provide clean, dry and covered location for storage of all pipe during installation.

B. Main Line Pressure Pipe: Comply with the following:
1. 3" and larger: Pipe PVC SDR 21, pressure 200 psi, gasketed
2. PVC Pipe and Fittings: SDR 21, pressure 200 psi, ASTM D 2241-00
3. Joints: Bell End type, ASTM D 2672-01
4. Fittings: Socket type, Schedule 40, ASTM D 2466-01

C. Lateral Line Pipe (downstream from valves): Comply with the following:
1. PVC Pipe and Fittings: SDR 26 pressure 160 psi (except 1" Class 200), ASTM D 2241-00.
2. Joints: Socket type, Schedule 40, ASTM D 2466-01.
3. Fittings: Socket type, Schedule 40, ASTM D 2466-01.

D. Valves: Manufacturer's standard, of type and size indicated, and as follows:
   1. Isolation valves.
      a. Harvard - quarter turn, brass, threaded, line-sized ball-valves (ie: #56-200).
      b. Nibco bronze, threaded, line-sized gate-valves (ie: T113-IRR-250) manual Shut-Off Valves: Cast bronze globe valve.
   2. Quick coupling valves.
      a. Standard: Rainbird Quick Coupler Valve 44 LRC (1") with matching key and hose swivel.
      b. All quick coupling valves shall be connected to the mainline by Lasco 1" triple-elbow swing joints and placed in valve boxes.
   3. Automatic valves: The automatic control valves shall be Rainbird valves operated by low-power solenoid, normally closed with, manual flow adjustment.
      a. Master Valve: Rainbird EFB-CP Series (brass, non-pressure-regulating, sized to flow)
      b. Standard Valve: Rainbird PEB Series Electronic Valves (Sized to Flow).
      c. Operated Valves: Manual valves, fitted for key operation.
   4. Furnish two valve keys, 5-feet long with tee handles and key end to fit valves.

E. Backflow Preventer: Manufacturer's standard, to suit sprinkler system.
   1. Manufactured by Febco, a division of CMB Industries, Fresno, California, 93747, or approved equal.

F. Landscape Turf and Planting Beds Spray Heads: Manufacturer's standard unit designed to provide uniform coverage over entire area of spray shown on drawings at available water pressure.

   1. Turf Rotors
      a. The mid-range turf rotors shall be Rainbird model 5000 series rotary turf sprinklers. The head shall feature either a 4" or 6" pop-up. The body of the sprinkler shall be constructed of heavy duty Cycolac, and the head shall have a working pressure of 25 - 65 p.s.i.
      b. The short-range turf rotors shall be Rainbird model 3500 rotary turf sprinklers. The head shall feature a 4" pop-up. The body of the sprinkler shall be constructed of heavy duty Cycolac, and the head shall have a working pressure of 25 - 55 p.s.i.
   2. Spray Heads
      a. The spray heads shall be Rainbird models 1802 and 1812 Series pop-up, with Matched Precipitation Rate (MPR) nozzles. The head shall feature a 4" pop-up, (turf-areas) or a 12" pop-up (planting beds). The body of the sprinkler shall be constructed of heavy duty Cycolac, and the head shall have a working pressure of 15 - 70 p.s.i.

G. Valve Box: Manufactured by Carson, or approved equal.

H. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3" maximum to ¾" minimum.

I. Backflow Preventer Enclosure: Manufactured by Hot Box, 250 Lane Avenue North, Jacksonville, FL 32254-2815 (1-800-736-0238), or approved equal.

J. Automatic Controller: Rainbird ESP-LX Plus Series Outdoor Controller in locked protective enclosure . Provide capacity to operate number of zones, as necessary.
   1. Station Control: Each zone runtime variable from 1 minute to 10 hours. Include switch for manual or automatic operation of each zone without disturbing preset automatic operations.

K. Sleeves
   1. Sleeves shall be twice the nominal size of the pipe to be carried within, unless noted differently. Sleeves for control wire only shall be 2" diameter, placed alongside (or above) each sleeve for the mainline.
   2. Under walks, paving and where indicated on drawings, install Schedule 40 PVC (ASTM D-1785) for sleeves 4" diameter and smaller. Sleeves 6" and larger shall be Class 200 PVC. Tape ends of sleeves and mark sleeve locations with above grade stakes with appropriate annotation, i.e.. "irrigation sleeves". Stakes shall be protected. Do not backfill over sleeve locations behind back of curbs or along walk edges, until work has been completed.

L. Drip Irrigation.
   1. Continuously self-flushing, pressure-compensating dripline by Rainbird. Continuously self-flushing, pressure-compensating dripline by Rainbird. The dripline (Rainbird XF Series Drip Line) shall consist of nominal sized one-half inch low density,linear polyethylene tubing housing internal pressure compensating, continuously self-flushing, integral drip emitters. The emitters should have the ability to independently regulate discharge rates, with an output pressure of between 15-50 psi, at a constant flow. The emitter discharge rate shall be 1.0 gallons per hour, utilizing a combination turbulent flow/reduced pressure cell mechanism and a diaphragm to maintain uniform discharge rates. The emitters shall continuously clean themselves while in operation. The dripline shall have the emitters spaced 18" apart.
   2. Accessories
      a. The disc-filters, flush-valves and air-relief valve shall all be manufactured specifically for use with drip-irrigation applications.
      b. Rainbird Xeri-Pop Micro Spray connected to landscape drip line.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION

A. Layout: Layout irrigation systems and make minor adjustments due to differences between site and drawings. Where piping is shown on drawings under paved areas, but running parallel and adjacent to planted areas, install the piping in the planted areas.

B. Diagrammatic Intent: The drawings are essentially diagrammatic. The size and location of equipment and fixtures are drawn to scale, where possible. Provide offsets in piping and changes in equipment locations as necessary to conform with structures and to avoid obstructions or conflicts with other work (i.e. light pole bases, etc.)

C. Grades: Before starting work, carefully check all grades to determine that work may safely proceed, keeping within the specified material depths with respect to finish grade and drainage.

D. Minimum Water Coverage:
   1. Turf areas, 100%
   2. Other planting areas, 95%

3.2 WATER SUPPLY

A. Water for the irrigation system shall be provided from the location shown on the drawings.

B. No water flow or pressure information has been provided by the Owner. The irrigation contractor shall verify water pressure and available flow prior to installation.

C. An existing irrigation system may have been abandoned in place on site. The irrigation contractor shall be responsible for locating any existing water service or point of connection associated with the abandoned system and determining if it is viable for reuse. If an existing connection is found to be serviceable and meets design assumptions, it may be reused with approval from the Owner's Representative. If no viable existing connection is found, the irrigation contractor shall create a new water tap at the location shown on the drawings, including all tapping, valves, backflow prevention, and appurtenances necessary for a complete and operational system.

3.3 SYSTEM DESIGN

A. Layout work as closely as possible to the irrigation plan. The drawings may be generally diagrammatic to the extent that all components are not necessarily shown as they will exist on site.

B. The Contractor shall be responsible for full and complete coverage of irrigated areas as to spacing and precipitation rates being matched and shall make any necessary adjustments to the system at no additional charge to the Owner. Head spacing should be based on the water pressure being 50-55 p.s.i. at the base of rotors, and 30 psi for sprayheads, after pressure losses occur through the service line, meter and backflow preventer. Head spacing shall not exceed 55 percent of manufacturer's stated diameter. Contractor shall verify pressure and set the pressure regulating modules to provide at least 50 psi at the base of the rotors, and 30 psi at the base of the spray-heads.

C. Revisions to the irrigation system must be submitted to the Owner's Representative in written form for approval.

3.4 TRENCHING AND BACKFILLING

A. General: Excavate straight and true with bottom uniformly sloped to low points.

B. Protect existing lawns and plantings. Remove and replant as necessary to complete installation. Replace damaged lawn areas and plants with new to match existing.

C. Trench Depth: Excavate trenches to a depth of 3 inches below invert of pipe, unless otherwise indicated.

D. Pulling, Excavating and Trenching.
1. Trenching, backfilling and compacting shall be as per Specifications -Site Water Utility Distribution Piping and Storm Utility Drainage Piping.
2. If trenching, trenches shall be made wide enough to allow a minimum of 6 inches between parallel pipe lines. If pulling, the same lateral distance shall be observed.

E. Minimum Cover: Provide following minimum cover over top of installed piping:
1. Main line pipe, 24
2. Lateral piping, 18" minimum

F. Backfill
1. Backfill with clean material from excavation. Remove organic material as well as rocks and debris larger than 1-inch diameter. Place acceptable backfill material in 6-inch lifts, compacting each lift.
2. Backfilling of trenches containing plastic pipe shall be done when pipe is cool to avoid excessive contraction in cold weather. Such backfilling can be done in early morning hours or the pipe may be water cooled prior to backfilling procedures.
3. Where pipe is pulled into the ground, slit-domes shall be compacted to original grade after pulling.

G. Existing Lawns: Where trenching is required across existing lawns, uniformly cut strips of sod six inches wider than trench. Remove sod in rolls of suitable size for handling and keep moistened until replanted.

1. Backfill trench to within 6” of finished grade. Continue fill with acceptable topsoil and compact to bring sod even with existing lawn.
2. Replant sod within 7 days after removal, roll and water generously.
3. Resod and restore to original condition any sod areas not in healthy condition equal to adjoining lawns 30 days after replanting.
4. Pavements: Do not cut existing pavements to install irrigation system. Provide sleeves of sufficient size to accommodate required piping and control wires prior to pavement installation. If pavement is installed prior to irrigation installation, contractor shall bore, as required, to install sleeves, irrigation piping and control wires.

H. Pavements, Walks, Etc.
1. Communication wire must be placed in sleeving under pavement, walks, etc.
2. Sleeving required shall be furnished by this Contractor, unless directed otherwise.

3.5 INSTALLATION

A. General: Unless otherwise indicated, comply with requirements of Uniform Plumbing Code.

B. Unless otherwise indicated, comply with requirements of the Local Plumbing Code.

C. Install piping, valves, controls and sprinklers in accordance with manufacturer’s written instructions. Mainline and lateral pipes shall be sized to maintain flow rates of 5 ft./second or slower. Generally, pipe sizing shall conform to the following guidelines:
   a. 0-16 gpm = 1” (minimum size shall be 1”)
   b. 17-35 gpm = 1.5”
   c. 36-55 gpm = 2”
   d. 56-80 gpm = 2.5”
   e. 80-120 gpm= 3” (looped mainline)
   f. 120-200 gpm=4”

D. Connection to Main: Backflow Preventer and 4-inch stub out shall be provided by others, see plans for exact locations, irrigation contractor shall make connection down stream of backflow preventer.

E. Maintain uninterrupted water service to all park facilities during normal working hours. Arrange for temporary water shut-off with General Contractor.

F. Control Valve Box. Install parallel or perpendicular to any adjacent site item such as curbs, walks, walls, etc. Locate valve boxes in landscape beds whenever possible.

G. Control Valves: Install in valve box, arranged for easy adjustment and removal. Provide four (4) feet of additional control wires at each junction.

H. Control Wire and Connections: 'Station' wires shall be 14 gauge, double insulated Maxi-Wire. DBY connections shall be made at all wire junctions. 'Common' wire shall be white 12-gauge.

I. Provide union on downstream side.

J. Adjust remote control valves to regulate flow rate and operating pressures required for each irrigation zone: (set at 55-60 psi for rotors; 35 psi for sprays).

K. Manual Shut-Off Valve: Install on main line piping to allow different areas of irrigation system to be shut off without affecting any of the others.

L. Piping: Lay pipe on solid sub-base, uniformly sloped without humps or depressions.
   1. At wall penetrations, pack the opening around pipe with non-shrink grout. At exterior face, leave a perimeter slot approximately ½" wide by ¾" deep. Fill this slot with backer rod and an acceptable elastomeric sealant. Repair below grade waterproofing disturbed by this work and make penetration watertight.
   2. Install PVC pipe in dry weather when temperature is above 40 degrees F in strict accordance with manufacturer's instructions. Allow joints to cure at least 24 hours at temperatures above 40 degrees F before testing, unless otherwise recommended by manufacturer.
   3. Reaction or thrust blocking shall be installed at all irrigation main line bends, tees, and where pipe diameter changes in size. Blocking shall be constructed against vertical surfaces either undisturbed earth or sheeting left in place as directed. Blocking shall be of the size and shape indicated and the actual or projected bearing area perpendicular to the direction of the resultant thrust of the pipeline shall be as shown or as required. Blocking shall be installed so the pipe and fitting joints will be accessible for repairs or future removal.
   4. Pipe may be assembled and welded on the surface.
   5. Plastic pipe and fittings shall be solvent welded using solvents and methods as recommended by manufacturer of the pipe, except where screwed connections are required. Pipe and fittings shall be thoroughly cleaned of dirt, dust and moisture before applying solvent with a non-synthetic bristle brush.
   6. When pipe is pulled into the ground, all PVC pipe shall be solvent welded at least 4 hours before pulling.
   7. Make all connections between plastic pipe and metal valves or steel pipe with threaded fittings using plastic male adapters.
   8. Use dielectric fittings at connection where pipes of dissimilar metal are joined.
   9. Trenches (or pulls) shall be snaked, or the pipe snaked, within the trench to allow for expansion and contraction of pipe.

M. Irrigation Heads: Flush lateral lines with full head of water and install heads after hydrostatic test is completed.
   1. Install lawn heads at manufacturer's recommended heights.

2. Install shrubbery heads at heights necessary to provide adequate coverage.
3. Install high pop-up heads as required to provide acceptable water distribution to all plant materials within the particular zone.
4. Locate part circle heads to maintain a minimum distance of 6 inches from walls and other boundaries, unless otherwise indicated.
5. Adjusting the system: Contractor shall adjust valves, align heads, and check coverage of each system prior to coverage test.
6. If it is determined by the Owner's Representative that additional adjustments or nozzle changes will be required to provide proper coverage, all necessary changes or adjustments shall be made prior to final payment.
7. The entire system shall be operating properly before any planting operations commence.

N. Dielectric Protection: Use dielectric fittings at connection where pipes of dissimilar metal are joined.

O. Air-Relief Valves: Install air-relief valve(s) in valve-boxes, at all high-points of the mainline.

3.6 TESTING

A. General: Notify Owner's Representative in writing when testing will be conducted. Conduct tests in presence of Owner's Representative for approval.

B. Hydrostatic Test: Test water piping and valves before backfilling trenches, to a hydrostatic pressure of not less than 100 psi. Piping may be tested in sections to expedite the work. Remove and repair piping, connections, valves that do not pass hydrostatic testing.

C. Operational Testing: Perform operational testing after hydrostatic testing is completed, backfill is in place and sprinkler heads are adjusted to final position. Perform test prior to any planting operations.

D. Demonstrate to Owner's Representative that the system meets the coverage requirements and that automatic controls function properly.

E. Coverage requirements are based on operation of one station at a time.

F. Should system fail to meet specified coverage or the automatic controls do not function properly, it will be the Contractor's responsibility to correct the installation as necessary prior to acceptance.

G. After completion of testing, carefully re-adjust lawn sprinkler heads so they will be flush with finish grade.

3.7 TRAINING

A. Contractor shall be responsible for the training of as many personnel as the Owner shall deem necessary.

B. Contractor shall be responsible for one closing and one opening of the system during the appropriate times of the year as part of the training of the Owner's personnel.

C. Contractor training shall include general trouble-shooting and operation of the system with reference to head, valve, and controller operation.

3.8 SPECIAL PROJECT WARRANTY

A. Warranty all irrigation systems products for a period of one year.

B. Warranty installation and workmanship for a period of one year. Repair failures due to pipe trench settlement, pipe rupture and irrigation head movement

C. Warranty period will begin from the date of final acceptance.

D. Irrigation shutdown and start-up will be performed by the contractor during the warranty period. Any fine-tuning, blowout of pipes, and repairs, will be made during this time.

END OF SECTION 32 8423

SECTION 32 9219 - SEEDING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Preparation of subsoil.
   2. Placing topsoil.
   3. Seeding.
   4. Mulching.
   5. Soil testing and fertilizer.
   6. Maintenance.
   7. Inspections.

1.2 REFERENCES

A. American Society for Testing and Materials:
   1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

B. Current State seed laws.

1.3 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.4 SUBMITTALS

A. Section 01 3300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data for seed mix, fertilizer and mulch.

C. Test Reports: Indicate topsoil nutrient and pH levels with recommended soil supplements and application rates.

D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 CLOSEOUT SUBMITTALS

A. Section 01 7000 - Execution Requirements: Requirements for submittals.

B. Operation and Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.6 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.

1.7 QUALIFICATIONS

A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum 5 years documented experience, approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.9 COORDINATION

A. Section 01 3000 - Administrative Requirements: Requirements for coordination.

1.10 MAINTENANCE

A. Maintain seeded areas immediately after placement until grass is well established and exhibits vigorous growing condition for two cuttings. Scattered bare spots, no larger than one square foot, will be allowed up to a maximum of 5% of any planted area. A minimum of 80% coverage is required as part of substantial completion. Refer to section 3.8 for additional maintenance requirements.

PART 2 PRODUCTS

2.1 SEED MIXTURE

A. Suppliers: Suppliers shall be from within a 500-mile radius of the project site at a location with similar climate conditions to the project site.

B. Standard Seed Mixture: Turf-type tall fescue mixture shall contain fresh, clean, new-crop seed with a minimum germination of 85%. The seed mixture (by

weight) shall be 90% improved turf-type tall fescue containing at least two varieties, in equal amounts of equal color and texture, containing acceptable varieties, including Arid, Bonanza, Mustang, Olympic, Falcon, Jaguar, Rebel II, or approved equal, and 10% improved Kentucky Bluegrass containing acceptable varies, including Adelphi, America, Baron, Majestic, Ram, Touchdown, Nassau, or approved equal.

Shade Seed Mixture:

Heavy Shade: Provide certified grass-seed blends or mixes, proportioned by weight, as follows:

Proportion	Name	Min. Pct. Germ.	Min. Pct. Pure Sd.	Max. Pct. Weed Sd.
65 pct.	Chewings Red Fescue (Festuca rubra) - Approved Varieties from list below: Florentine II, Flyer or approved equal.	85	98	0.50
25 pct.	Kentucky Bluegrass (Poa pratensis) - Approved Varieties from list below: Adelphi, America, Baron, Majestic, Ram, Touchdown, Nassau or approved equal.	80	85	1.00
10 pct.	Redtop (Agrostis alba) Approved Variety	85	92	1.00

2.2 SOIL MATERIALS

A. Topsoil: Excavated from site and free of weeds.

2.3 ACCESSORIES

A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.

B. Fertilizer: Grade recommended for grass, of proportion necessary to eliminate deficiencies of topsoil, as indicated in analysis. Apply only if recommended by and at rates identified in soil test results.

C. Lime: ASTM C602, Class T agricultural limestone containing a minimum 80 percent calcium carbonate equivalent.

D. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.

E. Erosion Fabric: Comprised of wheat straw, open weave, stitch bonded with UV accelerated photodegradable polypropylene netting on two sides, able to withstand a 2 fps minimum flow and mowing.

F. Herbicide: As recommended by soil test.

G. Stakes: Softwood lumber, chisel pointed.

H. String: Inorganic fiber.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 4000 - Quality Requirements: Verification of existing conditions before starting work.

B. Verify prepared soil base is ready to receive the Work of this section.

3.2 PREPARATION OF SUBSOIL

A. Prepare sub-soil to eliminate uneven areas and low spots. Maintain lines, levels, profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated sub-soil.

C. Scarify subsoil to depth of 3 inches where topsoil is to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted sub-soil.

3.3 PLACING TOPSOIL

A. Spread topsoil to minimum depth of 4 inches over area to be seeded. Rake until smooth.

B. Place topsoil during dry weather and on dry unfrozen subgrade.

C. Remove vegetable matter and foreign non-organic material from topsoil while spreading.

D. Grade topsoil to eliminate rough, low or soft areas, and to ensure positive drainage.

3.4 FERTILIZING

A. Apply fertilizer at application rate recommended by soil analysis.

B. Apply after smooth raking of topsoil and prior to roller compaction, as needed.

C. Do not apply fertilizer at same time or with same machine used to apply seed.

D. Mix fertilizer thoroughly into upper 2 inches of topsoil.

E. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

3.5 SEEDING

A. Apply both Standard Seed and Shade Seed Mixture at rate of 6 lbs. per 1000 sq. ft. evenly in two intersecting directions. Rake in lightly.

B. Allowable seeding methods are: drill or hydroseed. Broadcast seeding is only permitted in small areas of less than 100 square feet.

C. Do not seed areas in excess of that which can be mulched on same day.

D. Planting Season: March 15 through May 30 and August 15 through October 15.

E. Do not sow immediately following rain, when ground is too dry, or when winds are over 12 mph.

F. Roll seeded area with roller not exceeding 112 lbs./linear foot.

G. Immediately following seeding and compacting, apply mulch to thickness of one inch. Maintain clear of shrubs and trees.

H. Apply water with fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

3.6 SEED PROTECTION

A. Identify seeded areas with stakes and string around area periphery. Set string height to 24 inches. Space stakes at 48 inches.

B. Cover seeded slopes where grade is 4 inches per foot or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.

C. Lay fabric smoothly on surface, bury top end of each section in 6-inch-deep excavated topsoil trench. Overlap edges and ends of adjacent rolls minimum 12 inches. Backfill trench and rake smooth, level with adjacent soil.

D. Secure outside edges and overlaps at 36 inch intervals with stakes.

E. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.

F. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.7 TEMPORARY SEEDING

A. The work of temporary seeding and protection of erosive earth areas shall be done promptly, where needed.

B. Timing: Temporary seeding and protection shall be done under the following conditions:
   1. When it is impossible or impractical to bring an area to final line, grade and finish so that permanent seeding and protection work can be performed without subsequent serious disturbance by additional grading.
   2. When soil erosion occurs or is considered to be a potential problem on areas where construction operations are temporarily suspended.
   3. When an immediate cover would be desirable to minimize erosion, siltation or pollution of any area.

3.8 MAINTENANCE

A. Maintenance shall begin immediately after planting. The seed shall be protected and maintained by watering, mowing, fertilizing and replanting until final acceptance by the owner.

B. Mow grass at regular intervals to maintain at maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at each mowing. Perform first mowing when seedlings are 40 percent higher than desired height.

C. Immediately remove clippings after mowing and trimming. Do not let clippings lay in clumps.

D. Water to prevent grass and soil from drying out.

E. Control growth of weeds. Apply herbicides when necessary to inhibit excessive weed growth. Remedy damage resulting from improper use of herbicides.

F. Immediately reseed areas showing bare spots.

G. Repair washouts or gullies.

H. Protect seeded areas with warning signs during maintenance period.

I. The maintenance of the seeded turf areas shall be the Contractor’s responsibility until final acceptance by the Owner. Contractor shall protect seeded areas by watering, fertilizing, applying weed killer, and replanting as necessary, for a uniform stand of established grass and until approved by the Owner’s

Representative. Scattered bare spots, no larger than one square foot, will be allowed up to a maximum of 5% of any planted area.

3.9 INSPECTIONS

A. The Contractor shall notify the Owner's Representative for final inspection. The request shall be in written form and received at least ten (10) calendar days before the anticipated date of inspection.

B. Based on the sole judgment of the Owner's Representative, he shall certify in writing as to the satisfaction and substantial completion of the project, which shall be deemed final acceptance. Final acceptance is defined as when all punch list items have been determined to be complete by either the Owner or the Owner's Representative and the Contractor is authorized to submit the final pay application.

END OF SECTION 32 9219

SECTION 32 9223 - SODDING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Preparation of subsoil.
   2. Placing topsoil.
   3. Fertilizing.
   4. Sod installation.
   5. Maintenance.

1.2 REFERENCES

A. American Society for Testing and Materials:
   1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

B. Turfgrass Producers International:
   1. TPI - Guideline Specifications to Turfgrass Sodding.

1.3 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.4 SUBMITTALS

A. Section 01 3300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data for sod grass species and any other amendments to soil for sod growth.

C. Test Reports: Indicate topsoil nutrient and pH levels with recommended soil supplements and application rates.

D. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Sod: Root development capable of supporting its own weight without tearing, when suspended vertically by holding upper two corners.

1.6 QUALIFICATIONS

A. Sod Producer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum three years documented experience, approved by sod producer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver sod on pallets. Protect exposed roots from dehydration. Place sod in shaded areas, where feasible.

B. Do not deliver more sod than can be laid within 24 hours.

1.8 COORDINATION

A. Coordinate with installation of landscape plantings.

1.9 MAINTENANCE SERVICE

A. The maintenance of sodded turf area shall be the Contractor's responsibility until final acceptance by the Owner. The first mowing will not be attempted until the sod is securely in place, uniform in appearance, and the turf blades have reached a height of 4 inches.

1.10 WARRANTY

A. Contractor shall warrant that all sodded lawns and reconditioned lawns planted under this Contract will be healthy and in a condition of greater than 80 percent active growth one (1) year from date of Substantial Completion.

B. Any delay in completion of sodding operations which extends the planting into more than one planting season shall extend the Warranty Period correspondingly.

PART 2 PRODUCTS

2.1 MATERIALS

A. Sod:

1. Sod shall be nursery grown, of high quality, and free of disease nematodes, and soil-borne insects. Sod shall be free of noxious weeds, including but not limited to Common Bermuda Grass, Quack Grass, Johnson Grass, Poison Ivy, Yellow Nutsedge, Nibblewill, Canadian or Russian Thistle, Bindweed, Bentgrass, Wild Garlic, Ground Ivy, Perennial Sorel, Wild Violet, and Bromegrass. Sod shall be considered free of other

weed types if less than 5 weed plants are found per 100 square feet of area.

2. All sod should have two full seasons' growth before harvesting. Sod with less than two seasons' growth is subject to rejection.
3. All sod shall be stripped at a uniform solid thickness of approximately one-inch, plus or minus ¼". Measurement for thickness shall exclude top growth and thatch, and shall be determined at the time of field cutting. Sod thatch, uncompressed shall not exceed ½".
4. Root development shall be such that standard size pieces will support their own weight and retain their shape, when suspended vertically from a firm grasp on the uppermost 10% of area, or when rolled and unrolled three times.
5. Before stripping, the sod shall be mowed uniformly at a height of 2 to 2-1/2 inches.
6. Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect survival of the sod.
7. Sod shall be harvested, delivered and installed within a period of 24 hours. Sod not transplanted within this period shall be inspected and subject to rejection.
8. Sod shall be a 90% : 10%, turf-type Fescue/Kentucky Bluegrass blend, containing a mixture of equal parts by weight of three improved varieties of the turf-type Fescue.

2.2 SOIL MATERIALS

A. Topsoil: Excavated from site and free of weeds.

2.3 ACCESSORIES

A. Fertilizer: Commercial grade; recommended for grass, with fifty percent of elements derived from organic sources; of proportion necessary to eliminate deficiencies of topsoil to the following proportions: nitrogen 20 percent, phosphoric acid 20 percent, soluble potash 20 percent.

B. Lime: ASTM C602, Class T agricultural limestone containing a minimum 80 percent calcium carbonate equivalent. Apply only if recommended by and at rates identified in soil test results.

C. Water: Clean, fresh and free of substances or matter capable of inhibiting vigorous growth of grass.

D. Wood Pegs: Softwood, sufficient size and length to anchor sod on slope.

E. Herbicide: As recommended by sod installer and approved by Owner's Representative.

2.4 HARVESTING SOD

A. Machine cut sod and load on pallets in accordance with TPI standards.

B. Cut sod in area not exceeding one sq.yd., with minimum ½ inch and maximum 1-inch topsoil base.

2.5 SOURCE QUALITY CONTROL

A. Provide analysis of topsoil fill under provisions of Section 01 4000.

B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.

C. Provide recommendation for fertilizer and lime application rates for specified sod grass species as result of testing.

D. Testing is not required when recent tests are available for imported topsoil. Submit these test results to testing laboratory. If recent test results are unavailable, contractor is to provide a soil test. Indicate, by test results, information necessary to determine suitability.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 4000 - Quality Requirements: Verification of existing conditions before starting work.

B. Verify prepared soil base is ready to receive the Work of this section.

3.2 PREPARATION OF SUBSOIL

A. Turf areas shall be tilled to a minimum depth of 6 inches. After tilling, the area shall be regraded to a smooth and even grade. The top 4 inches of soil shall be free of existing turf, weeds, trash, rocks larger than one inch diameter, concentrations of crushed rock, scraps of waste concrete and asphalt, and other deleterious materials prior to sod placement. In areas where tree roots exist, care should be used during tilling operations to minimize disturbance of roots.

3.3 FERTILIZING

A. Prepare the sod bed by uniformly applying 12 pounds of 12N-12P-12K slow release fertilizer per 1,000 square feet of turf grass area to be planted. The fertilizer shall be thoroughly incorporated into the top six inches of soil with a mechanical tiller, or other approved method. Sod bed shall be in a firm, but uncompacted condition with a firm texture prior to laying of sod.

B. Fertilizer: As approved by Owner’s Representative, to be used in limited quantities, as needed. Do not allow direct leeching of material into adjacent stream or water bodies.

C. Apply fertilizer after smooth raking of topsoil and prior to installation of sod.

D. Apply fertilizer no more than 48 hours before laying sod.

E. Lightly water soil to aid dissipation of fertilizer.

3.4 LAYING SOD

A. Sod areas indicated on drawings, or as defined in related specifications sections.

B. The sodding operation shall not commence until site conditions are satisfactory. Sodding shall not be done when the ground is excessively wet, frozen, or untillable.

C. All areas to be sodded shall be fine graded before sodding and be free of deleterious materials, including weeds, existing grasses, tree branches, stones greater than one-inch diameter, concentrations of crushed rock, mortar and other debris. Grades for the flow lines of swales and ditches, shall be carefully established. Sod shall be placed so that it is level and even with the thatch surface of the sod.

D. Sod shall be installed in tightly abutted parallel rows with the lateral joints staggered at a minimum distance equal to the width of the sod slab. Voids between sod strips will not be accepted. Any netting used to hold the sod in place during transportation shall be removed before laid.

E. For sloping surfaces, sod shall be laid beginning at the base of the slope, with staggered joints and at right angles to the flow of water. Sod placed on 3:1 slopes or steeper, and in ditch flow lines, shall be staked with 6 stakes per square yard or roll of sod. Stakes shall be wood, ½” by 1” by 12” and shall be driven into the ground, leaving approximately ½” of the top above the sod line. Stakes should be set sufficiently in the ground to permit mowing.

F. The sod shall be watered immediately after installation. Prevent sod from drying during progress of work. After sodding is completed in any one section, the entire area shall be thoroughly irrigated to at least one-inch depth below the new sod pad. Subsequent watering should maintain moisture to a depth of at least 4 inches.

G. All sodded areas should be staked.

3.5 MAINTENANCE

A. Maintenance shall begin immediately after planting. The sod shall be protected and maintained by watering, mowing, fertilizing and replanting for as long as it is necessary to establish a uniform stand of grass. Any sod not surviving prior to its first mowing shall be replaced with new sod from the same source. Mowing of the sod will be the responsibility of the Contractor until final acceptance by the Owner.

B. Mow grass at regular intervals to maintain at maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at each mowing.

C. The maintenance of the sodded turf area shall be the Contractor's responsibility until final acceptance by the Owner. Until the first mowing, the Contractor shall apply the herbicide bromoxynil, or approved equal, at the label rate, to kill any broadleaf weeds. Contractor shall protect sodded areas by watering, fertilizing, applying weed killer, and replanting as necessary, for a uniform stand of established grass and until approved by the Owner's Representative. Scattered bare spots, no larger than one square foot, will be allowed up to a maximum of 5% of any planted area.

D. Neatly trim edges and hand clip where necessary.

E. Immediately replace sod on areas showing deterioration or bare spots.

F. Protect sodded areas with warning signs during maintenance period.

3.6 INSPECTIONS

A. The Contractor shall notify the Owner's Representative for final inspection. The request shall be in written form and received at least ten (10) calendar days before the anticipated date of inspection.

B. Based on the sole judgment of the Owner's Representative, he shall certify in writing as to the satisfaction and substantial completion of the project, which shall be deemed final acceptance.

END OF SECTION 32 9223

SECTION 32 9300 - PLANTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Preparation of subsoil and topsoil.
2. Topsoil bedding.
3. Trees, plants, and ground cover.
4. Mulch.
5. Fertilizer.
6. Pruning.
7. Maintenance.

1.2 REFERENCES

A. American National Standards Institute:
1. ANSI A300 - Tree Care Operations - Tree, Shrub and Other Woody Plant Maintenance - Standard Practices. (Most current versions)
2. ANSI Z60.1 - Nursery Stock. (2004)

1.3 DEFINITIONS

A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, Brome Grass and any plant life not specified.

B. Plants: Living trees, plants, and ground cover specified in this Section, and described in ANSI Z60.1.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Include pruning objectives, types and methods; types, application frequency, and recommended coverage of fertilizer.

1.5 QUALITY ASSURANCE

A. Tree Pruning: ANSI A300 Pruning Standards for Woody Plants.

B. One copy of the landscape plans and specification shall be kept on site throughout the work of this section.

1.6 QUALIFICATIONS

A. Nursery: Company specializing in growing and cultivating plants with three years' documented experience.

B. Installer: Company specializing in installing and planting plants with five years' documented experience.

C. Arborist: Company specializing in performing work of this section. Pruner shall be from the same company as the installer.

D. Maintenance Services: Performed by installer.

1.7 PRE-INSTALLATION MEETINGS

A. Notify Owner's Representative a minimum of 48 hours prior to installing phases of the work for in field plant placement verification for no more than a total of two such meetings. Some minor location adjustment may occur.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Mark plants for identification. Securely attach legible labels to at least 25 percent of each species and variety of separate plants in any shipment before delivery to the site. Each perennial plant shall be labeled individually.

B. Handle plants from bottom of ball. Protect plant roots and tops from sun or drying winds until final planting. Plants with cracked, broken or loosely wrapped balls will be rejected.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer. Fertilizer to be Osmocote or Owner approved equal.

D. Protect and maintain plant life until planted.

E. Deliver and install plant life materials within a 72-hour period. Keep plant containers and root balls moist throughout planting process. Proof of moisture must be found within top two inches of soil.

F. Plant material damaged as a result of delivery, storage or handling will be rejected and replaced at no cost to the Owner.

G. Spray deciduous plants in foliage with an anti-desiccant immediately after digging to prevent dehydration. Dig, pack, transport and handle plants with care to ensure protection against injury. Protect all plants from drying out. If plants cannot be planted immediately upon delivery, properly protect them with soil, wet peat moss, or in a manner acceptable to the Owner's Representative. Water heeled-in plantings daily. Only use anti-desiccant if forecast during planting and for two (2) weeks afterward is for temperatures over 80 degrees Fahrenheit.

H. Cover plants transported on open vehicles with a protective covering to prevent wind burn.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Do not install plant life when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F for greater than 24 hours.

B. Do not install plant life when wind velocity exceeds 30 mph.

1.10 COORDINATION

A. Coordinate work with other trades on site.

1.11 WARRANTY

A. Furnish one-year warranty for trees, plants, and ground cover.

B. If dormancy of plants requires verification of viability during the next growing season, the Warranty Period for those plants will commence following such verification.

C. For any delay in completion of planting operations that extends the planting into more than one planting season, the Warranty Period for all plantings shall begin when Certificate of Substantial Completion is granted unless otherwise indicated.

D. Any plants that are 25 percent or more dead shall be considered dead and shall be replaced at no charge. A tree shall be considered dead when the main leader has died back or 25 percent or more of the crown is dead.

E. Contractor shall not be held responsible for failures due to neglect by Owner or vandalism, during Warranty Period. Contractor shall be responsible to protect installed plantings from damage by animals. Contractor shall monitor condition of plantings regularly (once per month minimum) and report such occurrences to Owner in writing within 5 calendar days of observation. If Contractor does not notify Owner in writing of such conditions, Contractor shall be responsible for replacement of dead landscape plantings.

1.12 MAINTENANCE SERVICE

A. Maintain plant life immediately after placement and through final acceptance by the Owner.

B. Maintenance includes:
   1. Cultivation and weeding plant beds and tree pits.
   2. Applying herbicides for weed control. Remedy damage resulting from use of herbicides.
   3. Remedy damage from use of insecticides.

4. Watering sufficient to saturate root system. Contractor shall thoroughly water installed plants within 24 hours of installation. Installed plants shall be watered sufficient to saturate root system at least once each week during construction unless otherwise instructed by the Owner's Representative. Plants that are installed during the spring planting period shall be watered once a week during the following summer months of May, June, July and August. Plants that are installed during the fall planting period shall be watered once a week during the following spring months of March, April and May only if there is less than 1" of rain during each week, and once a week during the following summer months of June, July and August regardless of rainfall. Weeks shall be measured 12:00 a.m. Monday to 12:00 a.m. Monday.
5. Pruning, including removal of dead or broken branches.
6. Disease control.
7. Maintaining wrapping, guys, turnbuckles, and stakes. Adjust turnbuckles to permit sway and movement of trunk and limbs. Repair or replace accessories when required.
8. Replacement of mulch, except in events as a result of an act of God or vandalism.

PART 2 PRODUCTS

2.1 TREES, PLANTS, AND GROUND COVER

A. Planting Stock:
1. Species: In accordance with Standardized Plant Names, official code of American Joint Committee on Horticulture Nomenclature.
2. Identification: Label individual plants or each bundle of plants when tied in bundles.
3. Plants: No. 1 Grade conforming to "American Standard for Nursery Stock" of American Association of Nurserymen (AAN); well-branched, vigorous and balanced root and top growth; free from disease, injurious insects, mechanical wounds, broken branches, decay and other defects.
4. Trees: Furnish with reasonably straight trunks, free of disease and pest damage with well-balanced tops, and single leader. No trees with co-dominant leaders will be accepted.

B. Trees, Plants, and Ground Cover:
1. Species and size identifiable in plant schedule, grown in climatic conditions similar to those in locality of the Work.
2. Species with a "Y" shaped trunk or no main leader may be rejected if this is not true to species.

2.2 SOIL MATERIALS

A. Topsoil: For landscape planting beds and all other areas, topsoil to be provided and installed by Contractor.

1. Topsoil Plus (a 70/30 mix of screened river-bottom topsoil and Black Gold compost) by St. Louis Composting (636-861-3344) or approved equal. Black Gold Compost is a green, sustainable material manufactured from grass clippings, leaves, small brush, and food residuals. It is a weed-free and stabilized organic matter source. It is US Composting Council, Seal of Testing Assurance (STA) certified.

2.3 SOIL AMENDMENT MATERIALS

A. When soil tests indicate soil amendment, apply soil conditioners or fertilizers to amend soil to specified conditions.
   1. Tree Fertilizer: Containing fifty percent of elements derived from organic sources; of proportion necessary to eliminate deficiencies of topsoil, as indicated in analysis.

B. Peat Moss: Shredded, loose, sphagnum moss; free of lumps, roots, inorganic material or acidic materials; minimum of 85 percent organic material measured by oven dry weight, pH range of 4 to 5; moisture content of 30 percent.

C. Lime: Ground limestone, dolomite type, minimum 95 percent carbonates.

D. Water: Clean, fresh, and free of substances or matter capable of inhibiting vigorous growth of plants.

E. Herbicide: As recommended by landscape contractor and verified by owner’s representative. Any application deemed necessary must be applied by a person with a valid applicators license which should be submitted and approved prior to any application.

F. Pesticide: As recommended by landscape contractor and verified by owner’s representative. Any application deemed necessary must be applied by a person with a valid applicators license which should be submitted and approved prior to any application.

G. Rooting Hormone: Use for all live stake plant material. A product, such as Rhizopon AA#3 manufactured by Phytotronics, Inc., or equal, containing synthetic auxin plant hormone (IBA) or comparable ingredient and specifically formulated to promote root formation in hardwood cuttings.

2.4 MULCH MATERIALS

A. Mulching Material: Composted, shredded hardwood bark, dark brown in color, free of weeds and other organic matter and matter detrimental to plant life.

B. Hay or chopped cornstalks are not acceptable.

2.5 ACCESSORIES

A. Wrapping Materials: Natural Burlap.

B. Stakes: As indicated.

C. Cable: Non-corrosive, of sufficient strength to withstand wind pressure and resulting movement of plant life. Gauge as indicated.

D. Plant Protectors: Arbor Tie to protect plant stems, trunks, and branches.

E. Plant Pot: Typical black corrugated plastic.

F. Wrapping: Waterproof fabric.

G. Erosion Control Fabric: Curlex II with Fibernet or approved equal.

2.6 PLANT SOIL MIX

A. Plant Soil Mix:
   1. Planting Beds: 100% Topsoil
   2. Tree Pits: 50% Existing Soil and 50% Topsoil

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify the location of all utilities prior to beginning work to avoid conflicts during digging.

B. Verify prepared subsoil is at specified line and grade and is ready to receive work.

C. Saturate soil with water to test drainage. Notify owner's representative if a "hardpan" condition exists which may affect drainage and plant viability.

D. Plant quantities and spacing shown on the Drawings are for Contractor information only. Fill all areas on plans shown to be planted. Verify quantities and spacing of all plant material shown on the plans. All ground cover, perennial, and live stake beds are to be filled at the specified spacing. Notify Owner's Representative of discrepancies.

E. Verify that a required water source is available, in proper location, and ready for use. Verify the location of all utilities to avoid conflict during digging.

3.2 PREPARATION OF SUBSOIL

A. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated subsoil.

C. Scarify subsoil to a minimum depth of 3 inches where plants are to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.

D. Dig pits and beds two times wider than plant root system.

3.3 PLACING PLANTING SOIL MIX

A. Spread plant soil mix to minimum depth of 12”, over area to be planted. Rake smooth and to indicated tolerances.

B. Place plant soil mix during dry weather and on dry unfrozen subgrade.

C. Remove vegetable matter and foreign non-organic material from plant soil mix while spreading.

D. Grade plant soil mix to eliminate rough, low or soft areas, and to ensure positive drainage.

E. Install plant soil mix into pits and beds intended for plant root balls, as shown on the drawings.

3.4 FERTILIZING

A. Apply fertilizer in accordance with manufacturer’s instructions.

B. Apply after initial raking of plant soil mix.

C. Mix thoroughly into upper 2 inches of plant soil mix.

D. Lightly water to aid the dissipation of fertilizer.

E. For individual plants, provide fertilizer as described below:
   1. Each Installed Quart/Plug Size Plant:
      a. Installed in an oversized, mechanically dug hole with adequate loose soil around the root zone.
      b. Root pruned prior to planting to promote vigorous rooting response.
      c. One (1) Osmocote 15-8-11 slow release plant tab per plant pit.
      d. Immediate watering to saturate to settle plant into plant pit and prevent air pockets/root desiccation.

2. Each Installed Container Size Plant:
   a. Installed in an oversized, mechanically dug hole with adequate loose soil around the root zone.
   b. Root pruned prior to planting to promote vigorous rooting response.
   c. Two (2) Osmocote 15-8-11 slow release plant tab per plant pit.
   d. Immediate watering to saturate to settle plant into plant pit and prevent air pockets/root desiccation.
3. Each Installed Shrub:
   a. Installed in an oversized, mechanically dug hole with adequate loose soil around the root zone.
   b. Root pruned prior to planting to promote vigorous rooting response.
   c. Four (4) Osmocote 15-8-11 slow release plant tab per plant pit.
   d. Immediate watering to saturate to settle plant into plant pit and prevent air pockets/root desiccation.
4. Each Installed Tree:
   a. Installed in an oversized, mechanically dug hole with adequate loose soil around the root zone.
   b. Root pruned prior to planting to promote vigorous rooting response.
   c. Six (6) Osmocote 15-8-11 slow release plant tab per plant pit.
   d. Immediate watering to saturate to settle plant into plant pit and prevent air pockets/root desiccation.

3.5 PLANTING

A. Place plants for best appearance for review and final orientation by Owner's Representative.

B. Set plants vertical, where possible.

C. Remove non-biodegradable root containers.

D. Set plants in pits or beds, partly filled with prepared plant mix, at minimum depth as indicated on Drawings under each plant.

E. Saturate soil with water when pit or bed is half full of topsoil and again when full.

F. For Perennial and Ground Cover Planting: Set out and space plants in even rows with triangular spacing. Use planting soil mix with any recommendations for amendments. Dig holes large enough to allow spreading of roots. For rooted cutting plants supplied in flats or as plugs, plant each in a manner that will minimally disturb the root system but to a depth not less than two nodes. Work soil around roots to eliminate air pockets and leave a slight indentation around plants to hold water. Water thoroughly after planting, taking care not to cover plant crowns with wet soil. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

G. Planting Times:
1. Balled and Burlap Trees: Ball and burlap trees shall only be installed between September 1 through November 30 and February 1 through May 31.
2. Container Grown Material: Container grown material shall only be installed between September 1 through November 30 and February 1 through May 31.
3. Plug and Rhizome Material: Plug and rhizomes shall only be installed between February 15 through May 31.

3.6 INSTALLATION OF ACCESSORIES

A. Wrap deciduous shade and flowering tree trunks and place guying system. Maintain guys throughout planting process.

3.7 PLANT SUPPORT

A. Brace plants vertically with plant protector wrapped guy wires and stakes to the following:

Tree Caliper	Tree Support Method
Less than 2 inches	2 stakes with two ties minimum
Less than 2 inches (multi-stem)	3 stakes with two ties minimum
2 - 6 inches	3 guy wires

3.8 TREE PRUNING

A. When pruning of newly installed trees is required, lightly prune trees in accordance with ANSI A300 Maintenance Pruning Type: Crown Cleaning. Refer to Section 01 4500 for pruning of existing trees.

3.9 FIELD QUALITY CONTROL

A. Plants will be rejected when ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

END OF SECTION 32 9300

SECTION 33 11 00 - WATER MAINS & SERVICE

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

B. All work, installations, procedures, materials, and testing of the work performed under this Section shall conform to the Standard Specifications for Water and Sewer Main Construction in Illinois, 8th edition, 2020 (hereinafter referred to as the Standard Specifications), except as modified by this Specification.

1.2 SUMMARY

A. This work includes the furnishing of all labor, materials, and equipment necessary for the construction of the proposed water main/service improvements in substantial accordance with the Contract Drawings and Specifications.

B. CONTRACTOR shall pay for all permits and fees required under this Specification.

C. Related Sections:
1. Section 312300 – Excavation and Fill

1.3 SUBMITTALS

A. The CONTRACTOR shall submit to the ENGINEER one (1) digital copy of the water main/service pipe and appurtenant materials, fire hydrants, valves, fittings, etc. to be utilized for the construction of this Project.

B. The CONTRACTOR shall submit to the ENGINEER one (1) digital copy of the test results as required by this Specification.

1.4 QUALITY ASSURANCE

A. CONTRACTOR shall have a competent supervisor onsite during the process of the work who shall act for the CONTRACTOR in all matters concerning the work. He shall have the authority to receive and to act upon directions from the OWNER.

1.5 WARRANTY

A. The CONTRACTOR shall warrant all construction associated with this CONTRACT to be free from defects in material and construction for a period of one (1) year from the date of final acceptance by the OWNER.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Water-Distribution Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
   1. Notify Owner no less than one week in advance of proposed interruption of service.
   2. Coordinate signage for restricting existing building's usage of drinking fountains.

B. The CONTRACTOR shall have the responsibility of obtaining the necessary building trade permit required for performing the work associated with this Section.

C. The CONTRACTOR shall locate and verify elevations and sizes of the existing water main/service prior to construction.

PART 2 PRODUCTS

2.1 WATER PIPE

A. Water lines four inches (4") and larger shall be PVC pressure pipe in accordance with AWWA C900, Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings.

B. Vertical riser pipe for remote fire department connection (FDC) shall be schedule 40 galvanized steel threaded piping.

C. Cover: Install at depth to allow for 42-inches minimum cover.

2.2 FITTINGS

A. Fittings: Shall be ductile-iron or cast-iron. The interior of the fittings shall be cement-motor lined and outside coated with a bituminous seal. The fittings shall have mechanical joints.

B. Storz FDC: Shall be aluminum and angled downward.

2.3 VALVES

A. Valves: Water main valves shall comply with AWWA Standards C509. Water main valves for mains 12-inches or larger shall be Butterfly type valves. Water valves for mains under 12-inches shall be Gate valves.

2.4 FIRE HYDRANTS

A. Design: Fire Hydrants Shall Comply with AWWA C502-94.

B. Working Pressure: The hydrant shall be equipped with a secondary gate valve designed for 200 psi working pressure.

C. Connections: Inlet connections shall be 6-inches I.D. and shall be flanged. The attached hydrant secondary gate valve shall have flanged connections at hydrant end and a mechanical joint for 6-inches C.I. pipe at the other end.

D. Minimum Bury Depth: The minimum bury depth of pipe shall be 42-inches deep from grade to the top of the pipe.

E. Nozzles: Two 2-1/2 inch nozzles at 180 degrees and one 4-1/2 inch pumper nozzle shall be provided.

F. National Standard Threads: Fire hydrants, Siamese connections, standpipe hose connections and valves shall use National Standard threads.

G. Nozzle Cap: Each nozzle cap shall have a gasket.

H. Opening Direction: Direction of opening of fire hydrant and valves shall be counterclockwise.

I. Operating Nuts: Hydrant operating nut shall be 1-1/2 inch pentagonal nut. Secondary valve operating nut shall be a 2-inch square.

J. Rock: rock shall be placed around each fire hydrant to allow drainage and prevent freeze-up.

K. Color: Yellow.

2.5 VALVE BOXES

A. Valves Boxes: Shall be 3 piece cast iron, suitable for water works gate valves, having a 5-1/2 inch diameter, adjustable, screw type jacket and cover marked “Water”.

2.6 THRUST RESTRAINT

A. Blocks shall be provided for all pressure pipe fittings, changes in pipe alignment or direction, and at all points where there is a possibility of joint separation under pressure.
   1. Provide anchors and supports where necessary for fastening Work into place. Make proper provisions for expansion or contraction of pipelines. Thrust blocks shall be placed between solid ground and the pipe or fittings to be anchored as detailed.
   2. Thrust blocks shall be as detailed on the Drawings, or where not detailed, in accordance with AWWA C600, the *Standard Specifications for Water & Sewer Main Construction in Illinois*, and the pipe manufacturer’s recommendations.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION

A. Dimensions shown on CONTRACT DRAWING(S) are approximate only. CONTRACTOR shall verify all piping geometry in the field and shall be responsible for insuring proper alignment and fit of all piping consistent with the intent of the DRAWING(S).

B. Water and Sanitary/Storm/Combined Sewer separation shall meet requirements set forth in “Standard Specification for Water and Sewer Construction in Illinois, 8th edition, 2020” in Section 41-2.01.

C. Temporary support, adequate protection, and maintenance of all underground and surface structures, drains, sewers, utilities and other obstructions encountered in the progress of the work shall be provided or overcome by the CONTRACTOR at their own expense.

D. No deviation shall be made from the required line or grade except with the consent of the ENGINEER.

E. All pipe shall be laid and maintained to the required lines and grades. In locations of new developments, all water mains shall be installed a minimum of 42 inches below proposed or existing grade. Fittings, valves and hydrants shall be at the required locations and with joints centered, spigots home and all valve and hydrant stems plumb unless otherwise specified by the ENGINEER.

F. Cast iron valve boxes shall be firmly supported and maintained centered and plumb over the wrench nut of the valves with box cover flush with the surface of the finished pavement or at such other levels, as may be directed by the ENGINEER.

G. The CONTRACTOR shall make all necessary cuts on pipe and shall provide all required pipe supports, thrust rods, hangers, brackets, and like items.

3.2 PRESSURE AND LEAKAGE TESTS

A. After the pipe has been laid, thrust blocks installed and the trench backfilled, the entire pipe line, or any section thereof, shall be subjected to hydrostatic pressure of at least 150% of normal operation pressure, but not less than 100 psi or more than design rating of the pipe. The test pressure shall be slowly filled with water. The specified test pressure, measured at the point of lowest elevation, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the ENGINEER.

B. The pump pipe connection and all necessary appurtenances including gauges and meters shall be furnished by the CONTRACTOR. The duration of each pressure test shall be at least 1 hour unless otherwise directed by the ENGINEER.

C. Before applying the specified test pressure, all air shall be expelled from the pipe. If permanent air vents are not located in all high points, the CONTRACTOR shall install corporation stops at such points so the air can be expelled as the line is

filled with water. After all the air has been expelled, the corporation stops shall be closed and the test pressure applied.

D. During the test, all exposed pipes, fittings, valves, hydrants, and joints will be carefully examined. Any defective or damaged material shall be removed and replaced by the CONTRACTOR with sound material. The test shall then be repeated until satisfactory to the ENGINEER.

E. A leakage test shall be conducted upon successful completion of the pressure test. The pressure during the test shall be normal operation pressure, but not less than 100 psi. The test pressure shall be 2 hours unless otherwise directed by the ENGINEER.

F. Should any test disclose leakage greater than that permitted, the CONTRACTOR shall, at their own expense, locate and repair the defective joints and/or pipe until the leakage is within permitted allowance.

G. The pump, pipe connections, metering devices and all necessary apparatus for the pressure and leakage tests shall be furnished by the CONTRACTOR. The CONTRACTOR shall make all excavations and backfills and furnish all necessary assistance for conducting the tests.

3.3 STERILIZATION OF PIPELINES

A. The CONTRACTOR shall clean and disinfect all pipelines in accordance with AWWA C-601.

B. All new pipes shall be sterilized. It is most important to ensure that debris or other foreign matter is removed from the interior of the pipe before it is installed in the line. The ends of the installed pipeline are to be protected against entrance of foreign matter or animals at all times.

C. The new pipes shall be flushed as thoroughly as possible to remove foreign matter. Flushing shall be done before the pressure and leakage tests have been made.

D. Before being placed into service, all new pipes and repaired portions or extensions to existing pipes shall be chlorinated so that the initial chlorine residual is not less than 50 mg/l and that a chlorine residual of not less than 25 mg/l remains in the water after standing 24 hours.

E. The disinfectant should be introduced in the form of calcium hypochlorite (HTH) tablets. The number or tablets in each length of pipe shall be as specified below. Fasten the required number of tablets to the top of the inside of each length of pipe using a non-toxic water resistant adhesive which shall not cover the sides or face of the tablet. Water from an approved source of supply shall be controlled to flow slowly into the pipe to be disinfected.

NUMBER OF HYPOCHLORITE TABLETS OF 5 – GRAMS WEIGHT
REQUIRED FOR DOSE OF 50 mg/l CHLORINE AT 3.75 GRAMS

AVAILABLE CHLORINE PER TABLET

LENGTH OF SECTION FEET	DIAMETER OF PIPE – INCHES 2	4	6	8	10	12	16	20	24
13 or less	1	1	2	2	3	5	7	11	15
18	1	1	2	3	5	6	9	15	21
20	1	1	2	3	5	7	10	16	24
30	1	2	3	5	7	10	15	24	36
40	1	2	4	6	9	14	21	32	47

F. Care should be taken so the sterilizing solution in the pipe being sterilized will not flow back into the line supplying the water.

G. Treated water shall be retained in the pipe long enough to destroy all non-spore forming bacteria. This period should be at least 24 hours required time. After the chlorine treated water has been retained for the required time, the chlorine residual shall be at least 25 ppm.

H. Following chlorination, all treated water shall be thoroughly flushed from the newly laid pipe at its extremity until the replacement water throughout its lengths shows upon test, a chlorine residual of less than 1 mg/1. In the event chlorine is normally used in the source of supply, then the tests shall show a residual of not in excess of that carried in the system.

I. After flushing, water samples collected on two (2) successive days from the treated piping system, as directed by the ENGINEER, shall be satisfactory bacteriological results. Bacteriological analysis must be performed by a laboratory certified by the Illinois Department of Public Health. The CONTRACTOR shall deliver the samples to a certified laboratory.

J. Should the initial treatment result in an unsatisfactory bacterial test, the original chlorination procedure shall be repeated by the CONTRACTOR until satisfactory results are obtained. If the bacteriological test is unsatisfactory, the CONTRACTOR shall be responsible for the cost of water to re-flush and disinfect the water main for each succeeding failure.

END OF SECTION 33 1100

SECTION 33 42 13 – Pipe Culverts

PART 1 GENERAL

1.1 SUMMARY

A. The CONTRACTOR shall furnish all labor, materials, equipment and means to clear and prepare the project site as shown on the Contract Drawings or required to permit the installation of the facilities, and dispose of the materials. CONTRACTOR shall pay for all permits required under this specification.

B. Section Includes:
   1. Pipe Culverts

1.2 REFERENCES

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

B. All work, installation, procedures, materials, etc. shall be in conformance with the Standard Specifications for Road and Bridge Construction, adopted January 1, 2022, along with all Supplemental Specifications and Recurring Special Provisions, by the Illinois Department of Transportation (herein referred to as the Standard Specifications) except as modified by this Specification.
   1. In the event of a conflict between the Contract Documents and the IDOT Standard Specifications or IDOT Standard Drawings, the IDOT Standard Specifications and IDOT Standard Drawings shall govern.
   2. Where the Contract Documents provide additional detail or more stringent requirements than the IDOT Standard Specifications or IDOT Standard Drawings, the more stringent requirement shall apply.

1.3 SUBMITTALS

A. The CONTRACTOR shall submit to the ENGINEER one (1) digital copy of the pipe culvert to be utilized for the construction of this Project.

1.4 QUALITY CONTROL / QUALITY ASSURANCE

A. Quality Control / Quality Assurance shall be in accordance with Section 542 of the IDOT Standard Specifications.

1.5 QUALIFICATIONS

A. All Contractors shall be from the Illinois Department of Transportation’s Prequalified Contractor Listing.

1.6 PRE-INSTALLATION MEETINGS

A. Notify Owner's Representative a minimum of 48 hours prior to any phase of work.

1.7 COORDINATION

A. Coordinate work with other trades on site.

1.8 WARRANTY

A. The CONTRACTOR shall warranty all construction materials and workmanship associated with the pavements for this CONTRACT to be free from defects for a period of one (1) year from the date of final acceptance by the OWNER. Any cracks, flaws, etc. in the paving or markings shall be sealed by the CONTRACTOR at his/her own expense during the one (1) year guarantee period.

PART 2 PRODUCTS

2.1 PIPE CULVERTS

A. All materials shall be in accordance with Section 542 of the IDOT Standard Specifications.

PART 3 EXECUTION

3.1 PIPE CULVERTS

A. All work shall be in accordance with Section 542 of the IDOT Standard Specifications.

END OF SECTION 33 42 13