NILES TOWNSHIP
HIGH SCHOOL DISTRICT 219

OUTDOOR ATHLETIC FIELD AND SURFACE ALTERNATIONS
ARCHITECT’S PROJECT NO. 18107

NILES TOWNSHIP HIGH SCHOOL DISTRICT 219
OUTDOOR ATHLETIC FIELD AND SURFACE ALTERATIONS

NILES TOWNSHIP HIGH SCHOOL DISTRICT 219
7700 GROSS POINT ROAD
SKOKIE, ILLINOIS 60077

ARCHITECT: STUDIOGC ARCHITECTURE + INTERIORS
223 WEST JACKSON BOULEVARD
SUITE 1200
CHICAGO, ILLINOIS 60606
312-253-3400

DATE: FEBRUARY 12, 2019
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Sealed bids for the Outdoor Athletic Field and Surface Alteration will be received by the Niles Township High School District 219 at their District Office located at 7700 Gross Point Road, Skokie, IL 60077 until 11:00 a.m. prevailing time on March 5, 2019. Lump Sum bid proposals will be received for this project at the scheduled time of receipt of bids and will be publicly opened and read aloud at the above stated time and place.

Each bid must be accompanied by a Bid Guarantee in the form of a Bid Bond, Certified Check or Bank Draft in an amount equal to and not less than ten percent (10%) of the bid and made payable to Niles Township High School District 219. No bid shall be withdrawn for a period of sixty (60) days after the bid opening date without the consent of the Owner. Checks or drafts of unsuccessful Bidders will be returned as soon as practical, after opening and checking the bids. Successful Bidder must provide a Performance Bond and a Labor and Material Payment Bond in the full amount of the Contract, acceptable to the Owner.

Bids shall be submitted in an opaque sealed envelope clearly marked as SEALED BID and addressed to:

Mr. Eric Trimberger  
Assistant Superintendent for Business/CSBO  
Niles Township High School District 219  
7700 Gross Point Road  
Skokie, IL 60077

The Board of Education reserves the right to reject any or all bids or parts thereof or waive any irregularities or informalities in bidding.

This Contract is subject to the Illinois Prevailing Wage Act (820 ILCS 130/1 et seq.).

QUALIFICATION: Each Bidder must satisfactorily complete the qualification process described in Section 004395 -General Requirements of the Project Manual, by providing the required Qualification Documents. The required Qualification Documents must be delivered along with the Bidder’s sealed bid at the same place and time required for the bid. Contents of each Bidder’s Qualification Documents will be available for public review. The Qualification Documents will be reviewed by the Owner and Architect to determine the lowest responsible Bidder

Bidding documents consist of drawings, project manuals, plus all addenda issued prior to bids; and may be obtained electronically and reproduced at the Bidder's expense from Cross Rhodes Reprographics, 30 Eisenhower Lane North, Lombard, IL 60148, (630) 963-4700.

A mandatory pre-bid meeting walk-through for general contractors will be held at 1:00 p.m., prevailing time, on Wednesday, February 20, 2019, at the Niles North High School located at 9800 Lawler Avenue, Skokie, IL 60077. Subcontractors are encouraged, but not required to attend. After the pre-bid meeting, everyone shall visit the sites to view the area of work, gather additional information, and ask specific questions. There shall be only one scheduled walk-through of the sites. Attendance shall be taken at the site to ensure that all general contractors have visited the site. Non-attendance can be grounds for rejection of bid.

Board of Education  
Niles Township High School District 219  
Skokie, Cook County, Illinois

END OF SECTION 001113
SECTION 002213 – SUPPLEMENTARY INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.1 INSTRUCTIONS TO BIDDERS
   A. AIA Document A701, "Instructions to Bidders," is hereby incorporated into the Procurement and Contracting Requirements by reference.

1.2 SUPPLEMENTARY INSTRUCTIONS TO BIDDERS, GENERAL
   A. The following supplements modify AIA Document A701, "Instructions to Bidders." Where a portion of the Instructions to Bidders is modified or deleted by these Supplementary Instructions to Bidders, unaltered portions of the Instructions to Bidders shall remain in effect.

1.3 DEFINITIONS
   A. Definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201-2017, and the Supplementary General Conditions thereto, are applicable to these Instructions to Bidders.
   B. OWNER: NILES TOWNSHIP HIGH SCHOOL DISTRICT 219
      7700 GROSS POINT ROAD
      SKOKIE, IL 60077
   C. Bidding Documents include the Instructions to Bidders, the Bid Form, the Contract documents and Addenda which may be issued prior to receipt of bids.
   D. Addenda are written or graphic documents issued prior to the execution of the Contract which modify or interpret the Bidding and Contract Documents. Addenda will become part of the Contract Documents when the Construction Contract is executed.

1.4 MANDATORY QUALIFICATIONS OF BIDDERS
   A. Each Bidder must satisfactorily complete the qualification process described below by providing the required Qualification Documents along with their bid at the same time and place as required for the bid.
      1. In the case of a joint venture or partnership, each joint venturer or partner must independently meet each of the requirements set forth in Paragraphs 1.2, 1.3, 1.4 and 1.5 in Section 004395 – General Requirements.
   B. Bidder who: 1) fails to deliver a set of qualification documents or 2) delivers documents which do not satisfactorily demonstrate that the Bidder meets the bid criteria set forth, will be deemed to be in material non-compliance with these Instructions to Bidders, and the bid will be rejected as non-conforming.
   C. Bid Criteria and Qualification Documents as indicated in Section 004395 – General Requirements must be provided in the qualification document package. The documentation must satisfactorily show evidence that the Bidder meets each of the criteria stated.
1.5 BIDDER’S REPRESENTATION

A. Each bidder by making his Bid represents that:

1. He has read and thoroughly reviewed all divisions of the Specifications, all Drawings, and all other Contract Documents, Local, State and Federal Laws and Ordinances, and all other matters which can, in any way, affect the work under this Contract.

2. He has personally visited the site of the proposed project and thoroughly familiarized himself as to the nature and location of the project, the character, quality, the quantity of materials to be encountered and reused and the kind of equipment needed during the execution of the Work.

3. He has the equipment, technical ability, personnel and facilities to construct the project in accordance with the Contract Documents.

4. He has examined the Contract Documents and has found them sufficiently complete to enable him to prepare a proposal.

B. Bidders will not be given extra payments for conditions which can be determined by examining the site and Contract Documents.

1.6 OBTAINING BID DOCUMENTS

A. Bidding documents consist of drawings, project manuals, plus all addenda issued prior to bids; and may be obtained electronically and reproduced at the Bidder's expense from Cross Rhodes Reprographics, 30 Eisenhower Lane North, Lombard, IL 60148, (630) 963-4700.

1.7 PRE-BID CONFERENCE

A. General contractors shall attend a mandatory pre-bid meeting walk-through on Wednesday, February 20, 2019 at Niles North High School at the 9800 Lawler Avenue, Skokie, IL 60077. Subcontractors are encouraged, but not required, to attend. As part of the pre-bid meeting everyone shall visit the site to view the area of work, gather additional information, and ask specific questions. There shall be only one scheduled walk-through of the site. Attendance shall be taken at the site to ensure that all contractors have visited the site. Non-attendance can be grounds for rejection of bid.

1.8 INTERPRETATIONS

A. Requests for Interpretations:

1. Submit requests for interpretation of the documents in writing to the Architect. Inquiries received two or more days prior to the date fixed for opening of the Bids will be given consideration.

2. Responses to requests for interpretation will be issued as Addenda. Addenda will be issued to bidders of record. It is the responsibility of the bidders to check to be certain they have the issued Addenda.

B. No verbal agreement, understanding, or conversation with an agent or employee of the Owner or Architect, either before or after the bidding period, shall affect or modify the terms or obligations of the bidding requirements.
1.9 ALTERNATE BIDS

A. Alternate or partial bids will not be considered except as specifically set forth on the Bid Form. The Bidder shall write the words, “None Submitted”, in the space provided for the amount of any Proposal upon which he is submitting no bid.

1.10 SUBSTITUTIONS

A. Each bidder represents that his Bid is based upon the materials and equipment described in the Contract Documents.

B. No substitution will be considered unless written request has been received by the Architect at least two (2) days prior to the date of receipt of Bids. Each such request shall include a complete description of the substitution, the name of the material or equipment for which it is to be substituted, drawings, product data, cuts, performance or test data and other data and information necessary for a complete evaluation in accordance with the requirements of the Contract Documents.

C. When the Architect approves a proposed substitution, approval will be issued in an Addendum.

1.11 BIDS

A. Make bids in accordance with the following instructions:

1. Sealed Bids will be received until 11:00 a.m. prevailing time, on Tuesday, March 5, 2019 for all specified work at Niles Township High School District 219, District Office, 7700 Gross Point Road, Skokie, IL 60077.

2. Submit two (2) copies (1 original, 1 copy) of the bid on forms provided by the Architect with all blank spaces for bid prices filled in, either in ink or typewritten. Bids shall be complete and properly executed. State amounts in writing and in figures. Erasures, interlineations, and alterations on Bid Form are not permitted. Bids not accompanied by the required bid security, when required, will not be considered.

3. Form of Proposal included in the Bid Documents is for the information of the Bidder. A separate copy of this form is furnished for the submittal of Bids.

4. Signatures: Signatures shall be in long hand. Signatures shall be by individual, partner, corporate officer, or attorney-in-fact for the entity submitting the bid.

5. No oral, telegraphic, or telephone Bids or modifications will be considered. Bids must contain Alternates enumerated in the Bid Documents and Contract Documents.

6. Submit Bid, and other required documents in an opaque, sealed envelope. Identify the envelope with: (1) project name, (2) name of Bidder.

7. A Bid is invalid if it has not been received at the designated location prior to the time and date for receipt of Bids indicated in the Invitation for Bids or prior to any extension thereof.

8. Bids may be withdrawn by written or telegraphic request dispatched by the Bidder in time for delivery in the normal course of business prior to the time fixed for opening of Bids, provided that written confirmation of telegraphic withdrawal over the signature of the Bidder is placed in the mail and post marked prior to the time set for opening of Bids.

9. The Owner reserves the right to reject any and all bids and to waive any irregularities therein.

1.12 CONTRACT SECURITY

A. The contractor shall furnish a Performance Bond in an amount equal to one hundred percent (100%) of the Contract Sum as security for the faithful performance of this Contract and also a Labor and Material Payment Bond in an amount not less than one hundred percent (100%) of the Contract Sum as security for the payment of all persons performing labor and furnishing materials in connection with this Contract.
The Performance Bond and the Labor and Material Payment Bond shall be submitted on AIA Form A312 or on other forms acceptable to the Architect.

B. Provide the cost for the amount of premium for the bonds.

C. The contractor shall attach to the Form of Proposal a Bid Bond, in the amount not less than 10% of the Base Bid amount, payable to Board of Education, Niles Township High School District 219, Cook County, Illinois, which is agreed will be forfeited to the Niles Township High School District 219 if the undersigned fails to execute the Standard Form of Owner/Contractor Agreement (AIA Document A101, 2017 Edition), as modified herein by the Supplementary Conditions, and which is hereby made a part of this Contract Document by reference, and furnish evidence of his ability to become bonded and provide insurance coverage as specified, within five days after Owner's notification of the intent to award the contact to the contractor.

1.13 AWARD OF CONTRACT - REJECTION OF BIDS

A. The successful Bidder will be required to execute an agreement with the Owner. This agreement will be the standard AIA Agreement Form A101. It is understood that the Bidder accepts and agrees to provisions of said document unless specific exceptions are listed in his Bid. Bidder’s standard terms and conditions submitted with Bid will not be considered as listed specific exceptions.

1.14 CONSTRUCTION SCHEDULE

A. Tentative Date of Board Approval of Bids: March 19, 2019.

B. Tentative Commencement of Work on Site: May 28, 2019.

C. Substantial Completion: August 7, 2019.

D. Final Completion: August 14, 2019.

1.15 TAX EXEMPTIONS

A. Niles Township High School District 219 is exempt from fees related to Illinois Retailers Occupation Tax, the Illinois Use Tax Act, and the Illinois Service Occupation Tax Act as sales to a corporation organized and operated exclusively for not-for-profit charitable, religious, or educational purposes. No such tax needs to be included in the Base Bid Sum. Tax number will be provided on award of contract.

B. Other taxes that may apply are for the account of the Contractor.
SECTION 004113 – BID FORM

NAME: ________________________________

ADDRESS: ________________________________

CITY: ____________________ ZIP: ____________

PHONE: (____)- ____________ FAX: (____)- ______________

TO: Niles Township High School District 219
7700 Gross Point Road
Skokie, IL 60077

Attn: Eric Trimberger

1. BASE BID

The Undersigned, having inspected the construction site and having familiarized themselves with the conditions likely to be encountered affecting the cost and schedule of the Work, and having thoroughly familiarized themselves with the Bidding Documents; hereby proposes to provide all labor, material, tools, equipment, utilities, transportation, supervision and services required for the proper execution of the entire Work required, in strict accordance with the Contract Documents for the Outdoor Athletic Field and Surface Alterations work prepared by StudioGC for the Base Bid Sum, plus any allowances, for the Total Bid Amount listed below:

Base Bid: $ __________________________

Allowance No. 1: Contingency Allowance $ ______________ 100,000.00

TOTAL BID AMOUNT: $ __________________________

Dollars

and, if this proposal is accepted, agrees to execute a formal Contract subject to modifications as may be exercised by the Owner under alternate proposals.

2. SELF PERFORMING WORK

The bidder shall self-perform at least one major trade of work such as carpentry, masonry, mechanical, electrical, or plumbing. Indicate trade here: __________________________

3. ALTERNATE PROPOSALS

a. ALTERNATE BID NO. 1

Base Bid: Existing conditions to remain as is.

State the amount to be ADDED to the Base Bid to replace field perimeter storm sewer.
ADD TO THE LUMP SUM BASE BID $ ________________

b. ALTERNATE BID NO. 2

Base Bid: Existing conditions to remain as is.

State the amount to be ADDED to the Base Bid to replace field drainage piping and base.

ADD TO THE LUMP SUM BASE BID $ ________________

4. UNIT PRICES: State the amount (unit price) which shall include all expenses, including overhead and profit, which shall be used to make adjustments to the Contract Sum should additional work or less work be required. The unit prices shall be the same for additional, deducted or omitted units of work. Unit prices shall be established by the Bidder in accordance with Section “Unit Prices”.

Item 1: Sod, including preparation and placement $ ________________ /s.y.

Item 2: Sawcut, removal, and replacement of existing concrete track curb and perimeter synthetic turf nailer board (add or deduct) $ __________ / 10’ length

Item 3: Sawcut, removal, and replacement of existing asphalt pavement per details, full depth.

$ ________________ /s.y.

Item 4: Sawcut, removal, and replacement of existing concrete pavement per details, full depth.

$ ________________ /s.y.

Item 5: Sawcut, removal, and replacement of existing asphalt track pavement per details, full depth.

$ ________________ /s.y.


$ ________________ /s.y.

5. UNDERSTANDING: The Undersigned in submitting this proposal agrees to the following:

a. Not to withdraw their proposal for a period of 60 days after the date of the Bid Opening.

b. To enter into and execute a Contract, if same is awarded to them on the basis of this Proposal, and to furnish Contract Bonds, within five days of a written "Notice of Award".

c. To construct the Work in accordance with the intent of the Contract documents.

d. That the owner reserves the right to reject any and all Bids and to waive irregularities in the Bidding, and to award the contract in its best interest.

e. That any alterations to this Bid Form will result in disqualification of the Bid.

6. CONTRACT DOCUMENTS: The Undersigned acknowledges the following documents as the basis for their proposal:

a. Instructions to Bidders.


d. Supplementary General Conditions.
e. Project Manual, dated February 12, 2019, including all Divisions and Sections of the Specifications.
g. Addenda: The undersigned further acknowledges receipt of Addenda as listed below and represents that any additions to, modifications of, or deletions from the Work specified, as called for in these Addenda, are included in the Base Bid Sum and the Alternates.

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(NOTE: If no Addenda have been received, write “NONE”.)

7. **BID SECURITY:** The undersigned shall attach to this Form of Proposal a Bid Bond, in an amount not less than 10% of the Base Bid amount, payable to the Board of Education, Niles Township High School District 219 which is agreed will be forfeited to the Board of Education if the undersigned fails to execute the Standard Form of Owner/Contractor Agreement (AIA Document A-101, 2017 Edition), as modified herein as modified herein by the Supplementary Conditions and General Conditions of the Contract for Construction (AIA Document A201, 2017 edition), as modified herein by the Supplementary Conditions, and which is hereby made a part of this Contract Document by reference, and furnish evidence of their ability to become bonded and provide insurance coverage as specified, within five days after Owner’s notification of the intent to award the contract to the undersigned.

8. In signing and submitting this bid, the undersigned certifies that all materials and construction to be provided are as specified in the proposed Contract Documents.

9. **TIME OF COMPLETION:** If awarded the Contract for Construction, the Bidder agrees to complete all work for the Owner’s occupancy on or before the following dates:

   a. Commence Construction Work on site: May 28, 2019
   b. Final Completion of Work: August 14, 2019

10. **TAX EXEMPTION:** The Owner is exempt from the Illinois Retailer’s Occupation Tax and Use Tax (Sales Tax). The Bidder shall exclude such taxes from consideration in preparing their bid.

11. **ADDRESS, LEGAL STATUS AND SIGNATURE OF BIDDER**

   a. The Undersigned hereby designates the address given below as the legal address to which all notices, directions, or other communications may be served or mailed.

      Name of Firm or Joint Venture: __________________________
      Street Address: __________________________
      City: __________________________
      State: __________________________
      Zip: __________________________
      Telephone: __________________________
b. The Undersigned hereby declares that the Bidder has the legal status indicated below.

1) If a partnership, give full names of all partners:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

2) If a corporation, indicate state in which incorporated: ___

________________________________________________________________________

Affix Seal

c. The Undersigned hereby affirms that they are qualified to do business in the State of Illinois.

d. Signatures:

1) Individual, partnership or corporation:

Name: ________________________________

By: _________________________________

Title: ________________________________

2) Parties to Joint Venture:

Name: ________________________________

By: _________________________________

Title: ________________________________

Address: ________________________________

________________________________________________________________________

________________________________________________________________________

END OF DOCUMENT 004113.
BIDDER’S REQUIRED BID DOCUMENTS CHECKLIST

All Bidders must submit this form, completed in its entirety and signed, with their bid.

Below is a list of all documents and attachments which must be included with a bid in order for the bid to be considered a complete bid. Bidders must check boxes to indicate each item has been included with this bid.

- 004113 – Bid Form, including all attachments listed below
  - Bidder’s Required Bid Documents Checklist
  - Bidder’s Responsibility Information
  - Attachment 1 To Bidder’s Responsibility Information
  - Financial reports for the two consecutive, most recently available years.
  - References and project names of all projects as set forth in Section 004395 – General Requirements
- 004325 – Substitutions
- 004345 - Certificate of Prevailing Wage Requirements
- 004519 - Non-Collusion Affidavit
- 004521 - Bidder Eligibility Certificate
- 004546 - Certificate of Compliance With Illinois Drug-Free Workplace Act
- 004548 - Certificate Regarding Non-Discrimination in Employment – Protected Categories
- 004550 - Certificate Regarding Sexual Harassment Policy
- 004552 - Certificate Regarding Criminal Background Investigations
- Documentation of a minimum of five continuous years in business as detailed in Section 004395 General Requirements, Item 1.2.A.1
- Documentation that the Project Manager assigned to the project meets the requirements as detailed in Section 004395 General Requirements, Item 1.2.B and 1.2.B.1.
- Documentation that the Contractor meets the requirements as detailed in Section 004395 General Requirements, Item 1.2.C
- Documentation that Contractor’s Insurance Rating is 1.0 or less.
- Letter from President of the Company certifying absence of any filings for protection from creditors under federal bankruptcy laws and/or placement under receivership or similar restrictions in the last five years.
- Letter from President of the Company certifying absence of contracts terminated by Owner for non-performance in the past five years, except where not due to the material fault of the Bidder.
- Letter from bonding company certifying absence of claims on Bidder’s bond in the past five years, except where not due to the material fault of the Bidder.
- Completed AIA Document A305, Contractor’s Qualification Statement.

Signature:

Name: ________________________________
By: ________________________________
Title: ________________________________

THIS FORM MUST BE SUBMITTED WITH BID
BIDDER'S RESPONSIBILITY INFORMATION

Information required to be submitted with bid to facilitate application of Bidder Responsibility Criteria as described in Section 004395 of the Project Manual:

1. Date of establishment of current form of business organization: ________________________________

2. Type of current form of business organization: ________________________________

3. State of registration of current form of business organization: ________________________________

4. Name of bidder’s project manager with experience limits set forth in Section 004395 – General Requirements: ________________________________

5. Identification of projects which meet the requirements set forth in Section 004395 – General Requirements. Use Attachment 1 as the form on which to provide this information.

6. Enclose with this form independently prepared financial reports for the two consecutive, most recently available years.

7. Case, caption, number and court for any bankruptcy, receivership or similar proceeding involving the bidder other than solely as a claimant:

8. List contracts terminated by owner for non-performance within the past five years of this project’s bid date, and the name, address and telephone number of Owner’s representative under all such contracts:

9. List contracts on which a claim against the bidder’s bond was made within the past five years of this project’s bid date, and the name, address and telephone number of owner’s representative under all such contracts:

10. **Enclose with this form** a list of references and project names of all projects as set forth in Section 004395 – General Requirements. The references must include the names of contact person who are or were officials representing the Owner who are familiar with the Bidder’s performance.

**THIS FORM MUST BE SUBMITTED WITH BID**
ATTACHMENT 1 TO BIDDER'S RESPONSIBILITY INFORMATION

Identification of projects which meet the requirements set forth in Section 004395 – General Requirements. Fill out one sheet for each project. Duplicate as necessary.

1. Name of Project

2. Contract Price as Bid: $______________________________

3. Final Contract Price: $______________________________

4. Contract Start Date

5. Contract Completion Date:

6. Date of Substantial Completion:

7. Date of Final Completion:

8. Identification of change orders which increased contract price or completion date were due to the material fault of the Bidder:

9. Identification of any litigation, mediation or arbitration in which the bidder is or was a party, including the case caption, number and court, mediator or arbitrator and reasons for bidder’s involvement:

10. Identification of claims on the Bidder’s bond by owner, subcontractor or others which were due to the material fault of the Bidder:

11. Identification of mechanic’s liens filed against the owner and reasons for liens:

12. Name, address and telephone number of owner’s representative:

END OF SECTION 004113
SECTION 004325 – SUBSTITUTIONS

All bids shall be based upon the Contractor providing materials and equipment as required by the proposed Contract Documents.

Bidders desiring to propose substitutions for acceptable manufacturers, suppliers, materials and/or equipment indicated within the specifications shall list below such proposed substitutions, along with the amount to be added or deducted from the lump sum base bid should the Owner decide to accept such proposed substitutions.

The Owner reserves the right to reject any and all such proposed substitutions.

Proposed substitutions will not be used to determine the low bid.

In order to receive consideration, each proposed substitution shall be accompanied by complete technical data and written description of material or product, including effect on the construction schedule.

Note: Manufacturers, suppliers, materials and/or equipment approved by the Architect prior to the scheduled time for receipt of Bids, but not indicated in Addenda, must be listed below if said change from the specification requirements is to be considered.

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<th>ITEM SPECIFIED</th>
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<th>DEDUCT</th>
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Name of Bidder:  

Date:  

END OF SECTION 004325
SECTION 004343 – PREVAILING WAGE REQUIREMENTS

PART 1 - GENERAL

1.1 REQUIREMENTS

A. Each Contractor shall comply with requirements of “An Act regulating wages of laborers, mechanics and other workmen employed in any public works by the State, County, City or by any public body or any political subdivision or by anyone under contract for public works.”

B. If, during the course of work under this contract, the Department of Labor revises the prevailing rate hourly wages to be paid under this contract for any trade or occupation, Owner, will notify Contractor and each Subcontractor of the changes in the prevailing rate of hourly wages. Contractor shall have the sole responsibility and duty to ensure that the revised prevailing rate of hourly wages is paid by Contractor and all Subcontractors to each worker to whom a revised rate is applicable. Revisions to the prevailing wage as set forth above shall not result in an increase in the Contract Sum.

C. Contractor shall follow all State, County, City or by any public body provisions for prevailing wages. Contractors shall submit two forms of Certification of Monthly Payroll with each monthly pay request.

1. Certification of Monthly Payroll (record copy) will include name, address, phone, SS number, classification, hourly wages paid in each pay period, number of hours worked each day and starting and ending time of each day for each identified worker.

2. Certification of Monthly Payroll (public information copy) will include name, classification, hourly wages paid in each pay period, number of hours worked each day and starting and ending time of each day for each identified worker (Note: No SS # and address of employees). This submission would be maintained by the institution for three years and be provided upon receipt of a freedom of information act request concerning labor at those sites during the period which contractors and subs are employed at those sites.

1.2 ACT AND ORDINANCES

A. “An Act requiring wages of laborers, mechanics and other workmen employed in any public works by the State, County, City of any public body or any political subdivision or by anyone under contract for public works . . .”, Illinois Revised Statues, 1981, Chapter 48, Sections 39s-1 through 39s-2.

1. Copy of Illinois Department of Labor Prevailing Wages for [Cook] County can be found at www.state.il.us/agency/idol/rates/rates.HTM.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 004343
SECTION 004345 – CERTIFICATION OF PREVAILING WAGE REQUIREMENTS

CERTIFICATION OF PREVAILING WAGE REQUIREMENTS

I,_______________________________________________, Contractor, hereby certifies that all laborers, workers and mechanics performing work under the contract shall not be paid less than the prevailing wage as found by the Illinois Department of Labor or the Board of Education, and that Contractor and all subcontractors shall in all other respects comply with the Prevailing Wage Act in carry out work under the contract. If, during the course of work under this contract, the Department of Labor revises the prevailing rate of hourly wages to be paid under this contract, Contractor shall have the sole responsibility and duty to ensure that the revised prevailing rate of hourly wages is paid by Contractor and all subcontractors to each worker to whom a revised rate is applicable. Revisions to the prevailing wage as set forth above shall not result in an increase in the contract sum. Contractor shall protect, defend, indemnify and hold the Owner harmless for any claims or demands made as a result of Contractor’s failure to comply with this certification.

Certified By: __________________________________ Dated: ______________________________
(Contractor’s Authorized Representative)

________________________________________
(Name of Contractor of Subcontractor’s Representative)

________________________________________
(Title of Representative)

________________________________________
(Name of Contractor or Subcontractor)

Address of Contractor or Subcontractor:

________________________________________
________________________________________

SUBSCRIBED and SWORN TO before me this ___________ day of _____________________, 2019.

________________________________________
(Notary Public)

END OF SECTION 004345
SECTION 004395 – GENERAL REQUIREMENTS

PART 1 - GENERAL

1.1 GENERAL

A. The Bidder is required to meet the following criteria in order to be considered a responsible bidder by the Owner. Owner, through the Architect and its Business Office, shall have the right to make such inquiries as it deems appropriate to verify any of the information provided to Owner by Bidder pursuant to this Section 004395. If, as a result of such inquiries Owner deems any such information provided by the Bidder unsubstantiated, or if any of the documentation provided by the Bidder as described below is incomplete, Owner may deem the Bidder to have failed to satisfy said criteria.

B. The Owner may utilize any available information including but not necessarily limited to the information submitted as part of this Section to determine the lowest responsible bidder for this project.

C. In the case of joint venture or partnership, each joint venturer or partner must independently meet each of the requirements set forth in Paragraphs 1.2, 1.3, 1.4 and 1.5.

1.2 EXPERIENCE

A. Minimum of five continuous years in business from this project’s bid date, in the current form of business organization as a General Contractor.

1. Documentation: Documentation shall consist of corporate documents, registrations, annual Reports, (or, if the Bidder is not a corporation, substantial equivalents) showing continuous existence and operation for the time stated. If documents relating to a predecessor entity are provided, an explanation of the reason for the dissolution of the predecessor and the formation it’s successor must be provided.

B. Project Manager to be assigned to the project must have at least five (5) years of experience working for a General Contractor managing institutional or commercial projects and at least three (3) public school building construction, addition or renovation projects of at least $1,500,000 and of similar scope and complexity in the State of Illinois within the last five years from this project’s bid date.

1. Documentation: Documentation shall consist of Project Manager’s resume indicating name, education or training, and a list of projects where he managed the work as outlined above, and length of employment with this Bidder.

C. At least three (3) public school building construction, addition or renovation projects of at least $1,500,000 and of similar scope and complexity Substantially Completed on time within the last three (3) years from this project’s bid date in the State of Illinois as a General Contractor. Factors to be considered in evaluating successful completion include the following:

1. Completion of contract substantially on time or at a later date not due to the material fault of the Bidder.
2. Completion of the contract substantially at the contract price or at an increased price not due to the material fault of the Bidder.
3. Completion of the contract without litigation or arbitration by Bidder, Owner, any Subcontractor or others except where not due to the material fault of the Bidder.
4. Completion of the Contract without a claim on the Bidder’s bond by the Owner, any Subcontractor or others except where not due to the material fault of the Bidder.

5. Documentation: References and project names establishing that the Bidder meets this criterion. The references must include the names of contact persons who are or were officials of each public body involved who are familiar with the Bidder’s performance.

“Substantially” as used in the foregoing C.1, and C.2, means within at least five percent.

1.3 FINANCIAL CONDITION/BUSINESS PRACTICES

A. Absence of any filings for protection from creditors under federal bankruptcy laws and/or placement under receivership or similar restrictions in the last five years.

1. Documentation: Letter from President of the Company certifying the above.

B. Sound fiscal management and sufficient resources for successful completion of the contract.

1. Documentation: Independently prepared financial statements for the two consecutive, most recently available years.

C. Absence of contracts terminated by Owner for non-performance in the past five years, except where not due to the material fault of the Bidder.

1. Documentation: Letter from President of the Company certifying the above.

D. Absence of claims on Bidder’s bond in the past five years, except where not due to the material fault of the Bidder.

1. Documentation: Letter from bonding company certifying the above.

1.4 REFERENCES

A. List of all institutional and commercial projects performed in the last three (3) years.

1. Documentation: References and project names of all institutional and commercial projects completed within the last three (3) years of this project’s bid date, or which are still in progress at the time of this bid. The references must include the names of contact persons who are or were officials of the public body for institutional projects or officials of the commercial projects who are familiar with the Bidder’s performance.

1.5 AIA DOCUMENTS


PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 004395
SECTION 004519 – NON-COLLUSION AFFIDAVIT

AFFIDAVIT: “I (we) hereby certify and affirm that my (our) proposal was prepared independently for this project and that it contains no fees or amounts other than for the legitimate execution of this work as specified and that it includes no understanding or agreements in restraint of trade.”

(If an Individual)

Signature of Bidder ____________________________ (Seal)
Business Address ________________________________

(If a Partnership)

Firm Name ________________________________ (Seal)
By _________________________________________
Business Addresses ________________________________ (___________)
of all Partners ________________________________ (___________)
of the Firm ________________________________ (___________)

(If a Corporation)

Corporate Name ________________________________
By _________________________________________
Business Address ________________________________
__________________________________________ (Corporate Seal)

Name of Officers: (President) ________________________________
(Secretary) ________________________________
(Treasurer) ________________________________

Attest: ________________________________ (Secretary)

Name of Bidder ________________________________
Date ________________________________

END OF SECTION 004519
SECTION 004521 – BIDDER ELIGIBILITY CERTIFICATE

720 ILCS 5/33E-11 requires that all contractors bidding for public agencies in the State of Illinois certify that they are not barred from bidding on public contracts for bid rigging or bid rotation.

The following certification must be completed, signed and submitted with the Bidder's Form of Proposal. FAILURE TO DO SO WILL RESULT IN DISQUALIFICATION OF THE BIDDER.

__________________________________________________________________________, as part of its bid on a contract for

(Firm Name of Contractor)

NILES TOWNSHIP HIGH SCHOOL DISTRICT 219
OUTDOOR ATHLETIC FIELD AND SURFACE ALTERATIONS

certifies that said contractor is not barred from bidding on the aforementioned contract as a result of a violation of either 720 ILCS 5/33E-3 or 720 ILCS 5/33E-4.

Firm Name: ________________________________

By: ________________________________ (Typed or printed name)

Authorized Agent of Contractor)

______________________________

(Signature)

______________________________

(Title)

Subscribed and sworn to before me on this _____ day of ____________, 2019.

______________________________

(Notary Public)

END OF SECTION 004521
SECTION 004546 – CERTIFICATE OF COMPLIANCE WITH ILLINOIS DRUG-FREE WORKPLACE ACT

[Contractors With 25 Or More Employees]

CERTIFICATE OF COMPLIANCE WITH
ILLINOIS DRUG-FREE WORKPLACE ACT

______________________________, having 25 or more employees, does hereby certify pursuant to Section 3 of the Illinois Drug-Free Workplace Act (30 ILCS 580/3) that [he, she, it] shall provide a drug-free workplace for all employees engaged in the performance of work under the contract by complying with the requirements of the Illinois Drug-Free Workplace Act and, further certifies, that [he, she, it] is not ineligible for award of this contract by reason of debarment for a violation of the Illinois Drug-Free Workplace Act.

______________________________
By Authorized Agent

______________________________
Date

SUBSCRIBED and SWORN TO before me this _____ day of _____________, 2019.

NOTARY PUBLIC

END OF SECTION 004546
SECTION 004548 – CERTIFICATE REGARDING NON-DISCRIMINATION IN EMPLOYMENT – PROTECTED CATEGORIES

CERTIFICATE REGARDING NON-DISCRIMINATION IN EMPLOYMENT – PROTECTED CATEGORIES

[contractor], does hereby certify that [he, she, it] has a written policy that includes, at a minimum, the following information: (i) the definition of persons in a Protected Category in Employment under State and Federal law; (ii) the illegality of discrimination against persons in a Protected Category in Employment; (iii) an internal complaint process including penalties; (iv) the legal recourse, investigative and complaint process available through both the Illinois Department of Human Rights and Human Rights Commission and the U.S. Equal Employment Opportunity Commission; (v) directions on how to contact the Illinois Department of Human Rights and Human Rights Commission and the U.S. Equal Employment Opportunity Commission; and (vi) protection against retaliation.

Discrimination against Persons in a Protected Category in Employment can occur in the following categories: Age, Disability, Equal Pay/Compensation, Genetic Information, Harassment, National Origin, Pregnancy, Race/Color, Religion, and Sex-Based Discrimination.

__________________________________________________________________________

By Authorized Agent

__________________________________________________________________________

Date

SUBSCRIBED and SWORN TO before me this _____ day of _____________, 2019.

__________________________________________________________________________

NOTARY PUBLIC

END OF SECTION 004548
SECTION 004550 – CERTIFICATE REGARDING SEXUAL HARASSMENT POLICY

CERTIFICATE REGARDING
SEXUAL HARASSMENT POLICY

________________________________________
By Authorized Agent

________________________________________
Date

SUBSCRIBED and SWORN TO before me this ______ day of _________________, 2019.

________________________________________
NOTARY PUBLIC

END OF SECTION 004550
SECTION 004552 – CERTIFICATE REGARDING CRIMINAL BACKGROUND INVESTIGATIONS

Contractor hereby represents, warrants, and certifies that no officer or director thereof has any knowledge that any employee thereof has been convicted of committing or attempting to commit “Criminal Code of 2012,” 720 ILCS, Sections 5/11-6 (Indecent solicitation of a child), 5/11-30 (Public indecency), 5/11-14 (Prostitution), 5/11-18 (Patronizing a prostitute), 5/11-18.1 (Patronizing a minor engaged in prostitution), 5/11-14.4 (Promoting juvenile prostitution), 5/11-19.1 (Sexual exploitation of a child), 5/11-20 (Obscenity), 5/11-20.1 (Child Pornography), 5/11-1.30 (Aggravated criminal sexual assault), 5/11-1.50 (Criminal sexual abuse), and 5/11-1.60 (Aggravated criminal sexual abuse), and/or those offenses defined in the “Cannabis Control Act,” 720 ILCS, 550/1 et. seq. (except the “Illinois Controlled Substances Act,” 720 ILCS 570/100 et. seq. and/or any offense committed or attempted in any other state or against the laws of the United States, which if committed or attempted in this State, would have been punishable as one or more of the foregoing offenses. Contractor further agrees that it shall not employ any person who have or may have direct, daily contact with the pupils and for whom a criminal background investigation has not been conducted pursuant hereto, and further represents and agrees that all applicants for any such employment shall furnish with their applications the attached written “Authorization for Criminal Background Investigations” form authorizing the Board of Education to request a fingerprint-based criminal background investigation of said applicant pursuant to Section 5/10-21.9 of the School Code of Illinois and to receive criminal history record information pursuant thereto to determine if the applicant has been convicted of committing or attempting to commit any of the criminal or drug offenses enumerated above. Contractor shall incur any costs and expenses associated with the fingerprint-based criminal background investigation. Contractor further represents, warrants, and certifies that no applicant for employment with respect to whom the criminal investigation reveals any conviction for committing and/or attempting to commit any of the above enumerated offenses, shall be employed thereby in any position that involves or may involve contact with the students. This certification is executed on the date hereinafter indicated by the designated contractor by its duly authorized officer.

By: ____________________________________________

Its: ______________________________________________

Dated: __________________________________________

END OF SECTION 004552
SECTION 004554 – AUTHORIZATION FOR CRIMINAL BACKGROUND INVESTIGATIONS

AUTHORIZATION FOR CRIMINAL BACKGROUND INVESTIGATION INFORMATION

The undersigned hereby authorizes the School Board, Niles Township High School District 219 to request a fingerprint-based criminal background investigation from the Illinois State Police, pursuant to Section 5/10-21.9 of the School Code of Illinois, 105 ILCS 5/10-21.9 and to receive criminal history record information pursuant thereto.

By: ________________________________________________________________
    (Printed/Typed Name of Applicant Employee)

By: ________________________________________________________________
    (Signature of Applicant or Employee)

Dated: ___________________________________________________________________

NOTE: SIGNATURE NOT REQUIRED FOR SUBMITTAL WITH BID. THIS IS THE FORM REFERRED TO IN SECTION 004552 FOR USE WITH EMPLOYMENT APPLICATIONS.

END OF SECTION 004554
PART 1 - GENERAL

The following supplements modify the "General Conditions of the Contract for Construction", AIA Document A201-2017, Sixteenth Edition, 2017. Where any Article of the General Conditions is modified or any Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

ARTICLE 1: GENERAL PROVISIONS

1.1.1 Delete the last sentence of subparagraph 1.1.1 and add the following to the end of Subparagraph 1.1.1:

"Contract Documents shall include: Advertisements or Invitation to Bid, Instruction to Bidders; Form of Proposal; the Bid or Proposal executed by the Bidder and all attached documents; Addenda; Certificates of Insurance; and bonds indicated in the Project Manual, including, but not limited to Bid Bonds, Performance Bonds, and Labor and Material Payment Bonds."

1.2.1 In Subparagraph 1.2.1, delete "performance by the Contractor . . . indicated results," and add the following to Subparagraph 1.2.1:

"Where conflicts exist within or between parts of the Contract Documents, or between the Contract Documents and the applicable standards, codes and ordinances, the more stringent, or higher quality or greater quantity requirements shall apply. Large scale drawings take precedence over smaller scaled drawings, figured dimensions over scaled dimensions and noted materials over graphic representations."

1.2.4 Add Subparagraph 1.2.4 as follows:

"Large scale details on the Drawings shall take precedence over smaller scale details."

1.4.1 Add Subparagraph 1.4.1 as follows:

"The Contract Documents shall be interpreted as gender neutral. In the interest of brevity, the Contract Documents may include such gender determining words such as "he" or "him" or contain the suffix "-man". The use of such words shall be interpreted as inclusive of both genders equally."

ARTICLE 3: CONTRACTOR

3.3.1 Delete the last two sentences in Subparagraph 3.3.1 and add the following:

"The Contractor shall supervise and direct the Work using the Contractor's best skill and attention. The Contractor shall be solely responsible for and have charge and control of construction means, methods, techniques, sequences, and procedures for coordinating all portions of the Work. The Contractor shall review any specified construction or installation procedure (including those recommended by any product manufacturer). The Contractor shall advise the Architect:

(a) If the specified procedure deviates from good construction practice;
(b) If following the procedure will affect any warranties; or
(c) Any objections the Contractor may have to the procedure."

3.4.2 Add to Subparagraph 3.4.2:
"After the award of the Contract, a request by the Contractor for a substitution of materials or equipment in place of those specified in the Contract Documents will be considered only under one or more of the following conditions:

(a) Required for compliance with interpretation of code requirements or insurance regulations then existing.
(b) Unavailability of specified products, through no fault of the Contractor.
(c) Subsequent information discloses inability of specified products to perform properly or to fit in designated space.
(d) Manufacturer/fabricator refuses to certify or guarantee performance of specified product as required.
(e) When it is clearly seen, in the judgment of the Architect that a substitution would be substantially to the Owner's best interests, in terms of cost, time, or other considerations.

Substitution requests shall be written, timely, and accompanied by adequate technical and cost data. Requests shall include a complete description of the proposed substitution, name of the material or equipment for which it is to be substituted, drawings, cuts, performance and test data, and any other data or information necessary for a complete evaluation by the Architect."

3.5 Delete Subparagraph 3.5 and replace with:

"The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new, unless otherwise required or permitted by the Contract Documents and that the Work will be free from faults and defects and in conformance with the Contract Documents. The warranty will not be affected by the specification of any product or procedure, unless the Contractor objects promptly to such product or procedure and advises the Architect of possible substitute products or procedures that will not affect the warranty. This warranty shall not be restricted by the limitations of any manufacturer's warranty. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. Liability or refusal of the Subcontractor or supplier responsible for the defective work to correct such work shall not excuse the Contractor from performing under the warranty. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment."

3.9.1 Add to Subparagraph 3.9.1:

"In addition to being on site during all performance of the Work, Superintendent shall be on site when any and all supplemental activities related to the construction of the project, including but to limited to delivery of materials, occur. Owner’s personnel will not assume any responsibilities of the Contractor."

3.10.1 Add to Subparagraph 3.10.1:

"The Owner's or Architect's silence to a submitted schedule that exceeds time limits current under the Contract Documents shall not relieve the Contractor of its obligations to meet those limits, nor shall it make the Owner or Architect liable for any of the Contractor's damages incurred as a result of increased construction time or not meeting those time limits. Similarly, the Architect's or Owner's silence to a Contractor's schedule showing performance in advance of such time limits shall not create or infer any rights in favor of the Contractor for performance in advance of such time limits."

3.18.1 Delete Subparagraph 3.18.1 and substitute the following:

"To the fullest extent permitted by law, Contractor waives any right of contribution against and shall defend, indemnify and hold harmless Owner, any Owner's Representative, the Architect and their agents, consultants and employees from and against all claims, damages, losses and expenses, including
but not limited to attorneys' fees, arising out of or resulting from or in connection with the performance of the Work, provided that any such claim, damage, loss or expense (these are collectively referred to as "claims") is caused in whole or in part by any negligent act or omission of 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 it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity or contribution which would otherwise exist as to any party or person described in this Contract."

3.18.2 Delete Subparagraph 3.18.2 and substitute the following:

"In any and all claims by an employee of Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under this Contract shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or any Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts."

3.18.3 Add the following as Subparagraph 3.18.3:

"Claims, damages, losses and expenses" as these words are used in this Contract shall be construed to include, but not be limited to (1) injury or damage consequent upon the failure of or use or misuse by Contractor, its Subcontractors, agents, servants or employees, of any hoist, rigging, blocking, scaffolding, or any and all other kinds of items of equipment, whether or not the same be owned, furnished or loaned by Owner; (2) all attorneys' fees and costs incurred in defense of the claim or in bringing an action to enforce the provision of this Indemnity or any other indemnity contained in the Contract Documents; and (3) all costs, expenses, lost time, opportunity costs, etc. incurred by the party being indemnified or its employees, agents or consultants."

3.19 Add the following as Paragraph 3.19:

"If the work is to be performed by members of trade unions, the Contractor shall make all necessary arrangements to reconcile, without delay, damage, or cost to the Owner and without recourse to the Architect or the Owner, any conflict between the Contract Documents and any agreements or regulations of any kind at any time in force among members or councils which regulate or distinguish what activities shall not be included in the work of any particular trade. In case the progress of the work is affected by any undue delay in furnishing or installing any items or materials or equipment required under the Contract Documents because of the conflict involving any such agreement or regulation, the Architect may require that other material or equipment of equal kind and quality be provided at no additional cost to the Owner."

ARTICLE 4: ARCHITECT

4.1.2 Delete Subparagraph 4.1.2 and replace with:

"Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner and the Architect."

4.2.3 Add to Subparagraph 4.2.3:

"Nothing contained in Subparagraphs 1.1.3 or 4.2.2 shall alter the responsibilities established in this Subparagraph and in Subparagraph 3.3.1."

4.2.7 Add to Subparagraph 4.2.7:
"The Contractor will submit submittals to the Architect in a manner to allow for the Architect's reasonably prompt review and to allow for timely ordering of components of the work to effect no delay in the Work."

4.2.12 Delete the remainder of Subparagraph 4.2.12 after the first sentence and replace with:

"The Architect will be the initial interpreter of the requirements of the Contract Documents; however, the Architect will consult with the Owner prior to making any such interpretations or issuing any approvals. The decisions of the Architect are binding on the Contractor, but are not binding on and may be overridden by the Owner. Anything to the contrary contained in the Contract Documents notwithstanding, the Architect shall be and is the representative of the Owner and not an independent arbiter of the Contract, and although the Architect shall be fully informed by Contractor of the Contractor's performance under the Contract and consulted with regard to any decision and controversies, no decision of the Owner under the Contract shall be made by the Architect without the express written authority of the Owner."

4.2.13 Replace Subparagraph 4.2.13 with:

"The Architect's decisions on matters relating to aesthetic effect will be final if reasonably inferable from the Contract Documents as being necessary to produce the intended results."

ARTICLE 5: SUBCONTRACTORS

5.2.2 Add as the first sentence of Subparagraph 5.2.2:

"All Subcontracts shall be in writing and shall be assignable by the Contractor to the Owner."

5.4.2 Delete Subparagraph 5.4.2.

ARTICLE 6: CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

6.1.4 Delete Subparagraph 6.1.4.

ARTICLE 7: CHANGES IN THE WORK

7.1.2 Delete the last word of the sentence. Add "or the Owner".

7.3.4 Add to Subparagraph 7.3.4:

"Overtime when specifically authorized by the Owner shall be paid for by the Owner on the basis of a premium payment only, plus the cost of insurance and taxes based on the premium payment. The Owner will not pay overhead and profit for overtime. Contractor shall submit a detailed, itemized breakdown of quantities and unit costs, including overhead and profit as separate items with response to request for price."

7.3.8 In Subparagraph 7.3.8, after the word "increase" in the last line, add the words "or decrease".

7.3.8 Add to Subparagraph 7.3.8:

"Also, if the amount of either the credit or the addition is in dispute, the amount of the other, nondisputed item may not be included in Applications for Payment. Overhead and profit will be included in credits to the same extent they are included in additions."
7.5 Add Paragraph 7.5 as follows:

"7.5 AGREED OVERHEAD AND PROFIT RATES

For any adjustments to the Contract Sum based on other than the unit prices method, the Contractor agrees to charge and accept payment for their overhead and profit at the following percentages of the cost attributable to the change in the work:

(a) Ten percent (10%) for Work by the Contractor not involving Subcontractors;
(b) Five percent (5%) for Work by Subcontractors;
(c) When both additions and credits are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase, if any;
(d) For additional Work ordered as described above which will be executed by Subcontractors of the Contractor, it is agreed Subcontractors will be permitted to charge ten percent (10%) for work not involving Sub-subcontractors and five percent (5%) for work by Sub-subcontractors. To the net Subcontract amount the Contractor may add five percent (5%). However, for funds drawn from the Contingency Allowance, the maximum allowable overhead and profit is five percent (5%)."

ARTICLE 8: TIME

8.2.1 Add the following sentence at the end of this subparagraph:

"Further, Contractor acknowledges that in the event that overtime hours are required to complete the Work within the Contract Time, the additional cost for such overtime hours is included in the Contractor's bid and will not be cause for additional compensation from the Owner."

8.3.3 Delete Subparagraph 8.3.3 and substitute the following:

"The Contractor shall not be entitled to an increase in the Contract Sum as a result of any delays in the progress of the Work. The Contractor's sole remedy for delay shall be an extension of time."

8.4 Add the following as Paragraph 8.4:

"If the Contractor, but for a delay not within its control, would have completed the Work prior to the time set forth in the project schedule, the Contractor shall not be entitled to any recovery of damages arising out of any event or delay which prevented such early completion of the Work."

ARTICLE 9: PAYMENTS AND COMPLETION

9.3.1.2 Add to Clause 9.3.1.2:

"However, this Clause will not apply to routine retainage the Contractor intends to withhold from the Subcontractor pursuant to the Subcontract."

9.3.1.3 Add Clause 9.3.1.3: “Provide complete certified payroll forms with each Application for Payment.”

9.3.2 Add to Subparagraph 9.3.2:

"Contractor shall submit requisitions from suppliers and Subcontractors to substantiate the amounts requested on the Application for Payment for materials or equipment stored on or off site."

9.3.4 Add Subparagraph 9.3.4 as follows:
"A Sworn "Contractor's Affidavit" shall be submitted with each payment request in sufficient form for the Owner to determine Contractor's right to payment and compliance with the Illinois Mechanic's Lien law. Each payment request shall include executed waivers of lien in conformity with information set forth on a properly completed Contractor's Affidavit. In the event that the Owner is satisfied with Contractor's payment procedures, the Owner will accept partial waivers of lien of Subcontractors and suppliers who were included in the immediate preceding payment. The Contractor shall submit waivers on a current basis, but the Owner will allow Subcontractors and suppliers to be not more than one payment late with their partial waivers."

9.3.5 Add Subparagraph 9.3.5 as follows:

"Upon giving ten (10) days notice in writing to the Contractor, the full contract retainage may be reinstated and the retention restored to the basis established in Subparagraph 9.3.4 if the manner of completion of the work and its progress do not remain satisfactory to the Owner, or if any surety of Contractor withholds its consent."

9.6.3 Add to Subparagraph 9.6.3:

"Notwithstanding Subparagraph 4.2.4, the Architect and Subcontractor may communicate directly on the matters covered by this Subparagraph."

9.8.2 Subparagraph 9.8.2 is modified to add the following language to the end:

"With respect to Work enumerated on the list accompanying the Certificate of Substantial Completion, the guarantee or warranty period shall start at the time of subsequent acceptance of this Work in writing by Owner."

9.8.6 Add the following as Subparagraph 9.8.6:

"Liquidated Damages: The General Contractor is solely responsible for substantially completing the work of the project by the scheduled Substantial Completion Date. This responsibility includes all work including that of the General Contractor's forces, Subcontractors and suppliers. The General Contractor acknowledges that the Owner will suffer significant financial losses if the Project is not Substantially Complete by the dates set forth in the Contract Documents. The General Contractor further acknowledges that the measure of such loss would not be susceptible to precise calculation. To protect the Owner against said loss, the Owner and General Contractor hereby agree that the General Contractor and General Contractor's surety, if any, shall be liable for and shall pay to the Owner liquidated damages as follows:

Five Hundred Dollars ($500.00) per calendar day for each day of delay from the Date of Substantial Completion."

ARTICLE 10: PROTECTION OF PERSONS AND PROPERTY

10.1.1 Add Subparagraph 10.1.1 as follows:

"The Owner shall be responsible for obtaining the services of a licensed laboratory to verify a presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to verify that it has been rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence of such material or substance or who are to perform the task of removal or safe containment of such material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the
Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection.”

ARTICLE 11: INSURANCE AND BONDS
Replace Article 11 in its entirety with the following:

“ARTICLE 11 INSURANCE AND BONDS
§ 11.1 CONTRACTOR’S LIABILITY INSURANCE
§ 11.1.1 The Contractor shall purchase from and maintain in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located such insurance as will protect the Contractor from claims set forth below which may arise out of or result from the Contractor’s operations and completed operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a Subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

.1 Claims under workers’ compensation, disability benefit and other similar employee benefit acts that are applicable to the Work to be performed;
.2 Claims for damages because of bodily injury, occupational sickness or disease, or death of the Contractor’s employees;
.3 Claims for damages because of bodily injury, sickness or disease, or death of any person other than the Contractor’s employees;
.4 Claims for damages insured by usual personal injury liability coverage;
.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom;
.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;
.7 Claims for bodily injury or property damage arising out of completed operations; and
.8 Claims involving contractual liability insurance applicable to the Contractor’s obligations under Section 3.18.

§ 11.1.2 The insurance required by Section 11.1.1 shall be written for not less than limits of liability specified in the Contract Documents or required by law, whichever coverage is greater. Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from the date of commencement of the Work until the date of final payment and termination of any coverage required to be maintained after final payment, and, with respect to the Contractor’s completed operations coverage, until the expiration of the period for correction of Work or for such other period for maintenance of completed operations coverage as specified in the Contract Documents. The Contractor shall provide and maintain insurance in the amounts outlined below with companies acceptable to the Owner, for a minimum of one (1) year after Final Completion of the project.

§ 11.1.2.1 Such insurance shall be written to include the following coverages and for not less than the following minimum limits, or greater if required by law:

.1 General Liability:
   - Commercial General Liability (ISO 1986 Simplified Form)
   - Occurrence Basis
   - Limits;
      a. General Aggregate - $2,000,000.
      b. Products-Comp/Ops Aggregate - $1,000,000.
      c. Personal & Advertising Injury - $1,000,000.
      d. Each Occurrence - $1,000,000.
      e. Fire Damage (any one fire) - $50,000.
      f. Medical Expense (any one person) - $5,000.
A. Special Requirements:

1. The Owner and the Architect shall be named as "Additional Insured" on the General Contractor and/or Subcontractor commercial general liability policy.

2. Should the General Contractor and/or Subcontractor be unable to add the owner and/or Architect as an Additional Insured, then an Owner's and Architect's Protective Liability policy must be obtained by the General Contractor and/or Subcontractor. This policy should show both the Owner and the Architect as Named Insureds and have a Limit of Liability not less than $1,000,000. This policy should be maintained for the duration of the project.

3. The Contractor agrees to indemnify, defend and hold harmless the Architect against any and all liabilities, damages, losses, expenses, demands, claims, suits or judgments, including reasonable attorneys' fees and expenses, for the death of or bodily injury to any person and for the loss of, damage to or destruction of any property in any manner arising out of the negligent or intentional or alleged negligent or alleged intentional acts or omissions of the Contractor, its agents, employees or Subcontractors the Contractor may be responsible for.

   a) This provision shall not be construed to require the Contractor to indemnify the Architect against the consequences of the Architect's own negligence.

4. The Contractor shall procure insurance to defend and protect the Owner, Architect, Engineer, and any Consultants against claims of injured workmen or anyone on the construction site. This shall be in addition to the Owner, Architect, Engineer, or any other Consultants being listed as "Additional Insured".

   .2 Automobile Liability

   - Any Auto Owned by Contractor
   - Hired Autos
   - Non-Owned Autos
   - Limits;

   a. Combined Single Limit - $1,000,000.

   .3 Umbrella/Excess Liability

   - Limit;

   a. Each Occurrence - $4,000,000.
   b. Aggregate - $4,000,000.

   .4 Workers' Compensation and Employers' Liability

   - Employers' Liability Limits;

   a. Each Accident - $500,000.
   b. Disease-Policy Limit - $500,000.
c. Disease-Each Employee - $ 500,000.

§ 11.1.3 Certificates of insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work and thereafter upon renewal or replacement of each required policy of insurance. These certificates and the insurance policies required by this Section 11.1 shall contain a provision that coverages afforded under the policies will not be canceled or allowed to expire until at least 30 days’ prior written notice has been given to the Owner. An additional certificate evidencing continuation of liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment as required by Section 9.10.2 and thereafter upon renewal or replacement of such coverage until the expiration of the time required by Section 11.1.2. Information concerning reduction of coverage on account of revised limits or claims paid under the General Aggregate, or both, shall be furnished by the Contractor with reasonable promptness.

§ 11.1.4 The Contractor shall cause the commercial liability coverage required by the Contract Documents to include (1) the Owner, the Architect and the Architect’s Consultants as additional insureds for claims caused in whole or in part by the Contractor’s negligent acts or omissions during the Contractor’s operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor’s negligent acts or omissions during the Contractor’s completed operations.

§ 11.2 OWNER’S LIABILITY INSURANCE
The Owner shall be responsible for purchasing and maintaining the Owner’s usual liability insurance.

§ 11.3 PROPERTY INSURANCE
§ 11.3.1 Unless otherwise provided, the Owner shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located, property insurance written on a builder’s risk “all-risk” or equivalent policy form in the amount of the initial Contract Sum, plus value of subsequent Contract Modifications and cost of materials supplied or installed by others, comprising total value for the entire Project at the site on a replacement cost basis without optional deductibles. Such property insurance shall be maintained, unless otherwise provided in the Contract Documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made as provided in Section 9.10 or until no person or entity other than the Owner has an insurable interest in the property required by this Section 11.3 to be covered, whichever is later. This insurance shall include interests of the Owner, the Architect, the Contractor, Subcontractors and Sub-subcontractors in the Project.

§ 11.3.1.1 Property insurance shall be on an “all-risk” or equivalent policy form and shall include, without limitation, insurance against the perils of fire (with extended coverage) and physical loss or damage including, without duplication of coverage, theft, vandalism, malicious mischief, collapse, earthquake, flood, windstorm, falsework, testing and startup, temporary buildings and debris removal including demolition occasioned by enforcement of any applicable legal requirements, and shall cover reasonable compensation for Architect’s and Contractor’s services and expenses required as a result of such insured loss. Property Insurance provided by the Owner shall not cover any tools, apparatus, machinery, scaffolding, hoists, forms, staging, shoring, and other similar items commonly referred to as construction equipment, which may be on the site and the capital value of which is not included in the Work. The Contractor shall make their own arrangements for any insurance they may require on such construction equipment.

§ 11.3.1.2 If the Owner does not intend to purchase such property insurance required by the Contract and with all of the coverages in the amount described above, the Owner shall so inform the Contractor in writing prior to commencement of the Work. The Contractor may then effect insurance that will protect the interests of the Contractor, Subcontractors and Sub-subcontractors in the Work, and by appropriate Change Order the cost thereof shall be charged to the Owner. If the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain insurance as described above, without so notifying the Contractor in writing, then the Owner shall bear all reasonable costs properly attributable thereto.
§ 11.3.1.3 If the property insurance requires deductibles, the Owner shall pay costs not covered because of such deductible. With reference to Clause 11.4.1.3, the property insurance for the Work requires a minimum deductible of: $2,500 per claim.

§ 11.3.1.5 Partial occupancy or use in accordance with Section 9.9 shall not commence until the insurance company or companies providing property insurance have consented to such partial occupancy or use by endorsement or otherwise. The Owner and the Contractor shall take reasonable steps to obtain consent of the insurance company or companies and shall, without mutual written consent, take no action with respect to partial occupancy or use that would cause cancellation, lapse or reduction of insurance.

§ 11.3.2 BOILER AND MACHINERY INSURANCE
The Owner shall purchase and maintain boiler and machinery insurance required by the Contract Documents or by law, which shall specifically cover such insured objects during installation and until final acceptance by the Owner; this insurance shall include interests of the Owner, Contractor, Subcontractors and Sub-subcontractors in the Work, and the Owner and Contractor shall be named insureds.

§ 11.3.3 LOSS OF USE INSURANCE
The Owner, at the Owner’s option, may purchase and maintain such insurance as will insure the Owner against loss of use of the Owner’s property due to fire or other hazards, however caused.

§ 11.3.4 If the Contractor requests in writing that insurance for risks other than those described herein or other special causes of loss be included in the property insurance policy, the Owner shall, if possible, include such insurance, and the cost thereof shall be charged to the Contractor by appropriate Change Order.

§ 11.3.5 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, the Owner shall waive all rights in accordance with the terms of Section 11.3.7 for damages caused by fire or other causes of loss covered by this separate property insurance. All separate policies shall provide this waiver of subrogation by endorsement or otherwise.

§ 11.3.6 Before an exposure to loss may occur, the Owner shall file with the Contractor a copy of each policy that includes insurance coverages required by this Section 11.3. Each policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to this Project. Each policy shall contain a provision that the policy will not be canceled or allowed to expire, and that its limits will not be reduced, until at least 30 days’ prior written notice has been given to the Contractor.

§ 11.3.7 WAIVERS OF SUBROGATION
The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents and employees, each of the other, and (2) the Architect, Architect’s consultants, separate contractors described in Article 6, if any, and any of their subcontractors, sub-subcontractors, agents and employees, for damages caused by fire or other causes of loss to the extent covered by property insurance obtained pursuant to this Section 11.3 or other property insurance applicable to the Work, except such rights as they have to proceeds of such insurance held by the Owner as fiduciary. The Owner or Contractor, as appropriate, shall require of the Architect, Architect’s consultants, separate contractors described in Article 6, if any, and the subcontractors, sub-subcontractors, agents and employees of any of them, by appropriate agreements, written where legally required for validity, similar waivers each in favor of other parties enumerated herein. The policies shall provide such waivers of subrogation by endorsement or otherwise. A waiver of subrogation shall be effective as to a person or entity even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, did not pay the insurance premium directly or indirectly, and whether or not the person or entity had an insurable interest in the property damaged.

§ 11.3.8 A loss insured under the Owner’s property insurance shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any
applicable mortgagee clause and of Section 11.3.10. The Contractor shall pay Subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require Subcontractors to make payments to their Sub-subcontractors in similar manner.

§ 11.3.9 If required in writing by a party in interest, the Owner as fiduciary shall, upon occurrence of an insured loss, give bond for proper performance of the Owner’s duties. The cost of required bonds shall be charged against proceeds received as fiduciary. The Owner shall deposit in a separate account proceeds so received, which the Owner shall distribute in accordance with such agreement as the parties in interest may reach, or as determined in accordance with the method of binding dispute resolution selected in the Agreement between the Owner and Contractor. If after such loss no other special agreement is made and unless the Owner terminates the Contract for convenience, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 7.

§ 11.3.10 The Owner as fiduciary shall have power to adjust and settle a loss with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the Owner’s exercise of this power; if such objection is made, the dispute shall be resolved in the manner selected by the Owner and Contractor as the method of binding dispute resolution in the Agreement. If the Owner and Contractor have selected arbitration as the method of binding dispute resolution, the Owner as fiduciary shall make settlement with insurers or, in the case of a dispute over distribution of insurance proceeds, in accordance with the directions of the arbitrators.

§ 11.4 PERFORMANCE BOND AND PAYMENT BOND
§ 11.4.1 The Owner shall require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

§ 11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.5 MISCELLANEOUS REQUIREMENT
§ 11.5.1 All insurance coverage shall be provided by insurance companies having policy holder ratings no lower than "A" and financial ratings not lower than "XII" in the Best's Ratings, issued through A.M. Best Rating Services, Inc., latest edition in effect as of the date of the Contract.”

ARTICLE 13: MISCELLANEOUS PROVISIONS

13.2.1 Subparagraph 13.2.1 is modified to add the following to the end:

"Notwithstanding any of the provisions of this Paragraph, however, the Owner may assign the Contract to an affiliated entity without the consent of the Contractor."

ARTICLE 14: TERMINATION OR SUSPENSION OF THE CONTRACT

14.1.2 Add to Subparagraph 14.1.2:

"The amount the Contractor shall be entitled to recover pursuant to this Paragraph shall be subject to the provisions of Paragraph 7.5."

14.3.2 Replace Subparagraph 14.3.2 with the following:

"If suspension by the Owner constitutes in the aggregate more than 20 percent of the total number of days scheduled for completion, an adjustment shall be made for increases in the cost of performance of this Contract, excluding profit, caused by suspension. No adjustment shall be made to the extent:
(a) That performance is, was or would have been so suspended by another cause, including the fault or negligence of the Contractor; or

(b) That an equitable adjustment is made or denied under another provision of this Contract."

14.3.3 Add the following Subparagraph 14.3.3:

"Any adjustment made in the Contract Sum pursuant to Subparagraph 14.3.2 shall be subject to the provisions of Clauses 7.3.7.1 through 7.3.7.5. Overhead shall be allowed to the extent of one-half the percentages given in Paragraph 7.5."

14.4 Delete Paragraph 14.4.2 and 14.4.3 and replace with the following:

"14.4.2 Upon receipt of a notice of termination, the Contractor shall immediately, in accordance with instructions from the Owner, proceed with performance of the following duties regardless of delay in determining or adjusting amounts due under this Subparagraph:

(a) Cease operation as specified in the notice;
(b) Place no further orders and enter into no further Subcontracts for materials, labor, services or facilities except as necessary to complete continued portions of the Contract;
(c) Terminate all Subcontracts and orders to the extent they relate to the work terminated;
(d) Proceed to complete the performance of work not terminated; and
(e) Take actions that may be necessary, or that the Owner may direct, for the protection and preservation of the terminated work.

14.4.3 The Contractor shall recover payment for work executed on the terminated portion of the work before the effective date and for proven loss with respect to materials, equipment, tools, and construction equipment and machinery, including profit and overhead as provided in Paragraph 7.5 and damages.

14.4.4 Allowance shall be made for payments previously made to the Contractor for the terminated portion of the work and claims which the Owner has against the Contractor under the Contract, and for the value of materials, supplies, equipment or other items that are part of the cost of the work to be disposed of by the Contractor."

ARTICLE 15: CLAIMS AND DISPUTES

15.1.5 Subparagraph 15.1.5 is modified to add the following to the end:

"This Subparagraph is not intended to, and shall not, create any additional grounds upon which the Contractor shall be entitled to an increase in the Contract Sum beyond those grounds provided elsewhere in this Contract. Also, in no event shall the Contractor make a claim for additional costs resulting from any delays in the progress of the work."

15.1.7 Add the following as Subparagraph 15.1.7.3:

"The Contractor agrees to waive any right which it may have to punitive damages from the Owner and agrees not to make any claim or demand for punitive damages against the Owner."

ARTICLE 16 THROUGH ARTICLE 21: Add as follows:

"ARTICLE 16: LIMIT TO AVOID INCORPORATION OF RESPONSIBILITY BY REFERENCE"
Where any specification which is incorporated herein by reference, through the words "and/or as directed by the Architect," or phrases having a similar effect appear to give the Architect the right to direct something other than that specified, the Architect has in fact no such right to except as it may be established in specific instances in portions of this Project Manual other than in said specifications.

ARTICLE 17: CONSTRUCTION GENERAL CONDITIONS

In performing its obligations for the Owner, Architect and its Consultants may cause expense for the Contractor or its Subcontractor. However, Contractor, its Subcontractors and sureties shall maintain no direct action against Architect, its Consultants, their agents and employees, for any claim arising out of, in connection with or resulting from the Work performed or required to be performed. Only the Owner shall be the beneficiary of any undertaking by the Architect, its Consultants, their agents and employees.

Note: Contractor has no right of direct action against Architect.

ARTICLE 18: REPRODUCTION OF DRAWINGS

The drawings and specifications of this project cannot be reproduced without prior permission of the Architect and their consultants.

These drawings cannot be used as Shop Drawings.

ARTICLE 19: SPECIAL PROVISIONS FOR PREDETERMINED PREVAILING WAGE:

Prevailing Wage Laws: For the entire duration of the Work under the contract, the Contractor shall conform to the federal and state statues relating to the payment of prevailing wages and to all valid rules and regulations now or hereafter issued pursuant thereto. The Contractor and Subcontractor shall pay the general prevailing rate of hourly wages in the locality in which the work is to be performed for each craft or type of worker or mechanic needed to execute the contract or perform such work, also the general prevailing rate for legal holiday and overtime work, as ascertained by the Department of Labor for the Illinois county for each craft or type of worker needed to execute the contract or to perform such work, as required by 820 ILCS 130/0.01 et seq. The payment of prevailing rates of wage shall not result in an increase in the contract sum or other cost to the Owner.

If, during the course of work under this contract, the Department of Labor revises the prevailing rate of hourly wages to be paid in respect to the Contract, pursuant to 820 ILCS 130/4(c), the Owner discharges its duty to notify the Contractor and any Subcontractor of the revised rates by this stipulation that the prevailing rate of wages in effect or as revised by the Department of Labor is available on the Department's official website. The Contractor for itself and all subcontractors acknowledges that this statement is proper notification of any rate changes as is so provided in 820 ILCS 130/4(c).

Both the prevailing rate of wages and the revised prevailing rate of wages shall apply to the contract and Contractor shall have the sole responsibility and duty to pay, and ensure that all Subcontractors pay, the revised prevailing rate of wages to each person to whom a revised rate is applicable, revision of the prevailing wages shall not result in an increase in the contract sum or other cost to Owner. Contractor shall indemnify, defend and hold Owner harmless from any loss, including but not limited to, Owner's attorney's fees, resulting from Contractor's failure to comply with this prevailing wage Clause. All bonds applicable to the contract shall include such provision as will guarantee the faithful performance of the obligation to pay the prevailing rate of wages.

The Contractor shall post, at a location on the project site easily accessible to the workers engaged on the Work, the prevailing wage rates for each craft or type of worker or mechanic needed to execute the contract or project or work to be performed. In lieu of posting on the project site of the Work, if the Contractor which has a business location where laborers, workers, and mechanics regularly visit the Contractor may: (1) Post in a conspicuous location at that business the current prevailing wage rates for each county in which the contractor is performing work; or (2) Provide
such laborer, worker, or mechanic engaged on the public works project a written notice indicating the prevailing wage rates for the public works project.

The Contractor and each Subcontractor who participates in the Work shall:

(1) Make and keep, for a period of not less than 3 years from the date of the last payment on the contract or subcontract records of all laborers, mechanics, and other workers employed by them on the project; the records shall include each worker's name, address, telephone number when available, social security number, classification or classifications, the hourly wages paid in each pay period, the number of hours worked each day, and the starting and ending times of work each day; and

(2) No later than the tenth day of each calendar month file a certified payroll for the immediately preceding month with the Owner. A certified payroll must be filed for only those calendar months during which construction of the Work has occurred. The certified payroll shall consist of a complete copy of the records identified in paragraph (1) of this but may exclude the starting and ending times of work each day. The certified payroll shall be accompanied by a statement signed by the contractor or subcontractor or an officer, employee, or agent of the contractor or subcontractor which avers that: (i) he or she has examined the certified payroll records required to be submitted by the Act and such records are true and accurate; (ii) the hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required by the Illinois Prevailing Rate of Wage Act; and (iii) the contractor or subcontractor is aware that filing a certified payroll that he or she knows to be false is a Class A misdemeanor. The records submitted in accordance with this paragraph shall be considered public records, except an employee's address, telephone number, and social security number, and made available in accordance with the Freedom of Information Act. The public body shall accept any reasonable submissions by the contractor that meet the requirements of this Section.

Upon 7 business days' notice, the Contractor and each Subcontractor shall make available for inspection and copying at a location within reasonable distance of the Work during reasonable hours, the records required of the Contractor and Subcontractors in respect to prevailing wage laws to the Owner, its officers and agents, the Director of Labor and his deputies and agents, and to federal, State, or local law enforcement agencies and prosecutors.

No Contractor or Subcontractor, nor any of its officers, directors, supervisors, agents or employees shall discharge, discipline, or in any other way discriminate against, or cause to be discharged, disciplined, or discriminated against, any employee or any authorized representative of employees by reason of the fact that the employee or representative has filed, instituted, or caused to be filed or instituted any proceeding under this Act, or has testified or is about to testify in any proceeding resulting from the administration or enforcement of the Illinois Prevailing Rate of Wage Act, or offers any evidence of any violation thereof.

Minimum Wages: All laborers and workers employed or working upon the site of the work, shall be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate (except for such payroll deductions as the law may permit), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment, computed at rates not less than those contained in the Prevailing Rates of Wage regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and workers. Apprentices, trainees and helpers may, in compliance with applicable regulations, be paid at an apprentice rate, but otherwise must be compensated at no less than prevailing wage rates.

Withholding: The Owner may withhold or cause to be withheld from the Contractor under this contract as much of the accrued payments or advances as may be considered necessary to pay laborers and workers, including apprentices, trainees, and helpers, employed by the Contractor or any Subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or worker, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the Owner may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds, until such violations have ceased.
Investigation: The Contractor and Subcontractors shall make records evidencing compliance with this Section available for inspection or copying by authorized representatives of the Owner. They shall permit such representatives to interview employees during working hours on the job to investigate compliance with this Section.

ARTICLE 20: NO SMOKING ALLOWED

Smoking will not be allowed on the Project Site.

ARTICLE 21: OTHER PROVISIONS

21.1 It is the public policy and law of the United States and the State of Illinois that employment opportunities be free from illegal discrimination - Contractor and Subcontractors will not engage in discrimination prohibited by law, including on the basis of sex, age, race, color, religion, arrest record, marital status, sexual orientation, physical and mental disability, citizenship status with regard to employment, national origin, ancestry, unfavorable military discharge, military status and orders of protection. The Contractor and Subcontractors shall comply with Title VII of the Civil Rights Act of 1964; The Immigration Reform and Control Act; The Americans with Disabilities Act of 1990, as amended; The Age Discrimination in Employment Act of 1967; The Older Workers Benefit Protection Act; The Uniformed Services Employment and Reemployment Rights Act of 1994; the Civil Rights Act of 1991; the Equal Pay Act; The Rehabilitation Act; and the Illinois Human Rights Act and regulations applicable to such laws, including, without limitation and regulations, of the Illinois Department of Human Rights and the Equal Employment Opportunity Commission.

21.2 The Contractor and all Subcontractors shall familiarize themselves with and comply with all provisions of all statutes of the State of Illinois and the United States which affect labor and performance of work and will make an investigation of labor conditions and any negotiated labor agreements which may exist or are contemplated at this time. Nothing referred to in this section shall be construed to prohibit the payment of more than the prevailing wage scale.

21.3 Contractor and all Subcontractors shall comply with all pertinent provisions of the Illinois Steel Products Procurement Act, as amended.

21.4 Contractor all Subcontractors shall comply with the Public Works Preference Act and the Employment of Illinois Workers on Public Works Act.

21.5 Contractor shall execute the following certificates: (1) Certificate of Sexual Harassment Policy, (2) Certificate of Drug-Free Workplace, (3) Certificate of Bidder Eligibility, and (4) Non-Collusion Affidavit. These certificates shall become a part of and be considered as part of the Contract Documents. This Agreement, and the Contractor's written agreements with all subcontractors, shall require that all subcontractors execute the foregoing certificates, and that the Project sites be kept free of alcohol and all tobacco products. The Contractor and its employees, and subcontractors' employees, shall comply with the criminal background investigation requirements of 105 ILCS 5/10-21.9, shall not permit known sex offenders to be present at Project sites, and shall immediately notify the Owner in writing of the presence at any time of any known sex offenders at Project sites.”

END OF SECTION 007300
CERTIFICATION OF MONTHLY PAYROLL

I, __________________________________, do hereby certify that attached hereto are true and correct payroll records for all laborers, mechanics, and other workers employed by __________________________ on the project known as __________________________. Such records contain a true and accurate statement of each worker’s name, address, telephone number (if available), social security number, classification(s), hourly wages paid in each pay period, number of hours worked each day, and starting and ending times of each day. The hourly rate paid to each worker is not less than the general prevailing rate of hourly wages required by the Illinois Prevailing Wage Act. I am aware that filing a certified payroll that I know to be false is a Class B misdemeanor.

Certified By: __________________________________ Dated: ______________________________

(Contractor’s Authorized Representative)

__________________________________________

(Name of Contractor of Subcontractor’s Representative)

__________________________________________

(Title of Representative)

__________________________________________

(Name of Contractor or Subcontractor)

Address of Contractor or Subcontractor:

__________________________________________

__________________________________________

__________________________________________

SUBSCRIBED and SWORN TO before me this ___________ day of _____________________, 2019.

__________________________________________

(Notary Public)

END OF SECTION 007343.
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section. The General Conditions, Supplementary Conditions, and Division 01 General Requirements are hereby made a part of each Division and Section of these Specifications.

1.2 PROJECT DESCRIPTION

A. The Project consists of tennis court replacement, track resurfacing, long/triple jump replacement, and coordination of artificial turf replacement by others at Niles North High located for 9800 Lawler Avenue, Skokie, IL 60007 for Niles Township High School District 219, hereafter called the Owner, and is to be constructed in accordance with the Contract Documents prepared by StudioGC, dated February 12, 2019.

B. Scope: The Work includes the work of all trades required; and all the labor, materials, and equipment necessary and incidental to the construction and completion of the Work, plus scheduling, coordination, and incidental work related to Owner's Field Turf Replacement project.

C. Work to be executed under one General Contract, including all trades.

1.3 WORK UNDER SEPARATE CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

B. Concurrent Work: Owner has awarded or will award separate contract(s) for the following construction operations at the Niles North High School Project site. Those operations will be conducted simultaneously with work under this Contract.

1. Welding Lab Renovations and General Work; and Theater Lighting Controls: Owner has entered into separate contract(s) for this work.

a. Welding lab Renovations and General Work, and Theater Lighting Controls are anticipated to commence on May 28, 2019 and be completed by August 5, 2019.

C. Field Turf Replacement: Owner has entered into a separate agreement to replace the existing Field Turf synthetic surface system. Work of the "OUTDOOR ATHLETIC FIELD AND SURFACE ALTERATIONS" project includes the following responsibilities related to the Field Turf Replacement project:

1. Scheduling Field Turf Replacement project relative to overall sitework project schedule:

a. Demolition phase is anticipated to be 5 working days.
b. Installation phase is anticipated to be 28 working days.

2. Provide or designate the following:
   a. An 11,000 SF staging area no more than 100 feet from the site with minimum access of 15 feet wide by 15 feet high.
   b. Designate or otherwise provide a minimum 25 foot wide by 25 foot long hard or paved clean surface area located within 50 feet of the playing surface for purposes of proper mixing of infill material.
   c. Access to any field must include suitable bridging over curbs from the staging area to permit suitable access to the field by low clearance vehicles. Staging area surface shall be suitable for passage with motor vehicles used to transport materials to the site and/or staging area.

1.4 CONTRACTOR USE OF PREMISES

A. General: During the construction period the Contractor shall have limited use of the premises for construction operations, including use of the site. The Contractor's use of the premises is limited by the Owner's need for continuity of School operations.

B. General: Limit use of the premises to construction activities in areas indicated; allow for Owner occupancy and use by the public.
   1. Keep driveways and entrances serving the premises clear and available to the Owner and the Owner's employees at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.
   2. Move all stored materials or equipment which interferes with the operations of the Owner or other contractors.

C. Do not load structure with weight that will endanger structure.

D. Contractor shall assume full responsibility for protection and safekeeping of materials and equipment stored on site.

E. Contractor shall obtain and pay for additional storage space or work area as required for operations.

1.5 OWNER OCCUPANCY

A. Full Owner Occupancy: The Owner will occupy the site and existing building during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with the Owner's operations.
   1. Niles North High School: Summer school will be in session during the construction phase of this project. Students will be in the building but are not scheduled to occupy rooms affected by construction.

1.6 DUTIES OF CONTRACTOR

A. Except as specifically noted, provide and pay for:
   1. Labor, materials and equipment.
   2. Tools, construction equipment and machinery.
   3. Other facilities and services required to complete the Work.
B. Secure and pay for as required to complete the Work, and as applicable at the time of receipt of bids:
   1. Licenses.
   2. Fees.

C. Give required notices to Owner, testing agency, and public authorities which have jurisdiction over the Work.

D. Comply with codes, ordinances and other legal requirements of public authorities which have jurisdiction over the Work.

E. Promptly submit written notice to the Architect of any observed variance of Contract Documents from legal requirements.

F. Provide bonds for each portion of the Work.

G. Activities which are to occur on site during the construction period shall be coordinated with Owner to establish proper dates which construction operations may occur.

H. The Contractor shall include expedited delivery schedules, additional labor shifts, overtime work, and such other labor, equipment and materials as are necessary to complete each portion of the work by the date of Substantial Completion.

I. Utilities Shut-offs shall not occur without prior approval of the Owner.

1.7 PROJECT LIMITATIONS

A. The Work shall commence as follows:
   1. Commencement of Work on site: May 28, 2019

B. The Work shall not commence until the contractor's bonds and insurance have been received and approved by the Owner.

1.8 TIME OF COMPLETION AND OCCUPANCY

A. Substantial Completion: August 7, 2019

B. Final Completion: August 14, 2019

1.9 JOB OPERATIONS

A. Work Limitations:
   1. All spaces where work will be done may be occupied by the Owner's personnel.
   2. Schedule and perform work in such a manner so as not to disrupt existing electrical, plumbing and mechanical systems. Existing systems must remain fully functional at all times that school is in session. Provide Owner with minimum 24 hours’ notice of any required shut down of any existing system.
   3. Provide Owner with minimum 48-hour notice before starting demolition of any area that may disturb Owner's operations.
4. Maintain required exits and exit pathways at all times building is occupied.

B. Project Security:

1. General Project Security to be provided by the General Contractor. All Subcontractors must provide necessary precautions to protect their own materials and equipment until such Work is installed and operational.
2. Provide necessary precautions, including, but not limited to barriers and/or fencing, to protect Owner's personnel, pedestrians and workmen in the area of construction or demolition, as well as areas with stored materials and equipment.
3. Securely close off all areas of construction to prevent unauthorized entry.

1.10 ELECTRICAL UTILITIES

A. Owner will provide electrical power for construction activities in the form of designated existing line-voltage receptacles:

1. Coordinate power requirements with owner's representative.
2. Do not use emergency power circuits.
3. Do not overload circuits.
4. Provide all necessary extension cords.

1.11 CLEAN UP

A. Rubbish and debris resulting from the Work shall be collected and properly disposed of away from the site. If the Owner is required to perform cleaning as a result of the Contractor’s lack of cleaning, the Owner may perform the required cleaning. If the Owner performs the cleaning, the Contractor will be backcharged at a rate of three (3) times the cost of the cleaning including labor and material costs.

1.12 CONTRACTOR SECURITY CLEARANCE

A. The Contractor shall perform a criminal background check on every worker, including subcontractors, who may be assigned to work at the construction site. The Contractor shall utilize an established firm specializing in criminal background checks such as Rapsheets.org or comparable. The Contractor shall submit the criminal background check response to the Owner for review and approval prior to allowing a worker to be on-site. The cost of performing the criminal background check shall be the responsibility of the Contractor.
SECTION 012100 - ALLOWANCES

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.

1.2 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when direction will be provided to the Contractor. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

1. Contingency allowances.

C. Related Sections:

1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders for allowances.
2. Division 01 Section "Quality Requirements" for procedures governing the use of allowances for testing and inspecting.
3. Divisions 02 through 26 Sections for items of Work covered by allowances.

1.3 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.4 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.
C. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

D. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.6 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor's overhead, profit, and related costs for products and equipment ordered by Owner under the contingency allowance are included in the allowance and are not part of the Contract Sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

C. Change Orders authorizing use of funds from the contingency allowance will include Contractor's related costs and overhead and profit margins not to exceed five (5) per cent.

D. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.7 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other margins claimed.
3. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION
   A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION
   A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES
   A. Allowance No. 1: Contractor shall include in his base bid a General Contingency Allowance in the amount of $100,000.00 to be used only as directed by the Architect for the Owner’s purposes in offsetting any unforeseen conditions. Any and all contingency allowance not used during the course of the project will be reissued to the Owner via a deductive change order to the contract amount at the time of final certificate for payment.

END OF SECTION 012100
SECTION 012200 - UNIT PRICES

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.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for unit prices.

B. Related Sections include the following:
   1. Division 01 Section "Allowances" for procedures for using unit prices to adjust quantity allowances.
   2. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.

1.3 DEFINITIONS

A. Unit price is an amount proposed by bidders, stated on the Bid Form, as a price per unit of measurement for materials or services added to or deducted from the Contract Sum by appropriate modification, if estimated quantities of Work required by the Contract Documents are increased or decreased.

1.4 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A list of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 LIST OF UNIT PRICES

A. Unit Price 1:
   1. Description: Sod, including preparation and placement
   2. Unit of Measurement: Per square yard

B. Unit Price 2:
   1. Description: Sawcut, removal, and replacement of existing concrete track curb and perimeter synthetic turf nailer board (add or deduct).
   2. Unit of Measurement: Per lineal foot (minimum 10’ length)

C. Unit Price 3:
   1. Description: Sawcut, removal, and replacement of existing asphalt pavement per details, full depth.
   2. Unit of Measurement: Per square yard

D. Unit Price 4:
   1. Description: Sawcut, removal, and replacement of existing concrete pavement per details, full depth.
   2. Unit of Measurement: Per square yard

E. Unit Price 5:
   1. Description: Sawcut, removal, and replacement of existing asphalt track pavement per details, full depth.
   2. Unit of Measurement: Per square yard

F. Unit Price 6:
   1. Description: Undercuts/excavation/removal of bad soils and placement of 3” stone fill.
   2. Unit of Measurement: Per square yard

END OF SECTION 012200
SECTION 012300 - ALTERNATES

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.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Replace existing field perimeter storm sewer per documents.
   Base Bid: Existing conditions to remain as is.

B. Alternate No. 2: Replace existing field drainage piping and base per documents.
   Base Bid: Existing conditions to remain as is.

END OF SECTION 012300
SECTION 012500 - SUBSTITUTION PROCEDURES

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.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Sections:

1. Division 01 Section "Allowances" for products selected under an allowance.
2. Division 01 Section "Alternates" for products selected under an alternate.
3. Division 01 Section "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.
4. Divisions 02 through 33 Sections for specific requirements and limitations for substitutions.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

   a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
   b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
   c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant
qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project.
j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one (1) week of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Modify or adjust affected work as necessary to integrate work of the approved substitutions.
PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately upon discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

   a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   b. Substitution request is fully documented and properly submitted.
   c. Requested substitution will not adversely affect Contractor's construction schedule.
   d. Requested substitution has received necessary approvals of authorities having jurisdiction.
   e. Requested substitution is compatible with other portions of the Work.
   f. Requested substitution has been coordinated with other portions of the Work.
   g. Requested substitution provides specified warranty.
   h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within 30 days after the Notice of Award. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

   a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
   b. Requested substitution does not require extensive revisions to the Contract Documents.
   c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   d. Substitution request is fully documented and properly submitted.
   e. Requested substitution will not adversely affect Contractor's construction schedule.
   f. Requested substitution has received necessary approvals of authorities having jurisdiction.
   g. Requested substitution is compatible with other portions of the Work.
   h. Requested substitution has been coordinated with other portions of the Work.
   i. Requested substitution provides specified warranty.
   j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)
SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

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.

1.2 SUMMARY
A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.
B. Related Sections include the following:
   1. Division 01 Section "Allowances" for procedural requirements for handling and processing allowances.
   2. Division 01 Section "Unit Prices" for administrative requirements for using unit prices.
   3. Division 01 Section "Substitution Procedures" for administrative procedures for handling requests for substitutions made after Contract award.

1.3 MINOR CHANGES IN THE WORK
A. Architect will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, "Architect's Supplemental Instructions."

1.4 PROPOSAL REQUESTS
A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
   1. Proposal Requests issued by Architect are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.
   2. Within 5 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
      a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. Furnish survey data to substantiate quantities.
      b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
      c. Include costs of labor and supervision directly attributable to the change.
      d. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Architect.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. Furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Division 01 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.


1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, Architect will issue a Change Order for signatures by Owner and Contractor on AIA Document G701.

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: When the Owner and Contractor are not in total agreement on the terms of a Change Order Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600
SECTION 012900 - PAYMENT PROCEDURES

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.

1.2 SUMMARY

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

B. Related Sections include the following:

1. Division 01 Section "Allowances" for procedural requirements governing handling and processing of allowances.
2. Division 01 Section "Unit Prices" for administrative requirements governing use of unit prices.
3. Division 01 Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.

1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:

   a. Application for Payment forms with Continuation Sheets.
   b. Submittals Schedule.
   c. Contractor's Construction Schedule.

2. Submit the Schedule of Values to Architect at earliest possible date, but no later than the date scheduled for the pre-construction meeting.

3. Subschedules: Where the Work is separated into multiple sites or phases, provide sub-schedules showing values correlated with each site or phase of payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:
a. Project name and location.
b. Name of Architect.
c. Architect's project number.
d. Contractor's name and address.
e. Date of submittal.

2. Submit draft of AIA Document G703 Continuation Sheets.

3. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
   a. Related Specification Section or Division.
   b. Description of the Work.
   c. Name of subcontractor.
   d. Name of manufacturer or fabricator.
   e. Name of supplier.
   f. Change Orders (numbers) that affect value.
   g. Dollar value.

   1) Percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate. Include separate line items under required principal subcontracts for operation and maintenance manuals, punch list activities, Project Record Documents, and demonstration and training in the amount of 10 percent of the Contract Sum.

5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site. Include evidence of insurance or bonded warehousing if stored off site.

7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

8. Allowances: Provide a separate line item in the Schedule of Values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.

9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place shall be shown as separate line items in the Schedule of Values and not distributed as general overhead expense.

10. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.
1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involve additional requirements.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction Work covered by each Application for Payment is the period indicated in the Agreement.

C. Payment Application Forms: Use AIA Document G702 and AIA Document G703 Continuation Sheets as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. Each copy shall include waivers of lien and similar attachments.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien as follows:

1. From the Prime contractor for the Work covered by the payment.
2. From subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.
   a. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
   b. When an application shows completion of an item, submit final or full waivers.
   c. Owner reserves the right to designate which entities involved in the Work must submit waivers.
   d. Submit final Application for Payment with or preceded by final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
   e. Waiver Forms: Submit waivers of lien on forms, executed in a manner acceptable to Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of Values.
3. Contractor's Construction Schedule (preliminary if not final).
4. Products list and local suppliers of products. List supplier’s name, address, and contact person.
5. Schedule of unit prices.
7. List of Contractor’s staff assignments.
8. List of Contractor's principal consultants.
11. Initial progress report.
13. Certificates of insurance and insurance policies.
15. Initial settlement survey and damage report if required.

H. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
6. AIA Document G707, "Consent of Surety to Final Payment."
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900
SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

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.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. Coordination Drawings.
2. Administrative and supervisory personnel.
3. Project meetings.
4. Requests for Interpretation (RFIs).

B. Each contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific contractor.

C. Related Sections include the following:

1. Division 01 Section "Construction Progress Documentation" for preparing and submitting Contractor's Construction Schedule.
2. Division 01 Section "Closeout Procedures" for coordinating closeout of the Contract.

1.3 DEFINITIONS

A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.4 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

B. Coordination: Each contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each contractor shall coordinate its operations with operations, included in different Sections, that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

C. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
   1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
   1. Preparation of Contractor's Construction Schedule.
   2. Preparation of the Schedule of Values.
   3. Installation and removal of temporary facilities and controls.
   4. Delivery and processing of submittals.
   5. Progress meetings.
   6. Preinstallation conferences.
   7. Project closeout activities.
   8. Startup and adjustment of systems.
   9. Project closeout activities.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
   1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.5 SUBMITTALS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely shown on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.
   1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
      a. Use applicable Drawings as a basis for preparation of coordination drawings. Prepare sections, elevations, and details as needed to describe relationship of various systems and components.
      b. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
      c. Indicate space requirements for routine maintenance and for anticipated replacement of components during the life of the installation.
      d. Show location and size of access doors required for access to concealed dampers, valves, and other controls.
      e. Indicate required installation sequences.
f. Indicate dimensions shown on the Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Digital Data Files: Prepare coordination digital data files according to the following requirements:

1. File Preparation Format: Same digital data software program, version, and operating system as original Drawings.
2. File Preparation Format: DWG or NWC, Version 2010, operating in Microsoft Windows operating system.
3. File Submittal Format: Submit or post coordination drawing files using Portable Data File (PDF) format.
4. BIM File Incorporation: Develop and incorporate coordination drawing files into Building Information Model established for Project.
   a. Perform three-dimensional component conflict analysis as part of preparation of coordination drawings. Resolve component conflicts prior to submittal. Indicate where conflict resolution requires modification of design requirements by Architect. All elements shall be modeled to a AIA E201 LOD of 300.

5. Architect will furnish Contractor one set of digital data files of Drawings for use in preparing coordination digital data files.
   a. Architect makes no representations as to the accuracy or completeness of digital data files as they relate to Drawings.
   b. Contractor shall execute a data licensing agreement in the form of Agreement included in this Project Manual.

C. Key Personnel Names: Within 15 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1. Include special personnel required for coordination of operations with other contractors.

1.7 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:
   a. Tentative construction schedule.
   b. Phasing.
   c. Critical work sequencing and long-lead items.
   d. Designation of key personnel and their duties.
   e. Procedures for processing field decisions and Change Orders.
   f. Procedures for RFI's.
   g. Procedures for testing and inspecting.
   h. Procedures for processing Applications for Payment.
   i. Distribution of the Contract Documents.
   j. Submittal procedures.
   k. Preparation of Record Documents.
   l. Use of the premises and existing building.
   m. Work restrictions.
   n. Owner's occupancy requirements.
   o. Responsibility for temporary facilities and controls.
   q. Parking availability.
   r. Office, work, and storage areas.
   s. Equipment deliveries and priorities.
   t. First aid.
   u. Security.
   v. Progress cleaning.
   w. Working hours.

3. Minutes: Record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
b. Options.
c. Related RFIs.
d. Related Change Orders.
e. Purchases.
f. Deliveries.
g. Submittals.
h. Review of mockups.
i. Possible conflicts.
j. Compatibility problems.
k. Time schedules.
l. Weather limitations.
m. Manufacturer's written recommendations.
n. Warranty requirements.
o. Compatibility of materials.
p. Acceptability of substrates.
q. Temporary facilities and controls.
r. Space and access limitations.
s. Regulations of authorities having jurisdiction.
t. Testing and inspecting requirements.
u. Installation procedures.
v. Coordination with other work.
w. Required performance results.
x. Protection of adjacent work.
y. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at weekly intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

1) Review schedule for next period.
b. Review present and future needs of each entity present, including the following:

1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.
11) Progress cleaning.
12) Quality and work standards.
13) Status of correction of deficient items.
14) Field observations.
15) RFIs.
16) Status of proposal requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

3. Minutes: Record the meeting minutes.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

a. Schedule Updating: Revise Contractor’s Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

E. Coordination Meetings: Conduct Project coordination meetings at weekly intervals. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and preinstallation conferences.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of the previous coordination meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

a. Combined Contractor's Construction Schedule: Review progress since the last coordination meeting. Determine whether each contract is on time, ahead of schedule, or behind schedule, in relation to Combined Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

b. Schedule Updating: Revise Combined Contractor's Construction Schedule after each coordination meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with report of each meeting.

c. Review present and future needs of each contractor present, including the following:
1) Interface requirements.
2) Sequence of operations.
3) Status of submittals.
4) Deliveries.
5) Off-site fabrication.
6) Access.
7) Site utilization.
8) Temporary facilities and controls.
9) Work hours.
10) Hazards and risks.
11) Progress cleaning.
12) Quality and work standards.
13) Change Orders.

3. Reporting: Record meeting results and distribute copies to everyone in attendance and to others affected by decisions or actions resulting from each meeting.

1.8 REQUESTS FOR INTERPRETATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.

1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

1. Project name.
2. Date.
3. Name of Contractor.
5. RFI number, numbered sequentially.
6. Specification Section number and title and related paragraphs, as appropriate.
7. Drawing number and detail references, as appropriate.
8. Field dimensions and conditions, as appropriate.
9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
10. Contractor's signature.
11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
   a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow seven working days for Architect's response for each RFI.

1. The following RFIs will be returned without action:
   a. Requests for approval of submittals.
b. Requests for approval of substitutions.
c. Requests for coordination information already indicated in the Contract Documents.
d. Requests for adjustments in the Contract Time or the Contract Sum.
e. Requests for interpretation of Architect's actions on submittals.
f. Incomplete RFIs or RFIs with numerous errors.

2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
   a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within three days of receipt of the RFI response.

D. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within three days if Contractor disagrees with response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
   1. Project name.
   2. Name and address of Contractor.
   3. Name and address of Architect.
   4. RFI number including RFIs that were dropped and not submitted.
   5. RFI description.
   6. Date the RFI was submitted.
   7. Date Architect's response was received.
   8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100
SECTION 013200 – CONSTRUCTION PROGRESS DOCUMENTATION

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.

1.2 SUMMARY
   A. General: This Section specifies administrative and procedural requirements for schedules and reports required for proper performance of the Work.
   B. Coordination: Each prime Contractor shall closely coordinate scheduling and reporting with the scheduling and reporting of other prime Contractors.
   C. Schedules required include:
      1. Preliminary Construction Schedule.
      2. Contractor's Construction Schedule.
   D. Reports required include:
      1. Daily Construction Reports.
      2. Material location reports.
      3. Field correction reports.
      4. Special reports.
   E. The schedule of values is included in Section "Payment Procedures."
   F. Project meeting minutes are included in Section "Project Management and Coordination."
   G. Inspection and test reports are included in Section "Quality Requirements."

1.3 PRELIMINARY CONSTRUCTION SCHEDULE
   A. Bar-Chart Schedule: Submit a preliminary horizontal bar-chart type construction schedule within 2 days of the date established for Commencement of the Work.
      1. Provide a separate time bar for each significant construction activity. Coordinate each element on the schedule with other construction activities. Schedule each construction activity in proper sequence. Provide a continuous vertical line to identify the first working day of each week.
      2. Indicate completion of the Work in advance of the date established for Substantial Completion.
   B. Submittal Tabulation: With the submittal of the Preliminary Construction Schedule, include a tabulation by date of submittals required during the first 90 days of construction. List those submittals required to
maintain orderly progress of the Work, and those required early because of long lead time for manufacture or fabrication.

1. At the Contractor's option, submittal dates may be shown on the schedule, in lieu of being tabulated separately.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: Prepare a comprehensive, fully developed, horizontal bar-chart type Contractor's Construction Schedule based on the Preliminary Construction Schedule and on whatever updating and feedback was received since the start of the Project.

1. Submit the schedule within 15 days of the date established for commencement of the Work.
2. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week.
   a. If practical, use the same breakdown of units of the Work as indicated in the "Schedule of Values."

3. For significant construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in 10 percent increments within the time bar. As Work progresses, place a contrasting mark in each bar to indicate actual completion percentage.
4. Prepare the Schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data clearly for the entire construction period.
5. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other portions of the Work; include minor elements involved in the overall sequence of the Work. Show each construction activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
6. Coordinate the Contractor's Construction Schedule with the schedule of values, list of subcontracts, Submittal Schedule, progress reports, payment requests and other required schedules and reports.
7. Indicate completion of the Work in advance of the date established for Substantial Completion. Indicate Substantial Completion on the Schedule to allow ample time for the Architect administrative procedures necessary for Certification of Substantial Completion.

B. Phasing: Provide notations on the Schedule to show how the sequence of the Work is affected by the following:

1. Requirements for phased completion.
2. Work by separate Contractors.
3. Work by the Owner.
4. Pre-purchased materials.
5. Coordination with existing construction.
6. Limitations of continued occupancies.
7. Uninterruptible services.
8. Partial occupancy prior to Substantial Completion.
9. Site restrictions.
11. Seasonal variations.
12. Environmental control.

C. Work Stages: Use crosshatched bars to indicate important stages of construction for each major portion of the Work.
D. Such stages include, but are not necessarily limited to:

1. Subcontract awards.
2. Purchases.
3. Mockups.
4. Fabrication.
5. Sample testing.
6. Deliveries.
7. Installation.
8. Testing.
10. Curing.
11. Start-up and placement into final use and operation.

E. Area Separations: Provide a separate time bar to identify each major area of construction for each major portion of the Work. For the purposes of this article, a "major area" is defined as a story of construction, separate buildings or a similar significant construction element.

1. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
   
   a. Structural Completion.
   b. Permanent space enclosure.
   c. Completion of mechanical installation.
   d. Completion of the electrical portion of the Work.
   e. Substantial Completion.

F. Cost Correlation: Immediately below the date line at the head of the bar-chart, provide a two item cost correlation line, indicating both "precalculated" and "actual" costs. On the cost correlation line show dollar-volume of Work performed as of the same dates used for preparation of payment requests.

1. Refer to Section "Payment Procedures" for cost reporting and payment procedures.

G. Distribution: Following the Architect response to initial submittal of the Contractor's Construction Schedule, print and distribute copies to the Architect, Owner, separate contractors, subcontractors, suppliers, fabricators, and other parties required to comply with scheduled dates.

1. Post copies of the Schedule in the Project meeting room and temporary field office.
2. When revisions are made, distribute the updated Schedule to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

H. Schedule Updating: Revise the Schedule immediately after each meeting or other activity, where revisions have been recognized or made. Issue the updated Schedule concurrently with report of each meeting.

1.5 SCHEDULE OF INSPECTIONS AND TESTS

A. Prepare a schedule of inspections, tests and similar services required by the Contract Documents. Submit the schedule within 30 days of the date established for commencement of the Work.

B. Form: The Schedule shall be in tabular form and shall include but not be limited to the following data:

1. Specification Section number.
2. Description of the test.
3. Identification of applicable standards.
4. Identification of test methods.
5. Number of tests required.
6. Time schedule or time span for tests.
7. Entity responsible for performing tests.
8. Requirements for taking Samples.
9. Unique characteristics of each service.

C. Distribution: Distribute the Schedule to the Owner, Architect, and each party involved in performance of portions of the Work, where inspections and tests are required.

1.6 REPORTS

A. Daily Construction Reports: Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Architect at weekly intervals:

1. List of subcontractors at the site.
2. List of separate contractors at the site.
3. Approximate count of personnel at the site.
4. High and low temperatures, general weather conditions.
5. Accidents (refer to accident reports).
6. Meetings and significant decisions.
7. Unusual events (refer to special reports).
8. Stoppages, delays, shortages, losses.
9. Meter readings and similar recordings.
10. Emergency procedures.
11. Orders and requests of governing authorities.
12. Change Orders received, implemented.
13. Services connected, disconnected.
14. Equipment or system tests and start-ups.
15. Partial Completions, occupancies.

B. Material Location Reports: At weekly intervals prepare a comprehensive list of materials delivered to and stored at the site. The list shall be cumulative, showing materials previously reported plus items recently delivered. Include with the list a statement of progress on and delivery dates for all materials or items of equipment being fabricated or stored away from the building site. Submit copies of the list to the Architect at weekly intervals.

C. Field Correction Report: When the need to take corrective action that requires a departure from the Contract Documents arises, prepare a detailed report including a statement describing the problem and recommended changes. Indicate reasons the Contract Documents cannot be followed. Submit a copy to the Architect immediately.

D. The Contractor shall furnish to the Owner weekly written progress reports including an updated schedule of construction and schedule of values in duplicate on all construction activities.

1.7 ACCIDENT REPORTS

A. General: The Contractor shall provide a written report to the Owner of any and all accident whatsoever arising out of or in connection with the performance of the Work, whether on or adjacent to the site,
which causes death or personal injury or property damage. The report shall be furnished to the Owner within five (5) days of the occurrence.

1.8 SPECIAL REPORTS

A. General: Submit special reports directly to the Owner within one day of an occurrence. Submit a copy to the Architect and other parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at the site, prepare and submit a special report. List the chain of events, persons participating, response by the Contractor's personnel, an evaluation of the results or effects and similar pertinent information. Advise the Owner in advance when such events are known or predictable.
SECTION 013300 – SUBMITTAL PROCEDURES

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.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including:

1. Contractor's construction schedule.
2. Submittal schedule.
3. Daily construction reports.
4. Shop Drawings.
5. Product Data.
6. Samples.

B. Administrative Submittals: Refer to other Division 01 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

1. Permits.
2. Applications for payment.
3. Performance and payment bonds.
4. Insurance certificates.
5. List of Subcontractors.

C. Inspection and test reports are included in Section "Quality Requirements."

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
   a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals.
a. Allow ten (10) business days for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.

b. If an intermediate submittal is necessary, process the same as the initial submittal.

c. Allow ten (10) business days for reprocessing each submittal.

d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing.

B. Submittal Preparation: Architect will provide access to their Newforma Project Center (Project Management System) to the Contractor for logging, transmission, and overall management of electronic submittals.

1. Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

2. Provide a space approximately 4” x 5” on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.

3. Include the following information on the label for processing and recording action taken.

   a. Project name.
   
   b. Date.
   
   c. Name and address of Architect/Engineer.
   
   d. Name and address of Contractor.
   
   e. Name and address of subcontractor.
   
   f. Name and address of supplier.
   
   g. Name of manufacturer.
   
   h. Number and title of appropriate Specification Section.
   
   i. Drawing number and detail references, as appropriate.

C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.

1. On the transmittal Record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Bar-Chart Schedule: The Contractor will prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. All Subcontractors to provide input and coordinate activities in accordance with this Schedule. Information to be included in the Schedule is as follows:

1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".

2. Within each time bar indicate estimated completion percentage in 10 percent increments. As Work progresses, place a contrasting mark in each bar to indicate Actual Completion.

3. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.

4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the Work.
5. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.

6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.

B. Phasing: Provide notations on the Schedule to show how the sequence of the Work is affected by the following:

1. Work by separate Contractors.
2. Work by the Owner.
3. Coordination with existing construction.
4. Uninterruptible services.
5. Site restrictions.

C. Work Stages: Use crosshatched bars to indicate important stages of construction for each major portion of the Work. Such Stages include, but are not necessarily limited to:

1. Subcontract awards.
2. Purchases.
3. Fabrication.
4. Deliveries.
5. Installation.
7. Adjusting.
8. Curing.

D. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates.

1. When revisions are made, distribute to the same parties. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
2. Schedule Updating: Revise the schedule after each meeting or activity, where revisions have been recognized or made. Issue the updated schedule concurrently with report of each meeting.

1.5 DAILY CONSTRUCTION REPORTS - BY CONTRACTOR

A. Prepare a daily construction report, recording the following information concerning events at the site; and submit duplicate copies to the Architect at weekly intervals:

1. List of subcontractors at the site.
2. Approximate count of personnel at the site.
3. High and low temperatures, general weather conditions.
4. Accidents and unusual events.
5. Meetings and significant decisions.
7. Emergency procedures.
8. Orders and requests of governing authorities.
9. Change Orders received, implemented.
10. Services connected, disconnected.
11. Equipment or system tests.
12. Partial Completions, occupancies.
13. Substantial Completions authorized.
1.6 FIELD CORRECTION REPORTS

A. Field Correction Report: When the need to take corrective action that requires a departure from the Contract Documents arises, prepare a detailed report including a statement describing the problem and recommended changes. Indicate reasons the Contract Documents cannot be followed. Submit a copy to the Architect immediately.

1.7 CERTIFIED PAYROLL SUBMITTAL

A. Any contractor or subcontractor performing work on public works projects shall submit monthly in person, by mail, or electronically, a complete certified payroll report to the public body in charge of the project.

1.8 SPECIAL REPORTS

A. General: Submit special reports directly to the Owner within one day of an occurrence. Submit a copy to the Architect and other parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at the site, prepare and submit a special report. List the chain of events, persons participating, response by the Contractor’s personnel, an evaluation of the results or effects and similar pertinent information. Advise the Owner in advance when such events are known or predictable.

1.9 CONTRACTOR'S REVIEW OF SUBMITTALS

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Contractor’s Approval: Indicate Contractor’s approval for each submittal with a uniform approval stamp or indication in web-based Project software. Include name of reviewer, date of Contractor’s approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

C. Architect will not review submittals received from Contractor that do not have Contractor’s review and approval.

1.10 ARCHITECT ACTION

A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect/Engineer will review each submittal, mark to indicate action taken, and return promptly.

1. Compliance with specified characteristics is the Contractor's responsibility.

B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
1. Final Unrestricted Release: Where submittals are marked "Accepted," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.

2. Final-But-Restricted Release: When submittals are marked "Accepted as Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

3. Returned for Resubmittal: When submittal is marked "Not Accepted, Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.

   a. Do not permit submittals marked "Not Accepted, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.

4. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "No Action Taken"

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 013300
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.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-assurance and -control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

2. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and -control procedures that facilitate compliance with the Contract Document requirements.

3. Requirements for Contractor to provide quality-assurance and -control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

C. Related Sections include the following:

1. Division 01 Section "Construction Progress Documentation" for developing a schedule of required tests and inspections

2. Division 01 Section "Execution" for repair and restoration of construction disturbed by testing and inspecting activities.

3. Divisions 02 through 33 Sections for specific test and inspection requirements.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.
D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.

E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with industry standards.

G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespeople of the corresponding generic name.

K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

1.4 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.

1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:
   a. Provide test specimens representative of proposed products and construction.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Provide sizes and configurations of test assemblies, mockups, and laboratory mockups to adequately demonstrate capability of products to comply with performance requirements.
   d. Build site-assembled test assemblies and mockups using installers who will perform same tasks for Project.
   e. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
   f. When testing is complete, remove test specimens, assemblies, mockups, and laboratory mockups; do not reuse products on Project.

2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

J. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
2. Notify Architect seven days in advance of dates and times when mockups will be constructed.
3. Demonstrate the proposed range of aesthetic effects and workmanship.
4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
   a. Allow three days for initial review and each re-review of each mockup.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
6. Demolish and remove mockups when directed, unless otherwise indicated.

K. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 02 through 33.

1.7 QUALITY CONTROL

A. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

1. Contractor shall engage a qualified testing agency to perform these quality-control services.
2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
3. Where quality-control services are indicated, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

B. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Division 01 Section "Submittal Procedures."

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.


1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the location from which test samples will be taken and which tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform any duties of Contractor.

E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Delivery of samples to testing agencies.
6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
7. Security and protection for samples and for testing and inspecting equipment at Project site.

F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

G. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents.

1. Distribution: Distribute schedule to Owner, Architect, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and modifications as they occur. Provide access to test and inspection log for Architect's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
2. Comply with the Contract Document requirements for Division 01 Section "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000
SECTION 014200 - REFERENCES

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.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "approved," "required," and "permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.
C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

D. Abbreviations and Acronyms for Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

<table>
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<tr>
<th>Abbreviation</th>
<th>Description</th>
<th>Telephone Number</th>
<th>Website Address</th>
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<tr>
<td>ADAAG</td>
<td>Americans with Disabilities Act (ADA)</td>
<td>(800) 872-2253</td>
<td><a href="http://www.access-board.gov">www.access-board.gov</a></td>
</tr>
<tr>
<td></td>
<td>Accessibility Guidelines for Buildings and Facilities</td>
<td>(202) 272-0080</td>
<td></td>
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<tr>
<td>CRD</td>
<td>Handbook for Concrete and Cement</td>
<td>(601) 634-2355</td>
<td><a href="http://www.wes.army.mil">www.wes.army.mil</a></td>
</tr>
<tr>
<td>DOD</td>
<td>Department of Defense Military Specifications and Standards</td>
<td>(215) 697-6257</td>
<td><a href="http://www.dodssp.daps.mil">www.dodssp.daps.mil</a></td>
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<tr>
<td>DSCC</td>
<td>Defense Supply Center Columbus</td>
<td></td>
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<td>Federal Standard</td>
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<td>(215) 697-6257</td>
<td><a href="http://www.dodssp.daps.mil">www.dodssp.daps.mil</a></td>
</tr>
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<td></td>
<td>Available from General Services Administration</td>
<td>(202) 619-8925</td>
<td><a href="http://www.nibs.org">www.nibs.org</a></td>
</tr>
<tr>
<td>FTMS</td>
<td>Federal Test Method Standard</td>
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<td>(See FS)</td>
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<td>MIL</td>
<td>See MILSPEC</td>
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<td>MS MIL</td>
<td>See MILSPEC</td>
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ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

AA Aluminum Association, Inc. (The)
www.aluminum.org (202) 862-5100

AAADM American Association of Automatic Door Manufacturers
www.aaadm.com (216) 241-7333

AABC Associated Air Balance Council
www.aabchq.com (202) 737-0202

AAMA American Architectural Manufacturers Association
www.aamanet.org (847) 303-5664

AASHTO American Association of State Highway and Transportation Officials
www.aashto.org (202) 624-5800

AATCC American Association of Textile Chemists and Colorists (The)
www.aatcc.org (919) 549-8141

ABMA American Bearing Manufacturers Association
www.abma-dc.org (202) 367-1155

ACI American Concrete Institute/ACI International
www.aci-int.org (248) 848-3700

ACPA American Concrete Pipe Association
www.concrete-pipe.org (972) 506-7216

AEIC Association of Edison Illuminating Companies, Inc. (The)
www.aeic.org (205) 257-2530
AFPA    American Forest & Paper Association  
(See AF&PA)  
AF&PA  American Forest & Paper Association  
www.afandpa.org  
(800) 878-8878  
(202) 463-2700  
AGA    American Gas Association  
www.aga.org  
(202) 824-7000  
AGC    Associated General Contractors of America (The)  
www.agc.org  
(703) 548-3118  
AHA    American Hardboard Association  
www.hardboard.org  
(847) 934-8800  
AHAM  Association of Home Appliance Manufacturers  
www.aham.org  
(202) 872-5955  
AI     Asphalt Institute  
www.asphaltinstitute.org  
(859) 288-4960  
AIA    American Institute of Architects (The)  
www.aia.org  
(800) 242-3837  
(202) 626-7300  
AISC   American Institute of Steel Construction  
www.aisc.org  
(800) 644-2400  
(312) 670-2400  
AISI   American Iron and Steel Institute  
www.steel.org  
(202) 452-7100  
AITC   American Institute of Timber Construction  
www.aite-glulam.org  
(303) 792-9559  
ALCA   Associated Landscape Contractors of America  
www.alca.org  
(800) 395-2522  
(703) 736-9666  
ALSC   American Lumber Standard Committee, Incorporated  
www.alsc.org  
(301) 972-1700  
AMCA   Air Movement and Control Association International, Inc.  
www.amca.org  
(847) 394-0150  
ANSI   American National Standards Institute  
www.ansi.org  
(202) 293-8020  
AOSA   Association of Official Seed Analysts  
www.aosaseed.com  
(505) 522-1437  
APA    APA - The Engineered Wood Association  
www.apawood.org  
(253) 565-6600  
APA    Architectural Precast Association  
www.archprecast.org  
(239) 454-6989  
API    American Petroleum Institute  
(202) 682-8000
## REFERENCES

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<td>BIFMA</td>
<td>Business and Institutional Furniture Manufacturer's Association International</td>
<td><a href="http://www.bifma.com">www.bifma.com</a></td>
<td>(203) 637-1312</td>
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<td>CCC</td>
<td>Carpet Cushion Council</td>
<td><a href="http://www.carpetcushion.org">www.carpetcushion.org</a></td>
<td>(203) 637-1312</td>
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<td>CCFSS</td>
<td>Center for Cold-Formed Steel Structures</td>
<td><a href="http://www.umr.edu/~ccfss">www.umr.edu/~ccfss</a></td>
<td>(573) 341-4471</td>
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<td>CDA</td>
<td>Copper Development Association Inc.</td>
<td><a href="http://www.copper.org">www.copper.org</a></td>
<td>(800) 232-3282, (212) 251-7200</td>
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<td>CEA</td>
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<td><a href="http://www.canelect.ca">www.canelect.ca</a></td>
<td>(514) 866-6121</td>
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<td>CFFA</td>
<td>Chemical Fabrics &amp; Film Association, Inc.</td>
<td><a href="http://www.chemicalfabricsandfilm.com">www.chemicalfabricsandfilm.com</a></td>
<td>(216) 241-7333</td>
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<td>CGA</td>
<td>Compressed Gas Association</td>
<td><a href="http://www.c%D0%B3%D0%B0%D0%BDet.com">www.cганet.com</a></td>
<td>(703) 788-2700</td>
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<td>CGSB</td>
<td>Canadian General Standards Board</td>
<td><a href="http://www.pwgsc.gc.ca/cgsv">www.pwgsc.gc.ca/cgsv</a></td>
<td>(819) 956-0425</td>
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<td>CIMA</td>
<td>Cellulose Insulation Manufacturers Association</td>
<td><a href="http://www.cellulose.org">www.cellulose.org</a></td>
<td>(888) 881-2462, (937) 222-2462</td>
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<td>CISCA</td>
<td>Ceilings &amp; Interior Systems Construction Association</td>
<td><a href="http://www.cisca.org">www.cisca.org</a></td>
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<td>CISPI</td>
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<td><a href="http://www.cispi.org">www.cispi.org</a></td>
<td>(423) 892-0137</td>
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<td>CLFMI</td>
<td>Chain Link Fence Manufacturers Institute</td>
<td><a href="http://www.chainlinkinfo.org">www.chainlinkinfo.org</a></td>
<td>(301) 596-2583</td>
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<td>CPPA</td>
<td>Corrugated Polyethylene Pipe Association</td>
<td><a href="http://www.cppa-info.org">www.cppa-info.org</a></td>
<td>(800) 510-2772, (202) 462-9607</td>
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<td>CRI</td>
<td>Carpet &amp; Rug Institute (The)</td>
<td><a href="http://www.carpet-rug.com">www.carpet-rug.com</a></td>
<td>(800) 882-8846, (706) 278-3176</td>
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<td>CRSI</td>
<td>Concrete Reinforcing Steel Institute</td>
<td><a href="http://www.crsi.org">www.crsi.org</a></td>
<td>(847) 517-1200</td>
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<td>CSA</td>
<td>CSA International (Formerly: IAS - International Approval Services)</td>
<td><a href="http://www.csa-international.org">www.csa-international.org</a></td>
<td>(800) 463-6727, (416) 747-4000</td>
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<td>CSI</td>
<td>Construction Specifications Institute (The)</td>
<td><a href="http://www.csinet.org">www.csinet.org</a></td>
<td>(800) 689-2900, (703) 684-0300</td>
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<td>CSSB</td>
<td>Cedar Shake &amp; Shingle Bureau</td>
<td><a href="http://www.cedarbureau.org">www.cedarbureau.org</a></td>
<td>(604) 820-7700</td>
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CTI  Cooling Technology Institute  (281) 583-4087  (Formerly:  Cooling Tower Institute) www.cti.org

DHI  Door and Hardware Institute  (703) 222-2010  www.dhi.org

EIA  Electronic Industries Alliance  (703) 907-7500  www.eia.org

EIMA  EIFS Industry Members Association  (800) 294-3462  www.eima.com  (770) 968-7945

EJCDC  Engineers Joint Contract Documents Committee  (800) 548-2723  www.asce.org  (703) 295-6300

EJMA  Expansion Joint Manufacturers Association, Inc.  (914) 332-0040  www.ejma.org

ESD  ESD Association  (315) 339-6937

FCI  Fluid Controls Institute  (216) 241-7333  www.fluidcontrolsinstitute.org

FGMA  Flat Glass Marketing Association  (See GANA)

FM  Factory Mutual System  (See FMG)

FMG  FM Global  (401) 275-3000  (Formerly:  FM - Factory Mutual System) www.fmglobal.com

FRSA  Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.  (407) 671-3772  www.floridaroof.com

FSA  Fluid Sealing Association  (610) 971-4850  www.fluidsealing.com

FSC  Forest Stewardship Council  52 951 5146905  www.fscoax.org

GA  Gypsum Association  (202) 289-5440  www.gypsum.org

GANA  Glass Association of North America  (785) 271-0208  (Formerly:  FGMA - Flat Glass Marketing Association) www.glasswebsite.com

GRI  Geosynthetic Research Institute  (215) 895-2343  www.drexel.edu/gri
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<td>GTA</td>
<td>Glass Tempering Division of Glass Association of North America</td>
<td>(888) 786-7744</td>
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<td>(See GANA)</td>
<td>(973) 267-9700</td>
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<td>HI</td>
<td>Hydraulic Institute</td>
<td>(866) 464-8200</td>
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<td>(973) 267-9700</td>
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<td>HI</td>
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<td>HMMA</td>
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<td>HPVA</td>
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<td>(973) 267-9700</td>
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<td>IEC</td>
<td>International Electrotechnical Commission</td>
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<td><a href="http://www.iec.ch">www.iec.ch</a></td>
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<td>IEEE</td>
<td>Institute of Electrical and Electronics Engineers, Inc. (The)</td>
<td>(212) 419-7900</td>
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<td>IESNA</td>
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<td>IGCC</td>
<td>Insulating Glass Certification Council</td>
<td>(315) 646-2234</td>
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<td>IGMA</td>
<td>Insulating Glass Manufacturers Alliance (The)</td>
<td>(613) 233-1510</td>
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<td>ILI</td>
<td>Indiana Limestone Institute of America, Inc.</td>
<td>(812) 275-4426</td>
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<td>ISSFA</td>
<td>International Solid Surface Fabricators Association</td>
<td>(702) 567-8150</td>
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<td>ITS</td>
<td>Intertek Testing Services</td>
<td>(800) 345-3851</td>
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<td>IWS</td>
<td>Insect Screening Weavers Association</td>
<td>(607) 753-6711</td>
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<td>LMA</td>
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<td>(201) 664-2700</td>
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<td>LPI</td>
<td>Lightning Protection Institute</td>
<td>(800) 488-6864</td>
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<td>LSGA</td>
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<td>(847) 577-7200</td>
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<td>MBMA</td>
<td>Metal Building Manufacturers Association</td>
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<td>MH</td>
<td>Material Handling Industry of America</td>
<td>(800) 345-1815</td>
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<td>(704) 676-1190</td>
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<td>Marble Institute of America</td>
<td>(440) 250-9222</td>
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<td>MPI</td>
<td>Master Painters Institute</td>
<td>(888) 674-8937</td>
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<td>MSS</td>
<td>Manufacturers Standardization Society of The Valve and Fittings Industry Inc.</td>
<td>(703) 281-6613</td>
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<td>NAAMM</td>
<td>National Association of Architectural Metal Manufacturers</td>
<td>(312) 332-0405</td>
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<td>NAAMM</td>
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<td>NACE</td>
<td>NACE International</td>
<td>(281) 228-6200</td>
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<td>NADCA</td>
<td>National Air Duct Cleaners Association</td>
<td>(202) 737-2926</td>
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<td>NAIMA</td>
<td>North American Insulation Manufacturers Association (The)</td>
<td>(703) 684-0084</td>
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<td>NAMI</td>
<td>National Accreditation and Management Institute, Inc.</td>
<td>(304) 258-5100</td>
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<td>NBGQA</td>
<td>National Building Granite Quarries Association, Inc. <a href="http://www.nbgqa.com">www.nbgqa.com</a> (800) 557-2848</td>
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<td>NCMA</td>
<td>National Concrete Masonry Association <a href="http://www.ncma.org">www.ncma.org</a> (703) 713-1900</td>
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<td>NCPI</td>
<td>National Clay Pipe Institute <a href="http://www.ncpi.org">www.ncpi.org</a> (262) 248-9094</td>
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<td>NCTA</td>
<td>National Cable &amp; Telecommunications Association <a href="http://www.ncta.com">www.ncta.com</a> (202) 775-3550</td>
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<td>NEBB</td>
<td>National Environmental Balancing Bureau <a href="http://www.nebb.org">www.nebb.org</a> (301) 977-3698</td>
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<td>NECA</td>
<td>National Electrical Contractors Association <a href="http://www.necanet.org">www.necanet.org</a> (301) 657-3110</td>
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<td>NeLMA</td>
<td>Northeastern Lumber Manufacturers' Association <a href="http://www.nelma.org">www.nelma.org</a> (207) 829-6901</td>
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<td>NEMA</td>
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<td>NETA</td>
<td>InterNational Electrical Testing Association <a href="http://www.netaworld.org">www.netaworld.org</a> (303) 697-8441</td>
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<td>NFPA</td>
<td>NFPA International (National Fire Protection Association International) <a href="http://www.nfpa.org">www.nfpa.org</a> (800) 344-3555 (617) 770-3000</td>
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<td>NFRC</td>
<td>National Fenestration Rating Council <a href="http://www.nfrc.org">www.nfrc.org</a> (301) 589-1776</td>
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<td>NGA</td>
<td>National Glass Association <a href="http://www.glass.org">www.glass.org</a> (703) 442-4890</td>
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<td>NHLA</td>
<td>National Hardwood Lumber Association <a href="http://www.natlhardwood.org">www.natlhardwood.org</a> (800) 933-0318 (901) 377-1818</td>
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<td>NLGA</td>
<td>National Lumber Grades Authority <a href="http://www.nlga.org">www.nlga.org</a> (604) 524-2393</td>
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<td>NOFMA</td>
<td>National Oak Flooring Manufacturers Association <a href="http://www.nofma.org">www.nofma.org</a> (901) 526-5016</td>
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<td>NRCA</td>
<td>National Roofing Contractors Association <a href="http://www.nrca.net">www.nrca.net</a> (800) 323-9545 (847) 299-9070</td>
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<td>NRMCA</td>
<td>National Ready Mixed Concrete Association <a href="http://www.nrmca.org">www.nrmca.org</a> (888) 846-7622 (301) 587-1400</td>
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<td>NSF</td>
<td>NSF International (National Sanitation Foundation International) <a href="http://www.nsf.org">www.nsf.org</a> (800) 673-6275 (734) 769-8010</td>
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<td>NSSGA</td>
<td>National Stone, Sand &amp; Gravel Association</td>
<td>(800) 342-1415, (703) 525-8788</td>
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<td>National Terrazzo and Mosaic Association, Inc.</td>
<td>(800) 323-9736, (703) 779-1022</td>
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<td>OPL</td>
<td>Omega Point Laboratories, Inc.</td>
<td>(800) 966-5253, (210) 635-8100</td>
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<td>PCI</td>
<td>Precast/Prestressed Concrete Institute</td>
<td>(312) 786-0300</td>
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<td>PDCA</td>
<td>Painting and Decorating Contractors of America</td>
<td>(800) 332-7322, (703) 359-0826</td>
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<td>PDI</td>
<td>Plumbing &amp; Drainage Institute</td>
<td>(800) 589-8956, (508) 230-3516</td>
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<td>PGI</td>
<td>PVC Geomembrane Institute</td>
<td>(217) 333-3929</td>
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<td>RCSC</td>
<td>Research Council on Structural Connections</td>
<td>(800) 644-2400, (312) 670-2400</td>
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<td>RFCI</td>
<td>Resilient Floor Covering Institute</td>
<td>Contact by mail only</td>
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<td>RIS</td>
<td>Redwood Inspection Service</td>
<td>(888) 225-7339, (415) 382-0662</td>
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<td>RTI</td>
<td>Roof Tile Institute (Formerly: NTRMA - National Tile Roofing Manufacturers Association)</td>
<td>(541) 689-0366</td>
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<td>SAE</td>
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<td>(724) 776-4841</td>
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<td>SDI</td>
<td>Steel Deck Institute</td>
<td>(847) 462-1930</td>
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<td>Steel Door Institute</td>
<td>(440) 899-0010</td>
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<td>SEFA</td>
<td>Scientific Equipment and Furniture Association</td>
<td>(516) 294-5424</td>
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<td>SGCC</td>
<td>Safety Glazing Certification Council</td>
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<td>SJI</td>
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<td><a href="http://www.steeljoist.org">www.steeljoist.org</a></td>
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<td>SMACNA</td>
<td>Sheet Metal and Air Conditioning Contractors' National Association</td>
<td><a href="http://www.smacna.org">www.smacna.org</a></td>
<td>(703) 803-2980</td>
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<td>SMPTE</td>
<td>Society of Motion Picture and Television Engineers</td>
<td><a href="http://www.smpte.org">www.smpte.org</a></td>
<td>(914) 761-1100</td>
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<td>SPFA</td>
<td>Spray Polyurethane Foam Alliance</td>
<td><a href="http://www.sprayfoam.org">www.sprayfoam.org</a></td>
<td>(800) 523-6154</td>
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<td>SPIB</td>
<td>Southern Pine Inspection Bureau (The)</td>
<td><a href="http://www.spib.org">www.spib.org</a></td>
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<td>SPI/SPFD</td>
<td>Society of the Plastics Industry, Inc. (The)</td>
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<td>SPRI</td>
<td>SPRI (Single Ply Roofing Institute)</td>
<td><a href="http://www.spri.org">www.spri.org</a></td>
<td>(781) 647-7026</td>
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<td>SSINA</td>
<td>Specialty Steel Industry of North America</td>
<td><a href="http://www.ssina.com">www.ssina.com</a></td>
<td>(800) 982-0355</td>
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<td>SSPC</td>
<td>SSPC: The Society for Protective Coatings</td>
<td><a href="http://www.sspc.org">www.sspc.org</a></td>
<td>(877) 281-7772</td>
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<tr>
<td>STI</td>
<td>Steel Tank Institute</td>
<td><a href="http://www.steeltank.com">www.steeltank.com</a></td>
<td>(847) 438-8265</td>
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<td>SWI</td>
<td>Steel Window Institute</td>
<td><a href="http://www.steelwindows.com">www.steelwindows.com</a></td>
<td>(216) 241-7333</td>
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<tr>
<td>SWRI</td>
<td>Sealant, Waterproofing, &amp; Restoration Institute</td>
<td><a href="http://www.swrionline.org">www.swrionline.org</a></td>
<td>(816) 472-7974</td>
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<tr>
<td>TCA</td>
<td>Tile Council of America, Inc.</td>
<td><a href="http://www.tileusa.com">www.tileusa.com</a></td>
<td>(864) 646-8453</td>
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<tr>
<td>TIA/EIA</td>
<td>Telecommunications Industry Association/Electronic</td>
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<td>(703) 907-7700</td>
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<td>Code Agencies</td>
<td>Names, Telephone</td>
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<td>Industries Alliance</td>
<td><a href="http://www.tiaonline.org">www.tiaonline.org</a></td>
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<td>TMS</td>
<td>The Masonry Society, (303) 939-9700</td>
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<td><a href="http://www.masonrysociety.org">www.masonrysociety.org</a></td>
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<td>TPI</td>
<td>Truss Plate Institute, Inc, (608) 833-5900</td>
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<td><a href="http://www.tpi.org">www.tpi.org</a></td>
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<td>TPI</td>
<td>Turfgrass Producers International, (800) 405-8873</td>
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<tr>
<td><a href="http://www.turfgrass">www.turfgrass</a> sod.org</td>
<td>(847) 705-9898</td>
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<td>UL</td>
<td>Underwriters Laboratories Inc, (800) 704-4050</td>
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<td><a href="http://www.ul.com">www.ul.com</a></td>
<td>(847) 272-8800</td>
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<td>UNI</td>
<td>Uni-Bell PVC Pipe Association, (972) 243-3902</td>
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<td><a href="http://www.uni-bell.org">www.uni-bell.org</a></td>
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<td>USITT</td>
<td>United States Institute for Theatre Technology, Inc, (800) 938-7488</td>
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<td><a href="http://www.usitt.org">www.usitt.org</a></td>
<td>(315) 463-6463</td>
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<td>WASTEC</td>
<td>Waste Equipment Technology Association, (800) 424-2869</td>
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<td><a href="http://www.wastec.org">www.wastec.org</a></td>
<td>(202) 244-4700</td>
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<td>WCLIB</td>
<td>West Coast Lumber Inspection Bureau, (800) 283-1486</td>
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<td><a href="http://www.wclib.org">www.wclib.org</a></td>
<td>(503) 639-0651</td>
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<td>WCMA</td>
<td>Window Covering Manufacturers Association, (800) 506-4636</td>
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<tr>
<td>(See WCSC)</td>
<td>(212) 661-4261</td>
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<tr>
<td><a href="http://www.windowcoverings.org">www.windowcoverings.org</a></td>
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<tr>
<td>WCSC</td>
<td>Window Covering Safety Council, (800) 223-2301</td>
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<tr>
<td>(Formerly: WCMA - Window Covering Manufacturers Association)</td>
<td>(847) 299-5200</td>
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<td><a href="http://www.windowcoverings.org">www.windowcoverings.org</a></td>
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<tr>
<td>WDMA</td>
<td>Window &amp; Door Manufacturers Association, (800) 550-7889</td>
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<tr>
<td>(Formerly: NWWDA - National Wood Window and Door Association)</td>
<td>(530) 661-9591</td>
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<td><a href="http://www.wDMA.com">www.wDMA.com</a></td>
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<td>WIC</td>
<td>Woodwork Institute of California, (916) 372-9943</td>
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<td><a href="http://www.wicnet.org">www.wicnet.org</a></td>
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<td>WMMPA</td>
<td>Wood Moulding &amp; Millwork Producers Association, (800) 725-0333</td>
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<td><a href="http://www.wmmpa.com">www.wmmpa.com</a></td>
<td>(650) 548-0112</td>
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<td>WSRCA</td>
<td>Western States Roofing Contractors Association, (800) 725-0333</td>
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<td><a href="http://www.wsrca.com">www.wsrca.com</a></td>
<td>(650) 548-0112</td>
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<tr>
<td>WWPA</td>
<td>Western Wood Products Association, (503) 224-3930</td>
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<td><a href="http://www.wwpa.org">www.wwpa.org</a></td>
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C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and websites are provided.
D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CE               Army Corps of Engineers  
                  www.usace.army.mil  

CPSC             Consumer Product Safety Commission  
                  www.cpsc.gov  

DOC              Department of Commerce  
                  www.doc.gov  

EPA             Environmental Protection Agency  
                  www.epa.gov  

FAA             Federal Aviation Administration  
                  www.faa.gov  

FDA             Food and Drug Administration  
                  www.fda.gov  

GSA             General Services Administration  
                  www.gsa.gov  

REFERENCES      014200 - 14  
                  FEBRUARY 12, 2019
E. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Names, telephone numbers, and Web-site addresses are subject to change and are believed to be accurate and up-to-date as of the date of the Contract Documents.

CAPUC  (See CPUC)

CBHF  State of California, Department of Consumer Affairs
      Bureau of Home Furnishings and Thermal Insulation
      www.dca.ca.gov/bhfti

CPUC  California Public Utilities Commission
      www.cpuc.ca.gov

REFERENCES  014200 - 15  FEBRUARY 12, 2019
TFS Texas Forest Service  
Forest Products Laboratory  
www.txforestservicetamu.edu

PART 2 - PRODUCTS (Not Used)  

PART 3 - EXECUTION (Not Used)  

END OF SECTION 014200
SECTION 015000 – TEMPORARY FACILITIES AND CONTROLS

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.

1.2 SUMMARY
A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

B. Temporary utilities required include but are not limited to:
   1. Water service and distribution.
   2. Temporary electric power and light.
   3. Temporary heat.

C. Temporary construction and support facilities to be provided by the General Contractor include, but are not limited to:
   1. Field offices and storage sheds as needed.
   2. Temporary enclosures.
   3. Waste disposal services.
   4. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities to be provided by the General Contractor include, but are not limited to:
   1. Barricades, warning signs, lights.
   2. Enclosure fence for the site if needed.
   3. Environmental protection if needed.

1.3 SUBMITTALS
A. Temporary Utilities: Submit reports of tests, inspections, meter readings and similar procedures performed on temporary utilities.

1.4 QUALITY ASSURANCE
A. Regulations: Comply with industry standards and applicable laws and regulations if authorities having jurisdiction, including but not limited to:
   1. Building Code requirements.
   2. Health and safety regulations.
   3. Utility company regulations.
   4. Police, Fire Department and Rescue Squad rules.
5. Environmental protection regulations.


1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", prepared jointly by AGC and ASC, for industry recommendations.
2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.5 PROJECT CONDITIONS

A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.

B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials; if acceptable to the Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.

B. Lumber and Plywood: Comply with requirements in Division 06 Section "Rough Carpentry."

1. For fences and vision barriers, provide exterior type, minimum 3/8" thick plywood.
2. For safety barriers, sidewalk bridges and similar uses, provide minimum 5/8" thick exterior plywood.

C. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.

D. Water: Provide potable water approved by local health authorities.

E. Open-Mesh Fencing: Provide 11-gage, galvanized 2-inch, chain link fabric fencing 6-feet high with galvanized barbed wire top strand and galvanized steel pipe posts, 1-1/2" I.D. for line posts and 2-1/2" I.D. for corner posts.
2.2 EQUIPMENT

A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.

B. Water Hoses: Provide 3/4" heavy-duty, abrasion-resistant, flexible rubber hoses 100 ft. long, with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas where construction activities are in progress.

E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures, where exposed to breakage. Provide exterior fixtures where exposed to moisture.

F. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.

G. First Aid Supplies: Comply with governing regulations.

H. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.

1. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of fire exposure

PART 3 - EXECUTION

3.1 INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.
3.2 TEMPORARY UTILITY INSTALLATION – (IF NEEDED)

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.

1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.
2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.
3. Obtain easements to bring temporary utilities to the site, where the Owner's easements cannot be used for that purpose.
4. Install and operate temporary lighting that will fulfill security and protection requirements, without operating the entire system, and will provide adequate illumination for construction operations and traffic conditions.

B. Temporary Telephones: Provide temporary telephone service for all personnel engaged in construction activities, throughout the construction period. Install telephone on a separate line for each temporary office and first aid station. Where an office has more than two occupants, install a telephone for each additional occupant or pair of occupants.

1. At each telephone, post a list of important telephone numbers.

C. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If sewers are not available or cannot be used, provide drainage ditches, dry wells, stabilization ponds and similar facilities. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off the site in a lawful manner.

1. Filter out excessive amounts of soil, construction debris, chemicals, oils and similar contaminants that might clog sewers or pollute waterways before discharge.
2. Connect temporary sewers to the municipal system as directed by the sewer department officials.
3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. Following heavy use, restore normal conditions promptly.

D. Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

3.3 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access if facilities are required.

1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. Storage and Fabrication Sheds: Install storage and fabrication sheds, sized, furnished and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces within the building or elsewhere on the site.

C. Toilets: Use of the Owner's existing toilet facilities will be permitted, so long as facilities are cleaned and maintained in a condition acceptable to the Owner. At Substantial Completion, restore these facilities to the condition prevalent at the time of initial use.
D. Drinking Water Facilities: Containerized tap-dispenser bottled-water type drinking water units, including paper supply to be provided by General Contractor.
   
   1. Where power is accessible, provide electric water coolers to maintain dispensed water temperature at 45 to 55 deg F (7 to 13 deg C).

E. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Division 02 Sections. Where feasible, utilize the same facilities. Maintain the site, excavations and construction free of water.

F. Temporary Enclosures: General Contractor shall provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
   
   1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
   
   2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of 25 square feet or less with plywood or similar materials.
   
   3. Close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Architect.

   
   1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor at or near each usable stairwell.
   
   2. Store combustible materials in containers in fire-safe locations.
   
   3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas.
   
   4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.

C. Site Enclosure Fence: Before construction operations begin, furnish and install site enclosure fence in a manner that will prevent people and animals from easily entering site except by entrance gates.
   
   1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations. Unless otherwise indicated on Drawings.
   
   2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

D. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform
personnel and the public of the hazard being protected against. Where appropriate and needed provide lighting, including flashing red or amber lights.

E. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
   1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

F. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

3.5 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   4. Disposal: Remove waste materials from Owner's property and legally dispose of them.

3.6 OPERATION, TERMINATION AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation and similar facilities on a 24-hour day basis where required to achieve indicated results and to avoid possibility of damage.
   2. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.

C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged Work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification signs.
   2. Remove temporary paving that is not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that does not comply with requirements for fill or subsoil in the area. Remove materials contaminated
with road oil, asphalt and other petrochemical compounds, and other substances which might impair growth of plant materials or lawns. Repair or replace street paving, curbs and sidewalks at the temporary entrances, as required by the governing authority.

3. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:

   a. Replace air filters and clean inside of ductwork and housings.
   b. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
   c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION 015000
SECTION 016000 – PRODUCT REQUIREMENTS

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.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

B. The Contractor's Construction Schedule is included under Section "Submittal Procedures."

C. Administrative procedures for handling requests for substitutions made after award of the Contract are included under Section "Substitution Procedures."

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms such are self-explanatory and have well recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

   a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

   b. "Foreign Products", as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside of the United States and its possessions; or produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of nor living within the United States and its possessions.

2. "Materials" are products that are substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

B. Basis-of-Design Product Specification: A specification in which a specific manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.
1.4 SUBMITTALS

A. Product List Schedule: Prepare a schedule showing products specified in a tabular form acceptable to the Architect. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.

1. Coordinate the product list schedule with the Contractor's Construction Schedule.
2. Form: Prepare the product listing schedule with information on each item tabulated under the following column headings:
   a. Related Specification Section number.
   b. Generic name used in Contract Documents.
   c. Proprietary name, model number and similar designations.
   d. Manufacturer's and name and address.
   e. Supplier's name and address.
   f. Installer's name and address.
   g. Projected delivery date, or time span of delivery period.

3. Completed Schedule: Within 2 business days after date of commencement of the Work, submit 3 copies of the completed product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.

4. Architect/Engineer's Action: The Architect will respond in writing to the Contractor within 2 business days of receipt of the completed product list schedule. No response within this time period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents. The Architect response will include the following:
   a. A list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.5 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

1. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.

B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

C. Foreign Product Limitations: Except under one or more of the following conditions, provide domestic products, not foreign products, for inclusion in the Work:

1. No available domestic product complies with the Contract Documents.
2. Domestic products that comply with Contract Document are only available at prices or terms that are substantially higher than foreign products that also comply with the Contract Documents.
1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
7. Store products subject to damage by the elements above ground, under cover in a weathertight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.

1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:

1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.
2. Semiproprietary Specification Requirements: Where two or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
   a. Where products or manufacturers are specified by name, accompanied by the term "or equal," or "or approved equal" comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
3. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

5. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements, and are recommended by the manufacturer for the application indicated. General overall performance of a product is implied where the product is specified for a specific application.

   a. Manufacturer's recommendations may be contained in published product literature, or by the manufacturer's certification of performance.

6. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.

7. Visual Matching: Where Specifications require matching an established Sample, the Architect/Engineer's decision will be final on whether a proposed product matches satisfactorily.

   a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.

8. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect/Engineer will select the color, pattern and texture from the product line selected.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS:

   A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

   1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 016000
SECTION 017300 - EXECUTION

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.

1.2 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:

2. Installation of the Work.
3. Cutting and patching.
4. Protection of installed construction.

B. Related Sections include the following:

1. Division 01 Section "Submittal Procedures" for submitting surveys.
2. Division 01 Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
3. Division 02 Section "Selective Demolition" for demolition and removal of selected portions of the building.

1.3 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:

1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
3. Products: List products to be used and firms or entities that will perform the Work.
4. Dates: Indicate when cutting and patching will be performed.
5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.

6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.

7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.5 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety. Operating elements include the following:

1. Primary operational systems and equipment.
2. Air or smoke barriers.
3. Fire-suppression systems.
4. Mechanical systems piping and ducts.
5. Control systems.
6. Communication systems.
7. Conveying systems.
8. Electrical wiring systems.
9. Operating systems of special construction in Division 13 Sections.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity that results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety. Miscellaneous elements include the following:

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior curtain-wall construction.
4. Equipment supports.
5. Piping, ductwork, vessels, and equipment.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

E. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
1.6 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize or prevent interruption to occupied areas.

3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect and Construction Manager promptly.
B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.

C. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.

D. Establish limits on use of Project site.

E. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.

F. Inform installers of lines and levels to which they must comply.

G. Check the location, level and plumb, of every major element as the Work progresses.

H. Notify Architect when deviations from required lines and levels exceed allowable tolerances.

I. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

J. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

K. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

L. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect and Construction Manager.

3.4 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
E. Sequence the Work and allow adequate clearances to accommodate movement of construction items on site and placement in permanent locations.

F. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

G. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size and number to securely anchor each component in place, accurately located and aligned with other portions of the Work. Where size and type of attachments are not indicated, verify size and type required for load conditions.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
2. Allow for building movement, including thermal expansion and contraction.
3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

J. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.5 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Division 02 Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.
C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
   b. Restore damaged pipe covering to its original condition.

3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
   a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.
SECTION 017700 – CLOSEOUT PROCEDURES

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.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

1. Inspection procedures.
2. Project record document submittal.
3. Operating and maintenance manual submittal.
4. Submittal of warranties.
5. Final cleaning.

B. Closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 02 through 26.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
   a. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

2. Advise Owner of pending insurance change-over requirements.
3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications and similar documents.
4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities; include occupancy permits, operating certificates and similar releases.
5. Submit record drawings, maintenance manuals, and similar final record information.
6. Deliver tools, spare parts, extra stock, and similar items.
7. Make final change-over of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of change-over in security provisions.
8. Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
9. Complete final clean up requirements, including touch-up painting. Touch-up and otherwise repair and restore marred exposed finishes.

B. Inspection Procedures: On receipt of a request for inspection, the Architect will either proceed with inspection or advise the Contractor of unfilled requirements. The Architect will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Architect will repeat inspection when requested and assured that the Work has been substantially completed.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Architect's final inspection list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance, and the list has been endorsed and dated by the Architect.
4. Submit consent of surety to final payment.
5. Submit a final liquidated damages settlement statement.
6. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Reinspection Procedure: The Architect will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect.

1. Upon completion of reinspection, the Architect will prepare a certificate of final acceptance, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, reinspection will be repeated.

1.5 RECORD DOCUMENT SUBMITTALS

A. General: Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistant location; provide access to record documents for the Architect's reference during normal working hours.

B. Record Drawings: Maintain a clean, undamaged set of blue or black line white-prints of Contract Drawings and Shop Drawings. Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.

1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
3. Note related Change Order numbers where applicable.
4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.

C. Record Sample Submitted: Immediately prior to the date or dates of Substantial Completion, the Contractor will meet at the site with the Architect and the Owner's personnel to determine which of the submitted Samples that have been maintained during progress of the Work are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's Sample storage area.

D. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record-keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect for the Owner's records.

E. Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual heavy-duty 2-inch, 3-ring vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information:

1. Emergency instructions.
2. Spare parts list.
4. Wiring diagrams.
5. Recommended "turn around" cycles.
6. Inspection procedures.
7. Shop Drawings and Product Data.
8. Fixture lamping schedule.

1.6 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 30 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (215-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

D. Provide additional copies of each warranty to include in operation and maintenance manuals.
PART 3 - EXECUTION

3.1 CONTRACT CLOSEOUT

A. Operating and Maintenance Instructions: Arrange for each installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. If installers are not experienced in procedures, provide instruction by manufacturer's representatives. Include a detailed review of the following items:

1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Tools.
5. Lubricants.
6. Identification systems.
7. Control sequences.
8. Hazards.
10. Warranties and bonds.
11. Maintenance agreements and similar continuing commitments.

B. As part of instruction for operating equipment, demonstrate the following procedures:

1. Start-up.
2. Shutdown.
3. Emergency operations.
5. Safety procedures.
7. Effective energy utilization.

3.2 FINAL CLEANING

A. General: General cleaning during construction is required by the General Conditions and included in Section "Temporary Facilities and Controls".

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

1. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

   a. Remove labels that are not permanent labels.
   b. Clean transparent materials, including mirrors and glass in doors and windows.
   c. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films and similar foreign substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.
d. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

C. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

1. Where extra materials of value remaining after completion of associated Work have become the Owner's property, arrange for disposition of these materials as directed.

END OF SECTION 017700
SECTION 017823 - OPERATION AND MAINTENANCE DATA

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.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1. Operation and maintenance documentation directory.
2. Emergency manuals.
3. Operation manuals for systems, subsystems, and equipment.
4. Maintenance manuals for the care and maintenance of products, materials, and finishes systems and equipment.

B. Related Sections include the following:

1. Division 01 Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
2. Division 01 Section "Closeout Procedures" for submitting operation and maintenance manuals.
3. Division 01 Section "Project Record Documents" for preparing Record Drawings for operation and maintenance manuals.
4. Divisions 02 through 26 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.3 DEFINITIONS

A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.

B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 CLOSEOUT SUBMITTALS

A. Manual Content: Operations and maintenance manual content is specified in individual Specification Sections to be reviewed at the time of Section submittals. Submit reviewed manual content formatted and organized as required by this Section.

1. Architect will comment on whether content of operations and maintenance submittals are acceptable.
2. Where applicable, clarify and update reviewed manual content to correspond to revisions and field conditions.

B. Format: Submit operations and maintenance manuals in the following format:
   a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.
   b. Enable inserted reviewer comments on draft submittals.


C. Initial Manual Submittal: Submit draft copy of each manual at least 30 days before commencing demonstration and training. Architect will comment on whether general scope and content of manual are acceptable.

D. Final Manual Submittal: Submit each manual in final form prior to requesting inspection for Substantial Completion and at least 15 days before commencing demonstration and training. Architect will return copy with comments.

1. Correct or revise each manual to comply with Architect's comments. Submit copies of each corrected manual within 15 days of receipt of Architect's comments and prior to commencing demonstration and training.

1.5 COORDINATION

A. Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

A. Organization: Include a section in the directory for each of the following:

1. List of documents.
2. List of systems.
3. List of equipment.
4. Table of contents.

B. List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

C. List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

D. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

E. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, "Preparation of Operating and Maintenance Documentation for Building Systems."
2.2 REQUIREMENTS FOR EMERGENCY, OPERATION, AND MAINTENANCE MANUALS

A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

1. Title page.
2. Table of contents.

B. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Subject matter included in manual.
2. Name and address of Project.
3. Name and address of Owner.
4. Date of submittal.
5. Name, address, and telephone number of Contractor.
6. Name and address of Architect.
7. Cross-reference to related systems in other operation and maintenance manuals.

C. Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

E. Manuals, Electronic Files: Submit manuals in the form of a multiple file composite electronic PDF file for each manual type required.

1. Electronic Files: Use electronic files prepared by manufacturer where available. Where scanning of paper documents is required, configure scanned file for minimum readable file size.
2. File Names and Bookmarks: Enable bookmarking of individual documents based on file names. Name document files to correspond to system, subsystem, and equipment names used in manual directory and table of contents. Group documents for each system and subsystem into individual composite bookmarked files, then create composite manual, so that resulting bookmarks reflect the system, subsystem, and equipment names in a readily navigated file tree. Configure electronic manual to display bookmark panel on opening file.

F. Manuals, Paper Copy: Submit manuals in the form of hard copy, bound and labeled volumes.

1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch (215-by-280-mm) paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

   a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.
b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and subject matter of contents. Indicate volume number for multiple-volume sets.

2. Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

3. Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.


5. Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.
   a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
   b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 EMERGENCY MANUALS

A. Content: Organize manual into a separate section for each of the following:
   1. Type of emergency.
   2. Emergency instructions.
   3. Emergency procedures.

B. Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:
   1. Fire.
   2. Flood.
   5. Power failure.
   7. System, subsystem, or equipment failure.
   8. Chemical release or spill.

C. Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of Owner's operating personnel for notification of Installer, supplier, and manufacturer to maintain warranties.

D. Emergency Procedures: Include the following, as applicable:
   1. Instructions on stopping.
   2. Shutdown instructions for each type of emergency.
   3. Operating instructions for conditions outside normal operating limits.
   4. Required sequences for electric or electronic systems.
   5. Special operating instructions and procedures.
2.4 OPERATION MANUALS

A. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

1. System, subsystem, and equipment descriptions.
2. Performance and design criteria if Contractor is delegated design responsibility.
3. Operating standards.
4. Operating procedures.
5. Operating logs.
6. Wiring diagrams.
7. Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

B. Descriptions: Include the following:

1. Product name and model number.
2. Manufacturer's name.
3. Equipment identification with serial number of each component.
4. Equipment function.
5. Operating characteristics.
6. Limiting conditions.
7. Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

C. Operating Procedures: Include the following, as applicable:

1. Startup procedures.
2. Equipment or system break-in procedures.
3. Routine and normal operating instructions.
4. Regulation and control procedures.
5. Instructions on stopping.
7. Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

D. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

E. Piped Systems: Diagram piping as installed and identify color-coding where required for identification.

2.5 PRODUCT MAINTENANCE MANUAL

A. Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

B. Source Information: List each product included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer.
or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Product Information: Include the following, as applicable:

1. Product name and model number.
2. Manufacturer's name.
3. Color, pattern, and texture.
5. Reordering information for specially manufactured products.

D. Maintenance Procedures: Include manufacturer's written recommendations and the following:

1. Inspection procedures.
2. Types of cleaning agents to be used and methods of cleaning.
3. List of cleaning agents and methods of cleaning detrimental to product.
4. Schedule for routine cleaning and maintenance.
5. Repair instructions.

E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

2.6 SYSTEMS AND EQUIPMENT MAINTENANCE MANUAL

A. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.

B. Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

C. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

1. Standard printed maintenance instructions and bulletins.
2. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
3. Identification and nomenclature of parts and components.
4. List of items recommended to be stocked as spare parts.

D. Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

1. Test and inspection instructions.
2. Troubleshooting guide.
3. Precautions against improper maintenance.
4. Disassembly; component removal, repair, and replacement; and reassembly instructions.
5. Aligning, adjusting, and checking instructions.
6. Demonstration and training videotape, if available.

E. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

1. Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semiannual, and annual frequencies.
2. Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

F. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

G. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

H. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

1. Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

A. Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

B. Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by Owner's operating personnel for types of emergencies indicated.

C. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

D. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

1. Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.
2. Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by Owner's operating personnel.

E. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

F. Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

1. Do not use original Project Record Documents as part of operation and maintenance manuals.
2. Comply with requirements of newly prepared Record Drawings in Division 01 Section "Project Record Documents."

G. Comply with Division 01 Section "Project Closeout" for schedule for submitting operation and maintenance documentation.

END OF SECTION 017823
SECTION 017839 - PROJECT RECORD DOCUMENTS

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.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

B. Related Sections include the following:

1. Division 01 Section "Closeout Procedures" for general closeout procedures.
2. Division 01 Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
3. Divisions 02 through 26 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.3 SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of Record Drawings as follows:
   a. Initial Submittal: Submit one set of PDF files of scanned marked-up Record Prints. Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable. Architect will return documents for corrections, organizing into sets, scanning, and final submittal.
   b. Final Submittal: Submit one set of Record PDF Drawing plots and one copy printed from record plots. Plot and print each Drawing, whether or not changes and additional information were recorded.

      1) Electronic Media: CD-R.

B. Record Specifications: Submit one copy of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one copy of each Product Data submittal.

1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in manual instead of submittal as Record Product Data.
PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

A. Record Prints: Maintain one set of blue- or black-line white prints of the Contract Drawings and Shop Drawings.

1. Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an understandable drawing technique.
   c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.

2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations below first floor.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order or Construction Change Directive.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.

4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

5. Mark important additional information that was either shown schematically or omitted from original Drawings.

6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Newly Prepared Record Drawings: Prepare new Drawings instead of preparing Record Drawings where Architect determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting an alternate, substitution, or other modification.

2. Consult Architect for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared Record Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.
C. Format: Identify and date each Record Drawing; include the designation “PROJECT RECORD DRAWING” in a prominent location.

1. Record Prints: Organize Record Prints and newly prepared Record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Record PDF Drawings: Organize sheets into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification.

2.2 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders, Record Product Data, and Record Drawings where applicable.

2.3 RECORD PRODUCT DATA

A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer’s written instructions for installation.
3. Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.
B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

END OF SECTION 017839
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Identify, disconnect, cap, and remove designated utilities.
   2. Demolish and remove designated pavements.
   3. Remove designated fencing system.
   4. Owner retained material.
   5. Material scheduled for re-installation.
   6. Remove demolition materials from site.

B. Related Sections: Section 31 02 00 – General Requirements for Sitework
   1. Applicable provisions of Section 31 02 00 - General Requirements for Site Work shall govern Work under this Section.
   2. Section 02 41 15 – Utility Removal: Removal or abandonment of designated site services.
   3. Section 31 05 13 – Soils for Earthwork: Subsoil backfill material.
   4. Section 31 05 16 – Aggregates for Earthwork: Granular backfill material.

1.2 SUBMITTALS

A. Section 31 02 00 - General Requirements for Site Work Requirements for submittals.

B. Submit demolition removal procedures and schedule.

C. Submit project record documents under provisions of Section 31 02 00 - General Requirements for Site Work
   1. Record drawings should accurately identify location of utilities capped off or abandoned in place, location of foundations or appurtenances abandoned and covered, or items remaining that would affect future work on site.

1.3 REGULATORY REQUIREMENTS

A. Comply with local, state, and federal codes, rules and regulations applicable to demolition work including but not limited to erosion control, air pollution, noise pollution, and waste disposal.

B. Contractor shall obtain and pay for permits required for demolition work.

1.4 PROJECT SITE CONDITIONS

A. Conduct demolition to minimize interference with adjacent structures.

B. Maintain protected egress and access at all times.

C. Provide, erect, and maintain temporary barriers and security devices.
D. Conduct operations with minimum interference to public or private thoroughfares.

E. Do not close or obstruct roadways and sidewalks without permits.

1.5 SITE DEMOLITION REQUIREMENTS

A. Traffic Control Signs:
   1. Where pedestrian and driver safety is endangered in area of removal work, use traffic barricades with flashing lights.
   2. Anchor barricades in a manner to prevent displacement by wind.

B. Items to Remain in Place:
   1. Take necessary precautions to avoid damage to existing items scheduled to remain in place, to be reused, or to remain property of Owner.
   2. Repair or replace damaged items as approved by Owner’s Representative.
   3. Construct and maintain shoring, bracing, and supports as required.
   4. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, or demolition work performed.
   5. Do not overload structural elements pavements to remain.
   6. Provide new supports and reinforcement for existing construction weakened by demolition or removal work.
   7. Repairs, reinforcement, or structural replacement require approval by Owner’s Representative prior to performing such work.

C. Existing Conditions:
   1. Before beginning any demolition work, survey project site and examine drawings and specifications to determine extent of demolition work.
   2. Protect trees within project site which might be damaged during demolition, and which are indicated to be left in place.
   3. Replace any tree designated to remain that is damaged during the work under this contract with like and kind or as approved by Owner’s Representative.
   4. Maintain existing utilities indicated to stay in service and protect against damage during demolition operations.
   5. Prior to start of work, utilities serving each area of alteration or removal will be shut off by Utility Owner and disconnected and sealed by Contractor.

1.6 HAZARDOUS MATERIALS

A. If Contractor encounters a hazardous material during demolition process, it shall cease operations immediately and notify Owner and Owner’s Representative of its findings.

B. Owner will employ a Contractor, experienced and certified in removal and disposal of hazardous substances to perform removal and disposal work.

C. Contractor shall not reinstate demolition operations until areas have been cleared for continuation of demolition work.
PART 2 - PRODUCTS – (Not Used)

PART 3 - EXECUTION

3.1 NOTIFICATION

A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) all utilities, governmental agencies, entities, known to, or which can reasonably be assumed to have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.

B. In accordance with Illinois Statute 220 ILCS 50, "Illinois Underground Utility Facilities Damage Protection Act," every "Person" as defined in 50/2.1 shall be solely responsible to provide advance notice to “Julie, Inc.” (800-892-0123) or, within the City of Chicago, to “Digger” (312-744-7000) not more than fourteen nor less than two working days prior to commencement of any Excavation or Demolition, as defined in the statute, required to perform work contained in this Project, and further said "Person" shall comply with all other requirements of this Statute relative to Excavator's Work.

3.2 PREPARATION

A. Prevent movement or settlement of adjacent structures scheduled to remain.

B. Provide bracing and shoring of adjacent structures scheduled to remain.

C. Protect existing landscaping materials, appurtenances and structures which are not to be demolished.

D. Disconnect, cap, and remove designated utility lines.

E. Cooperate and work with local utility company to provide removal and disconnection of designated services.

F. Mark location of disconnected utilities. Identify utilities and indicate capping locations on Project Record Documents.

3.3 DEMOLITION AND REMOVAL

A. Except where specified in other sections, all materials and equipment removed, and not reused or salvaged shall become property of the Contractor.

B. Demolish designated items and appurtenances in accordance with removal procedure and schedule.

C. Cease operations and notify Owner’s Representative immediately if adjacent structures or landscape features appear to be endangered.

D. Do not resume operations until corrective measures have been taken.
E. Immediately remove demolished material from site unless approved demolition procedure and schedule submitted in accordance with this section provides otherwise.

F. Relics, antiques, and similar objects remain property of Owner.

G. Notify Owner’s Representative prior to removal and obtain acceptance regarding method of removal.

H. Remove materials to be re-installed or retained in manner to prevent damage.

I. Remove and promptly dispose of contaminated, vermin infested, or dangerous materials encountered.

J. Do not burn or bury materials on site.

K. Remove foundations and footings completely.

L. Demolish and remove designated concrete pavement completely which includes:
   1. Curb and Gutter.

M. Demolish and remove designated asphalt pavement completely which includes:
   1. Tennis Courts.

N. Neatly saw cut pavement edges at right angle to surface to complete depth of pavement prior to shattering or mechanical removal.

O. Keep work sprinkled to minimize dust. Provide hoses and water main or hydrant connections for this purpose. Obtain permits and pay for water usage as required by Local Water Utility.

P. Backfill areas excavated, open pits, and holes caused as a result of demolition with Type S1 or S2 subsoil specified in Section 31 05 13 – Soils for Earthwork and Type CA-6 fill specified in 31 05 16 – Aggregates for Earthwork.

Q. Rough grade and compact areas affected by building demolition to maintain and blend site grades and contours as indicated on Drawings.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Disconnection, removal, and disposal of below grade utility services.
   2. Removal, and disposal of existing utility structures.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 - General Requirements for Site Work shall
      govern Work under this Section.
   2. Section 31 05 13 – Soils for Earthwork: Subsoil fill.
   3. Section 31 05 16 – Aggregates for Earthwork: Gravel, sand or stone fill.
   4. Section 31 23 17 – Site Excavation, Backfill, and Compaction: Backfilling of abandoned or
      removed utility service excavations.
   5. Section 31 23 19 Site Dewatering.

1.2 REFERENCES

A. State of Illinois Department of Transportation:
   1. Standard Specifications for Road and Bridge Construction, Current Edition with latest
      supplements. (IDOT)

1.3 SUBMITTALS AT COMPLETION OF WORK

A. Section 31 02 00 - General Requirements for Site Work.

B. Section 31 02 00 - General Requirements for Site Work:
   1. Record horizontal and vertical depth locations of pipe and structure plugs.
   2. Identify, indicate, and describe unexpected variations to subsoil conditions or discovery of
      uncharted utilities.

1.4 REGULATORY REQUIREMENTS

A. Standard Specifications for Water & Sewer Main Construction in Illinois.
   State of Illinois Administrative Code, Department of Public Health, Plumbing Code, 77 Ill.
   Adm. Code 890 and local code if more stringent for materials and installation of the Work of
   this section.

B. Contractor shall comply with local, state, and federal regulations applicable to Work of this
   Section.

C. Contractor shall comply with and be solely responsible for compliance with U.S. Department of
   Labor OSHA Part 1926 Safety and Health Regulations for Construction for this Work.
D. Contractor performing Work of this Section shall be solely responsible for identifying, furnishing, installing and maintaining equipment and materials required by State and Federal regulations to establish safe working conditions during Work of this Section.

PART 2 - PRODUCTS

2.1 MATERIALS FOR UTILITY REMOVAL

A. Type S1 and S2 as specified in Section 31 05 13 – Soils for Earthwork:
   1. Consisting of loam, clay, gravel, sands or mixtures, for use as non-structural fill, within non-paved and non-foundation areas of project.
   2. Fill requires prior approval by Owner’s Representative upon written request from Contractor.
   3. Fill shall be free of pavement fragments larger than three (3) inches, bituminous or concrete materials, vegetable or organic matter, all types of refuse and frozen material.

B. Sand Fill: Aggregate Type A13 as specified in Section 31 05 16 – Aggregates for Earthwork.

C. Bulkhead Concrete:
   1. 3000 psi at 28 days.
   2. 3/4-inch maximum aggregate size.
   3. 4-inch slump.
   4. 423 pounds Portland Cement Type IA per cubic yard.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Utility services shall be maintained until removal is authorized by Owner’s Representative.

B. Contact Municipal Utility to identify and locate point of connection of utility lateral to site service line.

C. Verify Municipal Utility requirements for disconnection of utility service at property line. Obtain necessary permits.

D. Existing site utility service lines shall be removed in their entirety as identified on Drawings.

E. Utility structures including but not limited to manholes, cleanouts, inlet basins, and similar appurtenances shall be removed in their entirety including any concrete footings.

3.2 NOTIFICATION

A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) all utilities, governmental agencies, entities, known to, or which can reasonably be assumed to, have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.
B. In accordance with Illinois Statute 220 ILCS 50, "Illinois Underground Utility Facilities Damage Protection Act," every "Person" as defined in 50/2.1 shall be solely responsible to provide advance notice to “Julie, Inc.” (800-892-0123) or, within the City of Chicago, to “Digger” (312-744-7000) not more than fourteen nor less than two working days prior to commencement of any Excavation or Demolition, as defined in the statute, required to perform work contained in this Project, and further said "Person" shall comply with all other requirements of this Statute relative to Excavator's Work.

3.3 STORM SEWER REMOVAL

A. Locate and identify alignment of storm sewer utility service lines on site and their connection to Public Utility as indicated on Drawings.

B. Contractor shall uncover connection of utility at property line.

C. Existing connection where storm sewer terminate in manhole or pipe shall be securely plugged to prevent entry of construction water and debris into municipal active system.

D. Contractor shall be responsible to verify that plug(s) are in place at end of each workday.

E. Contractor shall remove any water or debris from terminal manhole as required but not less than once a week.

F. Remove a length of site pipe from joint at utility lateral at property line or at point in right of way required by Municipal Utility. Saw cut clean vertical joint in pipe if joint is not present at property line.

G. Insert a Municipal Utility approved plug in end of utility lateral. Place a concrete bulkhead against end of plug and pipe.

H. Procedure for removal of storm sewer site lines and appurtenances.
   1. Excavate, and dispose of properly off site, existing pipe service lines, manholes and similar appurtenances.
   2. Stockpile acceptable excavated material for reuse on site.
   3. Backfill and compact excavations in accordance with Article 3.6.

3.4 DRAINAGE STRUCTURE REMOVAL

A. Service shall be maintained in existing sewers until Owner’s Representative shall order bulkheads placed.

B. Bulkhead existing sewers that are no longer in use and abandon as indicated.

C. Remove structures full depth including concrete base.

3.5 BACKFILL AND COMPACTION

A. Place and compact backfill in accordance with Section 21 23 17 – Site Excavation, Backfill and Compaction.
3.6 FIELD QUALITY CONTROL

A. Section 31 02 00 - General Requirements for Site Work: Field inspection and testing.

B. Request inspection prior to placing backfill.

END OF SECTION
SECTION 31 02 00
GENERAL REQUIREMENTS FOR SITEWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section governs only technical specifications related to site work construction.

B. Section Includes:
   1. Definitions.
   2. Field Engineering.
   3. Pre-installation Meeting.
   4. Demonstration and Training Meeting.
   5. Submittal Procedures.
   7. Quality Control Requirements.
   8. Erosion and Sediment Control.

C. Related Divisions:
   1. Division 02 – Existing Conditions.
   2. Division 31 – Earthwork.
   4. Division 33 – Utilities.

1.2 DEFINITIONS

A. Field Engineering: Contractor’s establishment of elevations, lines, and levels as indicated on Drawings, utilizing recognized engineering survey practices.

B. Pre-installation Meeting: Meeting to discuss a product or material, typically complex in nature, and review manufacturer’s precautions, restrictions, and installation procedures.

C. Demonstration and Training Meeting: Contractor and/or manufacturer representative administered demonstration and training sessions for Owner for each portion of equipment and products that are required to have training in proper operation and maintenance.

D. Submittal Procedures: Specified requirements regarding procedures related to submission of product data, Shop Drawings, manufacturer’s certificates, and substitutions.


F. Quality Control: Inspection, analysis, and other relevant actions taken to provide control over what is being done, manufactured, or fabricated, so that a desirable level of quality is achieved and maintained during duration of the Work.
G. Erosion and Sediment Control: Enforcement of state law and city or county ordinance for erosion and sediment control including installation, maintenance, and regular Contractor inspection and repair.

H. Proposed Product List: Prepared listing of all materials and products intended to be used for site work related to sewer and water utilities, aggregates, and soils, and pavement mix designs.

I. Product Requirements: Product information regarding manufacturer’s data, preparation, fabrication, conveying and erection of Work including material, machinery, components, equipment, fixtures, and systems incorporated in Work.

J. Project Closeout Procedures: Process that provides acceptance of project by Owner including verification and documentation of required project records, and retention of other essential project documentation.

1.3 FIELD ENGINEERING

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

B. Contractor shall locate and protect survey control and reference points. Promptly notify Owner’s Representative of discrepancies discovered.

C. Control datum for survey is that shown on Drawings.

D. Verify setbacks and easements; confirm drawing dimensions and elevations.

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

F. Submit copy of site drawing and certificate signed by registered Land Surveyor certifying elevations and locations of the Work are in conformance with Contract Documents.

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

1.4 PREINSTALLATION MEETING

A. When required in individual specification sections, convene preinstallation meeting 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’s Representative 7 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. Record minutes and distribute copies within two (2) days after meeting to participants, with two (2) copies to Owner’s Representative and those affected by decisions made.
1.5 DEMONSTRATION AND TRAINING MEETING

A. Contractor shall schedule and administer demonstration and training sessions for Owner for each portion of equipment and products that are required to have training in proper operation and maintenance.

B. Contractor shall schedule representatives of equipment manufacturer to attend demonstration and training sessions to provide additional information as necessary.

1.6 SUBMITTAL PROCEDURES

A. Contractor shall provide Architect electronic PDF copies of specific submittal information regarding products and materials of this specification section with extended permission of Architect.

B. Submit Shop Drawings and product data in electronic PDF copies covering identified equipment and materials that will become a permanent part of Work to Architect for review.

C. Electronically submit material information, product data, and shop drawings in PDF format directly to Architect.

D. Shop Drawings and product data shall include drawings, descriptive information, and sufficient detail to show kind, size, arrangement, and operation of component materials and devices needed for installation and coordination with other materials and equipment.

E. All submittals, regardless of origin, shall be stamped with approval of Contractor and identified with name of the Project, Contractor’s name, and references to applicable specification sections and Drawings.

F. Each submittal shall indicate intended use of item in Work. When manufacturer data sheets are submitted, clearly identify applicable items and cross out inapplicable data.

G. Manufacturer’s data sheets shall be current and include issue number and date.

H. Contractor’s stamp of approval is a representation to Architect that Contractor accepts full responsibility for determining and verifying all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, and that Contractor reviewed and coordinated each submittal with requirements of the Work.

I. Contractor shall accept full responsibility for completeness of each submission. When an item consists of components from several sources, Contractor shall submit a complete initial submittal including all components.

J. Identify deviations from Specifications and Drawings on each submittal and tabulate in Contractor’s letter of transmittal. Such submittals shall indicate details of proposed changes, including modifications to other facilities that may result from deviation, and required piping and wiring diagrams.

K. Submit electronic PDF copies of each drawing and necessary data to Architect. Architect will return two marked copies to Contractor. Electronic copies will not be acceptable.
L. Architect will not accept submittals from anyone but Contractor.

M. Submittals shall be consecutively numbered in direct sequence of submittal and without division by subcontracts or trades.

N. Review of Shop Drawings and Product Data:
1. Architect’s review of Shop Drawings and product data will cover only general conformity to Drawings and Specifications, external connections, and dimensions that affect layout. Engineer/Architect’s review does not indicate a thorough review of all dimensions, quantities, and details of material, equipment, device, or item shown.
2. Architect’s review shall not relieve Contractor of Contractor’s responsibility for errors, omissions, or deviations in drawings and data, or of sole responsibility for compliance with the Work.
3. Architect’s submittal review period shall be a maximum of seven (7) days from date of submittal or resubmittal.
4. When Shop Drawings and data are returned marked “NOT ACCEPTABLE” or “RETURNED FOR CORRECTION”, Contractor shall make corrections as noted by Architect and resubmit six (6) corrected copies. Electronic copies will not be acceptable.
5. When Shop Drawings and product data are returned marked “EXCEPTIONS NOTED” or “APPROVED AS SUBMITTED”, no additional copies need be submitted unless requested by Architect at time of review.

O. Re-submittal of Shop Drawings and Product Data:
1. Contractor shall accept full responsibility for completeness of each re-submittal.
2. Contractor shall verify that resubmittal provides all corrected data and additional information previously requested by Architect.
3. When corrected files are re-submitted, Contractor shall indicate in writing revisions made.
4. Requirements specified for initial submittals also apply to re-submittals.
5. Re-submittals shall bear number of first submittal followed by a letter (A, B, etc.) to indicate sequence of re-submittal.
6. Make re-submittals within seven (7) days of date of letter returning material to be modified or corrected.

P. Substitutes and “Or-Equal” Items:
1. Whenever a material or article is specified or described by using a single name of a proprietary product or a single name of a particular manufacturer or vendor, specified item mentioned shall be understood as establishing type, function, and quality desired.
2. Whenever two or more names of proprietary products or particular manufacturers or vendors are used, it shall be understood that products of one named supplier shall be furnished with no options or substitutions allowed.
3. Products, materials, or equipment not specified by proprietary name and submitted as a proposed substitute shall be reviewed and approved or rejected by Architect [Owner’s Representative].

1.7 TRAFFIC CONTROL PLAN

A. Submit a traffic control plan for construction in public right-of-way in accordance with the "Manual on Uniform Traffic Control Devices.”
B. Data to be included on a traffic control plan will vary depending upon complexity of project, volume of traffic affected, and roadway geometrics where construction is being performed.

C. Traffic control plan must clearly depict exact sequence of construction operation(s), construction to be performed, and traveled way that will be utilized by all movements of traffic during each phase of construction.

D. Multiple phases of construction will require a separate traffic control plan for each different construction phase or operation.

1.8 QUALITY CONTROL REQUIREMENTS

A. Construction Notification:
   1. Contractor shall be responsible for locating existing underground installations in advance of excavating or trenching by contacting local utility identification agency.

B. Licenses, Permits, and Certificates:
   1. All licenses, permits, and certificates, required for, and in connection with site and utility work shall be secured by Contractor at their sole cost and expense.
   2. Contractor will be required to pay any permit fees required for utility work.
   3. Contractor shall comply with all requirements and recommendations of authority or authorities issuing license, permit, or certificate.

C. Easements and Rights-of-Way:
   1. Contractor will confine construction operations to areas designated on Drawings or identified by Owner’s Representative.
   2. Contractor shall use care in placement of construction tools, equipment, excavated materials, pipe materials, and supplies so as to minimize damage to property and minimize interference with the public.

D. Protection of Property:
   1. Contractor shall protect from damage or injury all property including survey monuments, property markers, and benchmarks. Items damaged shall be replaced or repaired at Contractor's expense.
   2. Locate existing utilities and utility services in advance of excavation and protect against damage. Changes in grade and alignment may be made to Work to avoid conflicts with existing structures if approved by Owner’s Representative.

E. Reference Standards:
   1. Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean latest edition of appropriate standard, specification, manual, code, law, or regulation in effect on date of first advertisement for the Work, unless specifically stated otherwise in Contract Documents.
   2. Should there be a conflict in Reference Standards, Contractor shall request clarification from Owner’s Representative before proceeding.

F. Compaction and Gradation Testing:
   1. Contractor shall provide and pay for compaction and gradation testing by an Owner’s Representative approved independent testing laboratory.
a. Make two (2) initial gradation tests for each type of bedding and backfill material, and make one additional gradation test for each additional 500 tons of each material.

b. Moisture-density (Proctor) tests and relative density tests on materials, and in-place field density tests, shall be made at intervals determined by Owner’s Representative.

c. Perform compaction and proof roll testing in accordance with procedures specified in Section 31 23 17 - Excavation, Backfill, and Compaction, and Section 32 11 23 – Aggregate Base Course.

G. Traffic Control - General:
1. Protect streets, roads, highways, and other public thoroughfares that are to be temporarily closed or restricted for traffic flow by effective barricades equipped with operational warning signals.
2. Locate barricades at nearest intersecting public highway or street on each side of blocked section.
3. Cover open trenches and other excavations with steel plates and have suitable barricades, signs, and lights to provide adequate protection to the public. Provide obstructions such as material piles and equipment with similar warning signs and lights.

H. Maintenance of Traffic:
1. Maintain effected traffic areas throughout duration of construction, in accordance with local, state, or federal requirements which govern Work area.
2. Contractor is responsible for maintaining traffic.
3. Contractor shall conduct work to minimize interference with traffic, vehicular or pedestrian.
4. Contractor shall obtain and pay for any permit required by local authority for areas where traffic will be obstructed.
5. Contractor shall provide and maintain suitable and safe bridges, detours, or other temporary measures for accommodating public and private travel.
6. Contractor shall provide at least 24 hours notice to owners of private drives before performing Work which would obstruct safe passage by drive owner.
7. Illuminate barricades and obstructions with warning lights from sunset to sunrise.
8. Store material storage and perform Work on or alongside public streets and highways to minimize obstruction and inconvenience to public.

I. Traffic Control Devices:
1. Contractor shall provide barricades, cones, construction warning signs, flagmen, and incidental devices to protect personnel and equipment on the Work site.

1.9 EROSION AND SEDIMENT CONTROL

A. Comply with requirements specified in Section 31 25 13 – Erosion and Sediment Controls and as indicated on Drawings.

1.10 PROPOSED PRODUCTS LIST

A. Within seven (7) days after date of Notice to Proceed, 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.
1.11 PRODUCT REQUIREMENTS

A. Products include material, equipment, and systems.

B. Comply with specifications and referenced standards as minimum requirements.

C. Components required to be supplied in quantity within a Specification section shall be same, and shall be interchangeable.

D. Do not use materials and equipment removed from existing structure, except as specifically required or allowed by Contract Documents.

E. Products Specified by Reference Standards or by Description Only: Furnish any product meeting those standards.

F. Products Specified by Naming Two (2) or More Manufacturers: Furnish products of one named manufacturer meeting specifications; no options or substitutions allowed.

G. Products Specified by Naming One (1) or More Manufacturers or with a Provision for Substitutions: Submit a request for substitution of a proposed equal.

1.12 PROJECT CLOSEOUT PROCEDURES

A. Project Records Documents:
   1. Contractor shall maintain, on site, one (1) set of the following record documents:
      a. Drawings.
      b. Specifications.
      c. Approved Shop Drawings.
      d. Product data.
      e. Samples.
   2. Contractor shall store Record Documents separate from documents used for construction.
   3. Contractor shall record actual revisions to the Work and maintain information concurrent with construction progress.
   4. Contractor shall legibly mark each item to record actual construction including:
      a. Measured horizontal and vertical locations of new utilities and existing underground utilities and appurtenances referenced to permanent surface improvements.
      b. Field changes of dimensions and Drawing details.
      c. Details not on original Drawings.
   5. Submit Record Documents to Owner at Final Inspection, including:
      a. Project Drawings.
      b. Survey notes.
      c. Approved submittals.
      d. Operation and Maintenance Manuals.

PART 2 - PRODUCTS (Not Used)
PART 3 - EXECUTION (Not Used)

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Subsoil materials.
   2. Topsoil materials.

B. Related Sections:
   1. Section 31 02 00 - General Requirements for Site Work shall govern Work under this Section.
   2. Section 02 41 13 - Site Demolition.
   3. Section 02 41 15 - Utility Removal.
   4. Section 31 05 16 - Aggregates for Earthwork.
   5. Section 31 22 13 - Rough Grading.
   6. Section 32 92 00 – Turf and Grasses.

1.2 REFERENCES

A. State of Illinois Department of Transportation (IDOT):

B. ASTM International (ASTM):
   1. ASTM D2487 - Classification of Soils for Engineering Purposes (Unified Soil Classification System).
   2. ASTM D5268 – Topsoil Used for Landscaping Purposes.

1.3 SUBMITTALS

A. Section 31 02 00 - General Requirements for Site Work: Requirements for submittals.

B. Samples: Submit, in airtight containers, 10 lb. sample of each type of Type fill to testing laboratory.

C. Product Data: Submit testing laboratory results for each type of specified soil.

D. Materials Source: Submit name of source of imported materials.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Illinois Department of Transportation standards.
PART 2 - PRODUCTS

2.1 SUBSOIL MATERIALS

A. Subsoil Type S1:
   1. Excavated and re-used material.
   2. Graded.
   3. Free of lumps larger than three (3) inches, rocks larger than two (2) inches, and debris.
   4. Contractor shall provide 10 lb sample of existing site material to laboratory for soil classification analysis conforming to ASTM D2487.

B. Subsoil Type S2:
   1. Imported borrow.
   2. Graded.
   3. Free of lumps larger than three (3) inches, rocks larger than two (2) inches, and debris.
   4. Imported subsoil and borrow shall be similar in composition when compared to existing site subsoil.
   5. Contractor shall provide 10 lb sample of proposed imported borrow material to laboratory for soil classification analysis conforming to ASTM D2487.

2.2 TOPSOIL MATERIALS

A. Topsoil: As specified in 32 91 19 – Landscape Grading

2.3 SOURCE QUALITY CONTROL

A. Section 31 02 00 - General Requirements for Site Work: Testing and analysis of soil material.

B. Testing and Analysis of Topsoil Material designated for Landscaping Purposes: Perform in accordance with ASTM D5268.

C. When tests indicate materials do not meet specified requirements, change material and retest.

D. Furnish materials of each type from same source throughout the Work.

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 31 05 16
AGGREGATES FOR EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Aggregate materials and designations for utility structure aggregate base course.
   2. Aggregate materials and designations for pavement aggregate base course.
   3. Aggregate materials and designations for backfill.
   4. Materials and designations for drainage aggregate.
   5. Aggregate materials and designations for grading purposes.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 - General Requirements for Site Work shall govern Work under this Section.
   2. Section 02 41 13 – Site Demolition.
   3. Section 02 41 15 – Utility Removal.
   4. Section 31 05 13 – Soils for Earthwork.
   5. Section 31 22 13 - Rough Grading.
   7. Section 32 01 00 – Site Restoration.
   8. Section 32 01 23 - Aggregate Base Course.
   9. Section 32 91 19 - Landscape Grading.
   10. Section 32 93 00 – Synthetic Turf
   11. Section 32 94 00 – Synthetic Turf Drainage System
   12. Section 33 46 00 - Subdrainage

1.2 REFERENCES

A. State of Illinois Department of Transportation (IDOT):
      http://www.dot.state.il.us/desenv/stdspecs07.html

B. ASTM International (ASTM):

1.3 SUBMITTALS

A. Section 31 02 00 - General Requirements for Site Work: Requirements for submittals.

B. Product Data: Submit gradation information for each type of aggregate specified. Gradation results shall be taken within the past three (3) months from contract date.
C. Samples: Submit, in airtight containers, 10 lb sample of each type of fill to testing laboratory.

D. Materials Source: Submit name of source of imported materials.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Illinois Department of Transportation standards.

PART 2 - PRODUCTS

2.1 AGGREGATE MATERIALS

A. Aggregate Type A1 (Gravel): Crushed Gravel: free of organic matter and debris; graded in accordance with:
   1. IDOT Gradation No. CA-6.

B. Aggregate Type A2 (Gravel): Crushed Gravel: free of organic matter and debris; graded in accordance with:
   1. IDOT Gradation No. CA-10.

C. Aggregate Type A3 (Recycled): Crushed Concrete; free of wood, steel, roots, bark or other extraneous material; graded in accordance with:
   1. IDOT Gradation No. CA-10.

D. Aggregate Type A4 (Recycled): Crushed Asphaltic Concrete; free of wood, steel, roots, bark or other extraneous material; graded in accordance with:
   1. IDOT Gradation No. CA-10.

E. Aggregate Type A5 (Stone): Crushed Stone; free of clay, shale, organic matter; graded in accordance with:
   1. IDOT Gradation No. CA-7

F. Aggregate Type A6 (3/8-Inch Stone Chips): Crushed stone; free of clay, shale, organic matter; graded in accordance with the following limits:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2-inch</td>
<td>100</td>
</tr>
<tr>
<td>3/8-inch</td>
<td>85 - 100</td>
</tr>
<tr>
<td>No. 4</td>
<td>10 – 30</td>
</tr>
<tr>
<td>No. 8</td>
<td>0 - 10</td>
</tr>
<tr>
<td>No. 16</td>
<td>0 – 5</td>
</tr>
</tbody>
</table>

G. Aggregate Type A7 (3/4-Inch Stone Chips): Crushed stone; free of clay, shale, organic matter; graded in accordance with the following limits:
### Aggregate Type A8 (Pea Gravel): Fractured, washed, free of clay, shale, organic matter; graded in accordance with the following limits:
   1. Minimum Size: 1/4-inch.

### Aggregate Type A9 (Granular Fill): Natural gravel/stone; free of clay, shale, organic matter; graded in accordance with:
   1. [IDOT Gradation No. CA-6.]

### Aggregate Type A10 (Bank Run Sand/Gravel): Natural river or bank sand; free of silt, clay, loam, friable or soluble materials, and organic matter; graded in accordance with following limits:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-inch</td>
<td>95 - 100</td>
</tr>
<tr>
<td>No. 4</td>
<td>35 - 60</td>
</tr>
<tr>
<td>Finer Than No. 200</td>
<td>5 - 15</td>
</tr>
</tbody>
</table>

### Aggregate Type A11 (Drainage Aggregate): Crushed stone; free of clay, shale, organic matter; graded in accordance with the following limits:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-inch</td>
<td>100 - 75</td>
</tr>
<tr>
<td>3/4-inch</td>
<td>50 - 75</td>
</tr>
<tr>
<td>No. 4</td>
<td>0 - 60</td>
</tr>
<tr>
<td>No. 40</td>
<td>0 - 50</td>
</tr>
<tr>
<td>No. 200</td>
<td>0 - 5</td>
</tr>
</tbody>
</table>

### Aggregate Type A12 (Bedding Sand): Unwashed bank-run sand or rejected concrete sand; approximately six (6) percent fine clay or loam particles but free of silt and clay or loam lumps consisting of durable particles ranging in size from fine to coarse in uniform combinations; maximum moisture content shall be 10 percent, graded within following limits:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-inch</td>
<td>100</td>
</tr>
<tr>
<td>No. 16</td>
<td>45 - 80</td>
</tr>
<tr>
<td>No. 200</td>
<td>2 - 10</td>
</tr>
</tbody>
</table>

### Aggregate Type A13 (Sand Fill): Natural river or bank sand; free of silt, clay, or loam, friable or soluble materials, or organic matter; consisting of durable particles ranging in size from fine to coarse in uniform combinations; maximum moisture content shall be 10 percent, graded within following limits:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-inch</td>
<td>90 - 100</td>
</tr>
<tr>
<td>3/4-inch</td>
<td>20 - 55</td>
</tr>
<tr>
<td>No. 4</td>
<td>0 - 10</td>
</tr>
<tr>
<td>No. 8</td>
<td>0 – 5</td>
</tr>
<tr>
<td>Sieve Size</td>
<td>Percent Passing</td>
</tr>
<tr>
<td>------------</td>
<td>----------------</td>
</tr>
<tr>
<td>3/8-inch</td>
<td>100</td>
</tr>
<tr>
<td>No. 4</td>
<td>95 - 100</td>
</tr>
<tr>
<td>No. 8</td>
<td>75 - 90</td>
</tr>
<tr>
<td>No. 16</td>
<td>55 - 75</td>
</tr>
<tr>
<td>No. 30</td>
<td>30 - 50</td>
</tr>
<tr>
<td>No. 50</td>
<td>10 - 25</td>
</tr>
<tr>
<td>No. 100</td>
<td>2 - 10</td>
</tr>
<tr>
<td>No. 200</td>
<td>0</td>
</tr>
</tbody>
</table>

N. Aggregate Type A14 (Stone): Crushed Stone; free of clay, shale, organic matter; graded in accordance with ASTM C33, Size No.

2.2 SOURCE QUALITY CONTROL

A. Section 31 02 00 - General Requirements for Site Work: Testing and analysis of aggregates.

B. When tests indicate materials do not meet specified requirements, change material or material source and retest.

C. Furnish materials of each type from same source throughout the Work.

PART 3 - EXECUTION (Not Used)
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Removal of topsoil and subsoil.
   2. Cutting, grading, filling, rough contouring and compacting site for utility structures and pavements.

B. Related Sections:
   1. Section 31 02 00 - General Requirements for Site Work shall govern Work under this Section.
   2. Section 02 41 13 – Site Demolition.
   3. Section 31 05 13 – Soils for Earthwork.
   4. Section 31 05 16 – Aggregates for Earthwork.
   5. Section 31 25 13 – Erosion and Sediment Controls.
   6. Section 32 01 00 – Site Restoration: Restoration of areas disturbed or damaged during construction.
   7. Section 32 91 19 - Landscape Grading: Finish grading with topsoil to contours.

1.2 REFERENCES

A. State of Illinois Department of Transportation (IDOT):
      State of Illinois DOT Standard Specifications

B. ASTM International (ASTM):
   3. ASTM D1557 - Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort 56,000 ft.-lbf/ft³.
   4. ASTM D6938 – Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 CLOSEOUT SUBMITTALS

A. Section 31 02 00 - General Requirements for Site Work: Requirements for project closeout submittals.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Illinois Department of Transportation standards.
PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil: as specified in Section 32 91 19 – Landscape Grading.

B. Subsoil Fill: Type S1 or S2 as specified in Section 31 05 13 – Soils for Earthwork.

C. Aggregate Fill: Type CA-10 as specified in Section 31 05 16 – Aggregates for Earthwork.

PART 3 - EXECUTION

3.1 NOTIFICATION

A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) all utilities, governmental agencies, entities, known to, or which can reasonably be assumed to have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.

B. In accordance with Illinois Statute 220 ILCS 50, "Illinois Underground Utility Facilities Damage Prevention Act," every "Person" as defined in 50/2.1 shall be solely responsible to provide advance notice to “One-Call System - Julie, Inc.” (811) or (800-892-0123) or, within the City of Chicago, to “Digger” (312-744-7000) not more than fourteen nor less than two (2) working days prior to commencement of any Excavation or Demolition, as defined in the statute, required to perform work contained in this Project, and further said "Person" shall comply with all other requirements of this Statute relative to Excavator's Work.

Illinois Statute 220 ILCS 50 - Illinois Underground Utility Facilities Damage Prevention Act

3.2 EXAMINATION

A. Section 31 02 00 - General Requirements for Site Work: Verification of existing conditions before starting work.

B. Verify project survey benchmarks and intended elevations are as indicated on Drawings.

3.3 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect utilities, indicated to remain, from damage.

D. Protect above and below grade utilities indicated to remain.

E. Protect plant life, lawns, and other features remaining as portion of final landscaping.

F. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
3.4 TOPSOIL EXCAVATION

A. Excavate topsoil from areas to be further excavated, re-landscaped, or re-graded without mixing with foreign materials.

B. Do not excavate wet topsoil.

C. Stockpile in area designated on site to depth not exceeding [eight (8)] [___] feet and protect from erosion.

D. Protect stockpiled material from erosion. Provide silt fencing or other approved erosion prevention method.

E. Remove excess topsoil from site.

F. Excess topsoil to be disposed off site shall become property of Contractor.

3.5 SUBSOIL EXCAVATION

A. Excavate subsoil from areas to be further excavated, re-landscaped, or re-graded.

B. Do not excavate wet subsoil.

C. When excavating through roots, perform Work by hand and cut roots with sharp ax.

D. Remove excess subsoil not intended for reuse, from site.

E. Benching Slopes: Horizontally bench existing slopes greater than 1:4 to key placed fill material to slope to provide firm bearing.

F. Stability: Replace damaged or displaced subsoil as specified for fill.

3.6 FILLING

A. Install Work in accordance with Illinois Department of Transportation Standards.

B. Fill areas to contours and elevations with unfrozen materials.

C. Place fill material on continuous layers and compact in accordance with schedule at end of this section.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Slope grade away from building minimum two (2) inches in 10 feet, unless noted otherwise.

F. Make grade changes gradual. Blend slope into level areas.

G. Remove surplus fill materials from site.
3.7 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 1/10-foot from required elevation.

3.8 FIELD QUALITY CONTROL

A. Section 31 02 00 - General Requirements for Site Work: Testing and inspection services.

B. Testing and Analysis of Fill Material: In accordance with ASTM D1557.

C. Density and Moisture Testing: In accordance with ASTM D6938.

D. When tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

E. Frequency of Tests: As determined by Owner’s Representative and Testing Agency.

3.9 SCHEDULES

A. Aggregate Fill:
   1. Maximum seven (7)-inch loose lifts.
   2. Compact each lift to minimum 95 percent of modified Proctor density.

B. Subsoil Fill:
   1. Maximum 12-inch loose lifts.
   2. Compact each lift to minimum 95 percent of modified Proctor density.

C. Topsoil Fill:
   1. Maximum 12-inch loose lifts.
   2. Compact each lift to minimum 85 percent of modified Proctor density.

END OF SECTION
SECTION 31 23 17
SITE EXCAVATION, BACKFILL, AND COMPACTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Verification of subsurface conditions and utilities prior to excavation.
2. Saw cutting of pavements prior to excavation.
3. Excavation for asphalt paving
4. Excavating for synthetic turf drainage system.
5. Excavation for concrete paving.
7. Excavation of trenches for water distribution system.
8. Backfilling to subgrade elevations.
11. Consolidation and compaction.

B. Related Sections:
1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern
   Work under this Section.
2. Section 31 05 13 – Soils for Earthwork: Subsoil backfill.
5. Section [31 23 19 - Site Dewatering.
6. Section 33 41 00 – Site Storm Sewer System: Installation of storm sewer system.
7. Section 33 49 00 – Storm Sewer Manholes, Catch Basins, and Inlets: Installation of storm
   sewer manholes, catch basins, and inlets.
8. Section 32 94 00 – Synthetic Turf Drainage System

1.2 REFERENCES

A. State of Illinois Department of Transportation (IDOT):
1. Standard Specifications for Road and Bridge Construction, Current Edition with latest
   supplements.
   State of Illinois DOT Standard Specifications

B. ASTM International (ASTM):
1. ASTM C518 - Test Method for Steady-State Thermal Transmission Properties by Means of
   the Heat Flow Meter Apparatus.
3. ASTM D1557 - Test Methods for Laboratory Compaction Characteristics of Soil Using
   Modified Effort 56,000 ft.-lbf/ft^3.
6. ASTM D2487 - Practice for Classification of Soils for Engineering Purposes (Unified Soil
   Classification System).
1.3 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.

B. Samples: Submit 10 lb. sample of each type of specified fill to testing laboratory, in airtight containers. Provide certified analysis of material(s) to Construction Manager prior to any use on Work.

1.4 REGULATORY REQUIREMENTS

A. Contractor shall comply with all local, state, and federal regulations applicable to Work of this Section.

B. Contractor shall comply with and be solely responsible for compliance with U.S. Department of Labor OSHA Part 1926 Safety and Health Regulations for Construction for this Work.

C. Contractor performing Work of this Section shall be solely responsible for identifying, furnishing, installing and maintaining equipment and materials required by state and federal regulations to establish safe working conditions during Work of this Section.

PART 2 - PRODUCTS

2.1 BEDDING AND BACKFILL MATERIALS

A. Aggregates as indicated on the plans and defined in Section 31 05 16 – Aggregates for Earthwork.

B. Site Excavated Material (Spoil) Backfill: as indicated on the plans and defined in Section 31 05 13 – Soils for Earthwork.

2.2 AGGREGATE SLURRY BACKFILL

A. Place materials in a clean cement mixer truck and thoroughly mixed in following quantities:

<table>
<thead>
<tr>
<th>Material</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,350 lbs. sand</td>
<td></td>
</tr>
<tr>
<td>775 lbs. 1-1/4 Inch stone</td>
<td></td>
</tr>
<tr>
<td>1,150 lbs. 3/4 Inch stone</td>
<td></td>
</tr>
<tr>
<td>25 gals. (+0 to –0.5) water/cu.yd.</td>
<td></td>
</tr>
</tbody>
</table>

B. Lean concrete backfill shall conform to above with addition of a minimum of one bag of cement per cubic yard.

2.3 PIPE INSULATION

A. Extruded polystyrene board to ASTM C578, Type V, rigid, closed cell type, with integral high density skin.

1. Thermal Resistance: Typical 5 year aged value of R-5 per 1 inch of thickness per ASTM C518.
2. Board Size: 24 x 96 x 2-inch thick. Square edges.
3. Compressive Strength: Minimum 100 psi per ASTM D1621.
4. Water Absorption: 0.7 percent by volume maximum per ASTM D2842.
5. Insulation shall be:
   a. Dow Chemical Company STYROFOAM™ Highload 100; Dow Chemical Styrofoam Highload 100 Insulation.
   b. Or Approved Equal.

PART 3 - EXECUTION

3.1 NOTIFICATION

   A. Contractor, prior to any excavation work, shall notify (1) a designated locating service; (2) all utilities, governmental agencies, entities, known to, or which can reasonably be assumed to have above or below ground pipe, conduit cables, structures, or similar items within limits of project; to locate and mark location of such items.

   B. In accordance with Illinois Statute 220 ILCS 50, "Illinois Underground Utility Facilities Damage Prevention Act," every "Person" as defined in 50/2.1 shall be solely responsible to provide advance notice to “One-Call System - Julie, Inc.” (811) or (800-892-0123) or, within the City of Chicago, to “Digger” (312-744-7000) not more than fourteen nor less than two (2) working days prior to commencement of any Excavation or Demolition, as defined in the statute, required to perform work contained in this Project, and further said "Person" shall comply with all other requirements of this Statute relative to Excavator's Work.

Illinois Statute 220 ILCS 50 - Illinois Underground Utility Facilities Damage Prevention Act

3.2 SITE VERIFICATION

   A. Verify that survey benchmark and intended elevations for Work are as indicated.

3.3 FIELD MEASUREMENTS

   A. Verify that survey benchmark and intended elevations for the Work are as shown on Drawings.

   B. Primary line and grade will be furnished by Owner and will be established by the Contractor.

   C. Contractor shall employ a Registered Land Surveyor, registered in the State of Illinois to perform all survey work related to primary line and grade for project utilities.

   D. Contractor shall check accuracy of line and grade stakes by means of visual and taping checks and shall be responsible for protection and preservation of such stakes established by Registered Land Surveyor.

   E. Contractor shall bear sole responsibility for correct transfer of all construction lines and grades from primary line and grade points and for correct alignment and grade of finished structure, based upon primary line and grade established by Registered Land Surveyor.
F. Except for those lot corners and survey monuments that fall within trench excavation, Contractor shall be solely responsible for protection and/or replacement of all survey corners that exist throughout work area.

G. Corners will be located and marked by Owner, upon request by Contractor, prior to commencing its work.

H. A Registered Land Surveyor shall replace damaged corners at Contractor’s expense.

3.4 SAWING AND BREAKING PAVEMENT

A. Saw concrete pavement, slabs, or bases to full depth of existing pavement, slab, or base prior to removal.

B. Saw cut asphalt surface course full depth before removal.

C. Cut pavements evenly along edges of excavation prior to their removal in such a way as to avoid excessive removal or ragged, uneven edges.

D. A drop weight or other type of machinery for breaking pavement when approved by Owner’s Representative may be used when such usage does not become a nuisance or a source of damage to underground or adjacent structures.

E. Prior to employing a drop weight, Contractor shall verify that there are no nearby underground structures that would be injured by its use.

F. Contractor shall be solely responsible for any damage caused thereby.

G. Owner’s Representative reserves right to order discontinuance of use of such drop weight at any time.

3.5 PREPARATION FOR EXCAVATION

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Notify utility company to remove and relocate utilities that interfere with Work.

D. Protect above and below grade utilities indicated to remain.

E. Protect plant life, lawns and other features remaining as portion of final landscaping.

F. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

G. Cut out soft areas of subgrade not capable of in situ compaction. Backfill w to density equal to or greater than requirements for subsequent backfill material.
3.6 FIELD QUALITY CONTROL FOR EXCAVATION

A. Field inspection will be performed under provisions of Section 31 02 00 – General Requirements for Sitework.

B. Provide for visual inspection of bearing surfaces.

3.7 EXPOSING EXISTING STORM SEWER AND WATER MAIN

A. Before excavation of trench is begun, Contractor shall uncover stub end of existing utility to which new utility is to be connected. This will permit adjustments in line and grade and verify connection required.

B. Securely plug existing terminations in manholes to which new utilities are to be connected to prevent entry of construction water and debris into active system.

C. Contractor shall be responsible to verify that plug(s) are in place at end of each workday.

D. Contractor shall remove any water or debris from terminal manhole as required but not less than once a week.

3.8 TRENCH EXCAVATION

A. Excavate subsoil required for installation of utility.

B. Excavate trenches at top of pipe to a maximum width based on dimension of outside diameter of pipe plus 24 inches to enable installation of pipe and to allow inspection.

C. Width at top of pipe may be increased with prior approval of Owner’s Representative to allow for stringers and sheathing when required.

D. Provide pipe laid in open-cut trench with six (6) inch minimum clearance between outside face of pipe barrel and face of sheathing or sidewall of trench.

E. Maximum width of trench at ground surface shall not exceed width of trench at top of pipe by more than two (2) feet without prior request to Owner’s Representative, unless it is specifically allowed on Drawings.

F. Place excavated material stored along trench excavation a minimum distance back from edge of trench. Determine distance by angle of repose of trench material to prevent surcharging of trench wall material leading to potential shearing of trench wall and collapse of trench.

G. Store excavated material to be used for trench backfilling so that it will not interfere with:
   1. Public travel.
   2. Adjacent property owners or tenants.
   3. Other Contractors.

H. Contractor shall immediately remove and dispose of excavated material which is not to be used as trench backfill, unless directed otherwise by Contract Documents.

I. Contractor shall maintain all finished excavations free of water or sewage during Work.
J. Hand trim excavation. Remove loose matter.

K. Remove lumped subsoil, boulders, and rock up to [1/3 cubic yard, measured by volume.

L. Correct unauthorized excavation and over-excavated areas at no cost to Owner.

M. Excavate no more trench in advance of completed pipe laying operations than can be completed and backfilled by end of workday.

N. Do not obstruct more than one street crossing by same trench at any one time.

3.9 TRENCH BEDDING

A. Keep trench bottom free of water prior to placement of bedding and laying of pipe.

B. Place and shape bedding material to pipe, to a minimum depth of three inches under bell and four inches under spigot and compact to 95 percent modified Proctor density.

C. Support pipe during placement and compaction of bedding material.

D. Bring bedding and cover material over top of pipe to a minimum compacted depth of 12 inches, compact to specified density.

E. Where sand is used for cover material, compact sand with portable plate compactor to a depth of twelve inches in two lifts of six (6) inches each for initial cover over pipe.

3.10 PIPE INSULATION

A. Insulate water pipes with less than six (6) foot of cover with a minimum four (4) inch thick sheet of extruded polystyrene insulation.

B. Sanitary sewers or storm sewers containing building condensate or clearwater shall have a minimum four (4) inch thick sheet of extruded polystyrene insulation when cover is less than:
   1. 60 inches in paved areas.
   2. 42 inches in non-paved areas.

C. Extend insulation a minimum of two (2) feet each side of pipe centerline.

D. Sheet insulation shall be minimum two (2) feet each side of pipe centerline and in addition shall have four (4) inches of insulation board placed vertically at end of horizontal board to bottom of excavated trench.

3.11 PROTECTION

A. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.

B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.
3.12 EXAMINATION PRIOR TO BACKFILLING

A. Verify fill material to be reused are acceptable.
B. Verify foundation perimeter drainage installation has been inspected.

3.13 BACKFILLING

A. Backfill with materials and to contours and elevations shown on Drawings. Generally, compact subgrade to density requirements for subsequent backfill materials.
B. Place specified backfill in loose lift layers. Use compaction equipment that will achieve desired compaction requirements.
C. Systematically backfill to allow for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
D. Where sidewall material is loose or unstable, place geotextile cloth material over sidewall prior to backfilling.
E. Employ a placement method that does not disturb or damage pipe in trench.
F. Maintain optimum moisture content of backfill materials to attain required compaction density.
G. Slope grade away from building minimum [two (2)] [____] inches in 10 feet, unless noted otherwise.
H. Make grade changes gradual. Blend slope into level areas.
I. Leave fill material stockpile areas completely free of excess fill materials.
J. Remove surplus backfill materials from site.

3.14 MECHANICAL COMPACTION

A. Mechanically compact backfill by means of a tamping roller, sheepsfoot roller, pneumatic tire roller, vibrating roller, or other mechanical tampers. Impact, free-fall, or "stomping" type compaction equipment shall not be allowed.
B. Flooding or jetting of backfill for compaction purposes shall not be allowed.
C. Contractor shall furnish written notification to Owner’s Representative prior to start of work as to size and type of mechanical compaction equipment to be used.
D. Place material for mechanically compacted backfill in lifts, which, prior to compaction, shall not exceed thickness specified below for type of compaction equipment used:
   1. Vibratory equipment including vibratory plate, vibratory smooth-wheel rollers, and vibratory pneumatic-tired rollers: maximum lift thickness two (2) feet.
   2. Rolling equipment, including sheepsfoot (both vibratory and non-vibratory), grid, smooth-wheel (non-vibratory), pneumatic-tired (non-vibratory), and segmented wheels: maximum lift thickness one (1) foot.
3. Hand-directed mechanical tampers: maximum lift thickness of six (6) inches.

3.15 TOLERANCES FOR BACKFILL

A. Top Surface of Backfill: Plus or minus 1 inch from required elevations.

3.16 COMPACTION REQUIREMENTS

A. Granular Material shall be compacted to 95 percent of modified Proctor density.

B. Excavated Material to be used for backfill shall be compacted to a density equal to adjacent undisturbed trench wall or as specified.

3.17 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 31 02 00 - General Requirements for Sitework.

B. Testing and analysis of fill material will be performed in accordance with ASTM D1557 and Section 31 02 00 - General Requirements for Sitework.

C. Compaction and moisture testing will be performed in accordance with ASTM D6938 and Section 31 02 00 - General Requirements for Sitework.

D. If tests indicate Work does not meet specified requirements, remove Work, replace, and retest at no cost to Owner.

3.18 PROTECTION OF FINISHED WORK

A. Reshape and recompact fills subjected to vehicular traffic.

B. Contractor shall have available a supply of steel plates with minimum dimensions of four (4) feet by eight (8) feet by one (1) inch.

C. Use plates to bridge open trenches crossing roadways and secure against possibility of shifting or dropping into excavation.

D. During winter months, do not leave plates in roadway overnight.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Requirements to keep excavations, trenches and other parts of Work dry during construction, including sumps, pumps and well points.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern Work under this Section.
   2. Section 31 23 16 - Utility Trench Excavation, Backfill, and Compaction.

1.2 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.

1.3 REGULATORY REQUIREMENTS

A. Contractor shall comply with applicable rules and regulations for dewatering operations in accordance with:

   1. [The Urban Committee of the Association of Illinois Soil and Water Construction Districts - Procedures and Standards for urban Soil Erosion and Sediment Control in Illinois and State of Illinois Department of Public Health (IDPH).]  
      http://aiswcd.org/IUM/standards/urbst813.html
   2. Contractor shall comply with other local, state or federal agency having jurisdiction related to Work of this Section.

B. Contractor shall obtain permits applicable to work of this Section as required by the regulatory agencies to comply with any Construction Site Erosion Control Ordinance to control, handle, and dispose of ground and surface water.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Contractor shall provide equipment and related accessories specifically applicable to dewatering work.

B. Equipment shall be operated and maintained in a manner to produce acceptable results.
PART 3 - EXECUTION

3.1 REMOVAL AND DISPOSAL OF WATER

A. Provide equipment and methods to remove water entering excavations, trenches, and other parts of Work.

B. Maintain excavations and trenches relatively dry until construction is completed.

C. Do not place concrete structure in water or allow water to rise above new concrete structure and keep trenches and foundations dry until construction is complete.

D. Maintain water level at an elevation to prevent flotation of installed Work until backfilling or other means to prevent flotation are in place.

E. Use of a well point system shall be submitted to Owner’s Representative for review and comment prior to its use.

F. Contractor shall dispose of water from Work in accordance with applicable agency rules and regulations.

G. Unless prior approval is obtained, do not discharge ground or surface water to a sanitary or storm sewer.

H. Water may be allowed to drain through completed sewer work after masonry and concrete units have set up sufficiently to prevent damage.

I. If new sewer work is utilized for drainage, place a watertight plug in downstream end of new pipe at last manhole to prevent water from entering permanent sanitary or storm sewer system. Pump and properly dispose of water at this manhole.

J. Completely clean piping and manholes used for dewatering of debris and foreign material upon completion of dewatering and prior to use for its intended purpose.

K. Under no circumstances shall a water main be used for discharge of ground or surface water.

3.2 FLOODING OF STRUCTURES

A. Contractor shall be responsible for keeping pumps, motors, electrical systems, and equipment dry during construction.

B. Replace equipment, electrical and communication systems, or similar items submerged or water damaged during construction at no cost to Owner.

3.3 DEWATERING WELLS AND PUMPS

A. Dewatering sumps and wells shall be adequately sheathed and braced.

B. Drill dewatering wells and maintain in accordance with:
2. Contractor shall comply with other local, state or federal agency having jurisdiction related to Work of this Section.

C. Abandon dewatering wells at completion of Work in accordance with:
2. Contractor shall comply with other local, state or federal agency having jurisdiction related to Work of this Section.

3.4 EXISTING AREA WELLS

A. Contractor shall be responsible for damage to, or contamination of, existing private or public wells in area of Work as a result of its dewatering.

B. It is recommended that Contractor, prior to initiating project dewatering, inspect and sample existing wells that may be affected by dewatering operations to establish a pre-construction record.

C. Provide a copy of well inspection record to Owner’s Representative and Owner.

D. Contractor shall be responsible for any cost of furnishing a potable water supply to residents and businesses whose wells are affected by dewatering work.

E. Contractor shall restore any well damaged by dewatering work to its original condition and acceptable use.

F. Contractor shall pay all costs of restoration and testing.

END OF SECTION
SECTION 31 25 13
EROSION AND SEDIMENT CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Equipment and materials for erosion and sediment control to minimize erosion and siltation during construction.
2. Erosion and sediment control provisions detailed on Drawings and specified herein are minimum requirements for erosion control program.
3. Contractor to provide additional erosion and sediment control materials and methods required by state or local ordinances, whichever is more stringent.

B. Related Sections:
1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern Work under this Section.
2. Section 31 23 19 – Site Dewatering.
3. Section 32 01 00 – Site Restoration: Seeding, sodding, and plantings.
4. Section 32 92 00 - Turf and Grasses: Seeding of site as part of final landscaping features.

1.2 REFERENCES

A. ASTM International (ASTM):

B. Association of Illinois Soil and Water Conservation Districts, Urban Manual. (IUM)
   http://aiswcd.org/IUM/index.html

C. Illinois Environmental Protection Agency (IEPA) http://www.epa.state.il.us/water/forms.html

D. Illinois Urban Manual – Practice Standards (IUM - PS);

E. State of Illinois Department of Transportation
   http://www.dot.state.il.us/desenv/stdspecs07.html
1.3 DEFINITIONS

A. Definitions shall be in accordance with Association of Illinois Soil and Water Conservation Districts, Urban Manual Practice Standards, as defined by each standard.

1.4 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.

B. Provide erosion control plan indicating proposed methods, materials, and schedule for effecting erosion and siltation control to prevent erosion damage to site and adjacent area.

C. Plan shall include following:
   1. Proposed methods for erosion and siltation control.
   2. Erosion plan scale of 1 inch equals 40 feet, indicating location of erosion control materials, siltation basins, etc.
   3. Schedule for implementation of plan.
   4. Provision for maintenance and upkeep of erosion control and siltation materials, identifying persons responsible for said maintenance.

1.5 REGULATORY REQUIREMENTS

A. Comply with Village of Skokie ordinance for construction site erosion control.

B. Comply with applicable state and federal rules and regulations governing erosion and siltation on construction sites.

C. Permit
   1. Apply for, pay fee, and obtain State stormwater discharge permit.

1.6 EROSION CONTROL PRINCIPLES

A. Keep disturbed area small.

B. Stabilize disturbed areas with mechanical or structural and vegetative methods.

C. Keep runoff low through use of short slopes, low gradients, and preservation of natural vegetative cover.

D. Protect disturbed areas from storm water runoff.

E. Retain sediment within site boundaries.

F. Implement a thorough maintenance and follow-up program.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Dust Control: (IUM-PS Code 825)
1. Dust controls shall be conducted by utilizing one of or a combination of the following procedures:
   a. Mulches: Reference IUM-PS Code 875-Mulching. Chemical or wood cellulose fiber binders may be used instead of asphalt to bind mulch material.
   c. Spray-on Adhesives:
      1) Anionic Asphalt Emulsion: Water dilution of 7:1, with a coarse spray of 1,200 gal/acre.
      2) Latex Emulsion: Water dilution of 12.5:1, with a fine spray of 235 gal/acre.
   d. Tillage: Provide tilling of soil with chisel type plows on exposed soils. Tillage shall be utilized only on flat areas of the project site.
   e. Irrigation: Provide water applications until surface is wet and repeat as necessary. Water shall be applied so it does not cause runoff.
   f. Calcium Chloride: Apply at a rate that will keep the surface moist but not cause water pollution or plant damage.

B. Inlet Protection – Fabric Drop: (IUM-PS Code 860)
   1. Provide fabric drop inlet protection at locations indicated on Drawings.
   2. Fabric drop inlet protection shall apply to one acre areas only.
   3. Maximum height of filter fabric above crest of the drop inlet shall be 1.5 feet.
   4. Provide 2 x 4 inch wood or equivalent steel stakes for fabric attachment and support with a minimum length of 3 feet.
   5. Stakes shall be placed no more than 3 feet apart and securely driven into ground a minimum of 18 inches.
   6. Fasten fabric securely by staples or wire to the stakes and inlet frame. Joints shall be overlapped to the next stake.
   7. Fabric shall meet IUM-PS Code 592, Table 1 or 2, Class 1 with apparent opening size of at least 30 for non-woven and 50 for woven.

C. Silt Fence: (IUM-PS Code 920)
   1. Provide silt fence at locations indicated on Drawings.
   2. Silt fencing shall be used for the following conditions:
      a. The maximum allowable slope lengths contributing runoff to a silt fence shall be as follows:

<table>
<thead>
<tr>
<th>Slope (%)</th>
<th>Maximum Spacing (Feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>20</td>
<td>75</td>
</tr>
<tr>
<td>15</td>
<td>125</td>
</tr>
<tr>
<td>10</td>
<td>175</td>
</tr>
<tr>
<td>Flatter than 10</td>
<td>200</td>
</tr>
</tbody>
</table>

   b. Maximum drainage area for overland flow to a silt fence shall not exceed 1/2 acre per 100 feet of fence.
   c. Erosion would occur in the form of sheet erosion.
   d. There is no concentration of water flowing to the barrier.
   e. Where effectiveness is required for more than one construction season or 6 months, whichever is less.
g. As protection for a culvert inlet, reference IUM-PS Code 808 – Culvert Inlet Protection.
3. Fabric shall meet IUM-MS 592, Table 1 or 2, Class 1 with apparent opening size of at least 30 for non-woven and 50 for woven.
4. Silt fence posts shall be a minimum of 48 inches long.
5. Wood posts shall be of sound quality with a minimum cross section area of 3.0 square inches.
6. Steel posts shall be standard “T” and “U” sections weighing not less than 1.33 pounds per linear foot.
7. Attach fabric to posts using heavy-duty staples or 10 gauge tie wire. Do not attach fabric to wire mesh or trees.
8. Maximum spacing of posts shall be 5 feet. Posts shall be driven into ground a minimum of 18 inches.
9. When wire mesh or other form of approved backing is used, maximum post spacing may be increased to 8 feet. Wire mesh shall be a minimum 12 gauge wire with a maximum 6 x 6 inch mesh opening. Provide mesh in continuous lengths.
10. Post spacing shall be adjusted closer than 5 feet where an expected abundance of water ponding and sediment is expected to gather during storm events to secure fencing from failure.
11. The height of the silt fence shall be a minimum of 24 inches above original ground level and shall not exceed a height of 30 inches above the ground surface.
12. Wire mesh shall be provided for fencing that is exceeding 24 inches in height.
13. Entrench silt fence a minimum of 6 inches into ground and an additional 6 inches extending along the bottom of the trench in the upslope direction.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Installation of all erosion control shall be in accordance with the Association of Illinois Soil and Water Conservation Districts, Urban Manual practice standards, construction specifications and material specifications and manufacturer’s written instructions.

3.2 MAINTENANCE

A. Inspect erosion control devices within 24 hours after each rainfall or daily during periods of prolonged rainfall.

B. Repair or replace damaged or defective materials or installation immediately.

C. Remove sediment deposits within 24 hours after each storm event or when deposits reach one-half height of fence or barrier, whichever occurs first.

D. Apply replacement bales or additional mulch, netting, or matting immediately to maintain suitable cover.

E. Where vegetative cover has been placed, inspect until vegetative cover is established and functioning as intended.
3.3 REMOVAL OF EROSION CONTROL DEVICES

A. Maintain erosion control measures disturbed earth has been paved or vegetated.

B. Remove erosion control devices prior to final inspection and acceptance of Project site by Owner.

C. Restore or replace areas disturbed or damaged by removal of erosion control devices to satisfaction of Owner’s Representative.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Work necessary to restore to its original or specified condition following items, either
      removed to facilitate construction or damaged during Work. Restoration of:
      a. Asphalt pavement.
      b. Concrete pavement, curb and gutter and sidewalk.
      c. Public and private lawn areas.
      d. Existing trees, bushes, and shrubs.
      e. Grades in ditches, lawns, and fields.
      f. Miscellaneous landscape and drainage facilities.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern
      Work under this Section.
   2. Section 31 05 16 – Aggregates for Earthwork.
   3. Section 32 11 23 – Aggregate Base Course.
   4. Section 32 12 16 – Asphalt Paving.
   5. Section 32 13 13 – Concrete Paving.
   6. Section 32 92 00 – Turf and Grasses

1.2 REFERENCES

A. State of Illinois, Department of Transportation
   1. Standard Specifications for Road and Bridge Construction, Current Edition with latest
      supplements. (IDOT)

1.3 TESTS

A. Testing and analysis of restoration materials will be performed under provisions of Section
   31 02 00 – General Requirements for Sitework.

1.4 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework.

PART 2 - PRODUCTS

2.1 AGGREGATE BASE COURSE

A. As specified in Section 32 11 23 – Aggregate Base Course.
PART 3 - EXECUTION

3.1 GENERAL

A. Replace paved surfaces, curbs and gutters, sidewalks, driveways and driveway approaches, lawns, trees, shrubs, and other surface features disturbed or damaged during Work as specified herein or as called for on Drawings.

B. Provide protective covers or coatings for any exposed portions of bridges, culverts, curb and gutter, manholes, valve boxes, fences, signs or other public or private structures that may be splashed, stained or damaged by restoration activities especially during asphalt or concrete restoration work.

C. Remove any oil, asphalt, concrete, dirt or other undesirable matter that may come in contact with these structures.

D. Adjust manholes, catch basins, valve boxes and similar items to established finished grade for restored area, and include such work as part of project cost.

E. Contractor shall contact owner of private manholes, catch basins, valve boxes and similar items requiring adjustment to receive direction as to procedures and materials to use for said adjustment.

F. Compaction of Subgrade: Prior to restoration work contained in this Section, Contractor shall verify that backfilling and compaction has been completed and excavations and areas disturbed by Work brought up to finished subgrade elevation in accordance with requirements contained in this Project Manual.

G. Settlement or other failure of restoration work will require its removal, rework of subgrade and application of new restoration materials.
H. Contractor shall be responsible for maintenance, repair, protection and safety of disturbed areas prior to its restoration.

I. Contractor shall provide as part of its project cost crushed stone, gravel, asphalt patching material or other temporary materials required to keep disturbed areas in a condition for use they were intended.

J. Contractor shall maintain disturbed areas on a continuous basis from time work if it initiated until restoration is completed including but not limited to maintenance of grade, elevations, crowns, compaction, dust elimination and drainage.

K. Contractor shall immediately respond to requests from Owner or Owner’s Representative relative to received complaints of unsatisfactory conditions.

3.2 AGGREGATE BASE COURSE INSTALLATION
A. As specified in 321123 Asphalt Base Course

3.3 ASPHALT RESTORATION
A. As specified in 32 12 16 Asphalt Paving

3.4 CONCRETE RESTORATION
A. As specified in 32 13 13 Concrete Paving

3.5 GRAVEL/STONE RESTORATION
A. Contractor shall place crushed road gravel or crushed stone of size and type used in existing road shoulder, driveway, parking or walking surface.

B. Remove excavated materials and existing materials contaminated with excavated material from area to be restored.

C. Place new gravel or stone material to match existing thickness and grade of adjacent undisturbed area, compact, and restore area to its existing condition.

D. Spread and compact aggregate in compacted layers of 6 inches or less.

E. Compact aggregate until there is no appreciable displacement, either laterally or longitudinally, under compaction equipment. Route hauling equipment uniformly over previously placed base. Compact each layer before placing a subsequent layer. If material is too dry to readily attain required compaction, add water as necessary to achieve compaction.

3.6 DRAINAGE FACILITIES
A. Contractor shall maintain ditches and drainage facilities during Work. Upon completion of Work, restore to original condition.

B. Carefully remove storm sewers, drain tile, culverts, catch basins, inlets, and similar items, necessary to facilitate construction, and protect existing materials from damage.
C. Replace materials damaged during construction in kind as approved by Owner’s Representative.

D. Contractor shall immediately notify Owner’s Representative if it encounters materials that are in poor condition due to deterioration or failure for direction on replacement.

E. Contractor shall assume responsibility to replace materials at their cost if notification is not given to Owner’s Representative prior to removal.

F. Replace existing piping damaged or disturbed during construction activities by installing new pipe to existing line and grade. Install pipe on 4 inches of bedding material.

G. Install other utility appurtenances in accordance with requirements contained in other Sections of this Project Manual.

H. Where no information as to installation is contained in Project Manual, contact Owner’s Representative for direction before proceeding.

I. If Contractor encounters underground piping that appears to be abandoned, Contractor shall notify both owner of property and Owner’s Representative and Owner to verify that pipe is in fact abandoned and need not be replaced or repaired.

3.7 LAWN REPLACEMENT

A. As specified in 32 92 00 Turf and Grasses

3.8 TREES, SHRUBS, BUSHES

A. Contractor, at its expense, shall maintain any tree, shrub, or bush within construction or easement limits designated to remain.

B. Contractor shall not store excavated material or backfill materials on root system of trees.

C. If Contractor finds it necessary to remove or relocate a tree, bush, or shrub designated to remain, remove and replant within 24 hours of removal.

D. If designated tree, bush, or shrub does not survive transplant Contractor shall replace with in kind plant material at its expense.

E. Do not remove, cut back, or trim trees, shrubs, or bushes unless specifically allowed in Contract Documents or with prior written approval of owner of easement or right-of-way with a copy of such written approval furnished to Owner’s Representative prior to commencing work.

F. Neatly cut roots 1-inch or larger in diameter perpendicular to direction of growth.

G. Neatly cut branches perpendicular to direction of growth at main limb or trunk.

H. When Contractor replaces trees, shrubs, or bushes, perform planting during normal Spring and Fall planting seasons and as conditions permit planting. Do not install plant material when ground is frozen.
I. Contractor shall vertically brace plants with protection wrapped guy wires and stakes as follows:
   1. Provide one stake and tie for plant up to 1-inch diameter.
   2. Provide two stakes and ties for plants up to 2 inches in diameter.
   3. Provide three guy wires with eyebolts and turnbuckles for plants over 2 inches in diameter.

J. Contractor shall maintain plants from time of planting for 30 days. Maintenance includes watering, spraying, cultivating, weeding, fertilizing, and cutting and pruning to maintain plants in a healthy condition.

3.9 PROTECTION AND RESTORATION OF PROPERTY

   A. Contractor shall use every reasonable precaution to prevent damage to or destruction of public or private property such as, but not limited to, poles, mailboxes, fences, agricultural crops adjacent to or interfering with the Work; overhead structures such as wires and cables; and underground structures such as water and gas mains, pipes, conduits, and shutoff boxes, within or without construction limits.

3.10 RESTORATION OF GRADES AND ELEVATIONS

   A. Contractor shall restore grade and radiuses of ditches and culverts encountered during the Work to original unless directed otherwise by contract documents.
   B. Contractor shall re-establish grade and elevations of property disturbed by the Work to original condition unless directed otherwise by Drawings.
   C. Contractor shall protect and preserve property and survey marks and monuments and shall notify Owner’s Representative of location of these markers as discovered. Do not disturb or destroy these markers.
   D. Contractor shall bear costs of replace or restoration of survey markers or monuments destroyed or disturbed during course of its work.

3.11 EXCESS MATERIAL

   A. Contractor shall remove and dispose of excess materials produced as a result of restoration work of this Section.
   B. Perform disposal of excess and removed material in accordance with local, state, or federal regulations.
   C. Burning and on site disposal are not allowed.

3.12 GUARANTEE

   A. Contractor shall guarantee restoration work against defective workmanship, materials, or labor for a period of one year from date of final completion as established by the General Conditions.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Aggregate Materials.
2. Sub-grade Preparation.
3. Test Rolling Equipment and Procedures.
4. Aggregate Installation Requirements.
5. Base Course Schedule.

B. Related Sections:
1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern Work under this Section.
2. Section 31 05 16 – Aggregates for Earthwork.
4. Section 31 23 17 – Site Excavation, Backfill, and Compaction.
5. Section 32 01 00 – Site Restoration: Pavement restoration including aggregate base course.
6. Section 32 12 16 – Asphalt Paving
7. Section 32 13 13 - Concrete Paving
8. Section 32 14 43 – Permeable Precast Concrete Unit Paving
9. Section 32 91 19 - Landscape Grading: Topsoil fill at areas adjacent to aggregate base course.
10. Section 33 41 00 – Site Storm Sewer System: Adjustment of drainage structure frames in preparation for paving.
11. Section 33 49 00 – Storm Sewer Manholes, Catch Basins, and Inlets: Adjustment of drainage structure frames in preparation for paving.

1.2 REFERENCES

A. State of Illinois Department of Transportation

B. ASTM International (ASTM):
1. ASTM D698 – Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort 12,400 ft.-lbf/ft².
2. ASTM D1557 – Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort 56,000 ft.-lbf/ft².
3. ASTM D6938 – Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
PART 2 - PRODUCTS

2.1 AGGREGATE MATERIALS

A. Aggregate Material as indicated on the drawings and as specified in Section 31 05 16 – Aggregates for Earthwork.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify substrate is dry and has been inspected, and gradient and elevation are correct.

3.2 SUBGRADE PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and recompacting.

B. Do not place fill on soft, muddy, or frozen surfaces.

3.3 TEST ROLLING SUBGRADE

A. Test rolling shall be used to verify stability and uniformity of subgrade. Perform this Work in presence of Owner’s Representative.

B. Use test rolling equipment conforming to following description:
   1. Tandem axle, dual wheel dump truck.
   2. Tire pressure shall be no less than 90 percent of manufacturer’s recommended maximum inflation.
   3. Minimum gross weight of loaded truck shall be 60,000 pounds.
   4. Provide weigh slip to Owner’s Representative.

C. Perform test rolling procedure as follows:
   1. Operate equipment at a rate not to exceed 3 to 5 mph or a comfortable walking pace. Adjust speed to allow Owner’s Representative to measure any deflections and areas of rutting.
   2. Operate test rolling equipment in a pattern so that affected areas are loaded with at least one pass.
   3. After test rolling, check subgrade for conformance to drawings, and correct any surface irregularities. Re-shape subgrade within tolerances specified.

D. Test Rolling Evaluation:
   1. Rutting up to 1-inch is acceptable. Rutting in excess of 1-inch but not more than 6 inches, shall be considered a failure and requires reworking soil and compaction to required density.
   2. Deflection (pumping) up to 1-inch is acceptable. Deflection in excess of 1-inch but not more than 2 inches shall be acceptable if there is not substantial cracking or lateral movement of soil.
   3. Deflection in excess of 2 inches but not more than 6 inches shall be considered a failure, and requires reworking soil and compaction to required density.
4. Rutting and deflection in excess of 6 inches will require review and recommendation for corrective action by an approved Geotechnical Engineer.

5. After remedial work is performed, a final test roll shall be performed upon completion of work.

6. If remedial work is performed as directed, second test roll may be waived at discretion of Owner’s Representative.

3.4 AGGREGATE INSTALLATION REQUIREMENTS

A. Spread aggregate over prepared substrate to a total compacted thickness as indicated on Drawings.

B. Place aggregate in maximum 7-inch loose lifts and compact to specified density.

C. Level and contour surfaces to elevations and gradients indicated.

D. Add small quantities of fine aggregate to coarse aggregate as appropriate to assist compaction.

E. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

F. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.5 TOLERANCES

A. Section 31 05 16 – Aggregates for Earthwork defines base course materials.

B. Flatness: Maximum variation of 1/4-inch measured with 10-foot straight edge.

C. Scheduled Compacted Thickness: Within 1/4-inch.

D. Variation from Design Elevation: Within 1/4-inch.

3.6 FIELD QUALITY CONTROL

A. Section 31 02 00 – General Requirements for Sitework: Field inspection.

B. Perform compaction testing in accordance with ASTM D1557, ASTM D6938, and Section 31 02 00 – General Requirements for Sitework.

C. Perform moisture content testing in accordance with ASTM D6938 and Section 31 02 00 – General Requirements for Sitework.

D. If tests indicate Work does not meet specified requirements, remove Work, replace, and retest.

E. Frequency of Tests: As determined by Owner’s Representative.

3.7 BASE COURSE SCHEDULE

A. Section 31 05 16 – Aggregates for Earthwork defines base course materials.
B. Under Asphalt Pavement:
   1. Aggregate type as indicated on the Drawings, compact to 95 percent modified Proctor density.

C. Under Concrete Pavement and Curb and Gutter:
   1. Aggregate type as indicated on the Drawings, compact to 95 percent modified Proctor density.

D. Under Paver Units:
   1. Sub-Base: Aggregate type as indicated on the Drawings, compact to 95 percent modified Proctor density.
   2. Sand Base: Aggregate type as indicated on the Drawings, compact to 95 percent modified Proctor density.

E. Under Synthetic Track:
   1. Aggregate type as indicated on the Drawings, compact to 95 percent modified Proctor density.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Asphalt Paving Mix.
   3. Aggregate Base Course.
   4. Tack Coat Preparation.
   5. Asphalt Pavement - Two Course Installation.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 - General Requirements for Sitework shall govern Work under this Section.
   2. Section 31 05 16 – Aggregates for Earthwork: Product requirements for aggregate for placement by this section.
   4. Section 32 11 23 - Aggregate Base Course: Compacted granular base for paving.

1.2 REFERENCES

A. State of Illinois Department of Transportation

1.3 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.

B. Product Data: Submit product information and mix design.

C. Certification: Provide Manufacturer’s Certification Report that indicates Products and Materials meet or exceed all specified requirements.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Illinois Department of Transportation Standards.

B. Mixing Plant: Conform to
   1. IDOT Section 1102.

C. Obtain materials from same source throughout.

1.5 QUALIFICATIONS

A. Installer: Company specializing in performing Work of this section with minimum five years experience.
1.6 ENVIRONMENTAL REQUIREMENTS

A. Section 31 02 00 – General Requirements for Sitework: Environmental conditions affecting products on site.

B. Do not place binder course when temperature in the shade is below 40 degrees F, surface course when temperature in the shade is below 45 degrees F, or any course if surface is wet or frozen.

C. Install Work in accordance with
   1. IDOT Section 406.

PART 2 - PRODUCTS

2.1 ASPHALT PAVING MIX

A. Use dry material to avoid foaming. Mix uniformly.

B. Provide Asphaltic Concrete Binder Course Mixtures as specified below:
   1. Asphaltic Concrete Binder Course: IDOT Section 406, IL-19.0L, PG 64-22.

C. Provide Asphaltic Concrete Surface Course Mixtures as specified below:
   1. Asphaltic Concrete Surface Course: IDOT Section 406, IL-9.5L, PG 64-22.

D. Recycled Asphalt Pavement (RAP) [may] [shall not] be used.
   1. Contractor may use up to 25 percent RAP for base, binder, and intermediate course mixtures.
   2. Contractor may use up to 20 percent RAP in surface course mixtures.

2.2 ASPHALT MATERIALS

A. Tack Coat: in accordance with
   1. IDOT MC-20 Section 406.

2.3 SOURCE QUALITY CONTROL AND TESTS

A. Section 31 02 00 – General Requirements for Sitework: Testing, inspection and analysis requirements.

B. Submit proposed mix design for each mixture for review prior to beginning of Work.

C. Provide test samples in accordance with Section 31 02 00 – General Requirements for Sitework.

D. Perform Asphaltic Concrete Testing in accordance with
   1. IDOT Section 406.
PART 3 - EXECUTION

3.1 EXAMINATION
A. Section 31 02 00 – General Requirements for Sitework: Verification of existing conditions before starting work.
B. Verify compacted aggregate base is acceptable and ready to support paving and imposed loads.
C. Verify gradients and elevations of base are correct.

3.2 AGGREGATE BASE COURSE
A. Section 32 11 23 - Aggregate Base Course forms base course construction for Work of this section.

3.3 TACK COAT APPLICATION
A. Apply tack coat in accordance with
   1. IDOT Section 406.
B. Apply tack coat on asphalt or concrete surfaces over subgrade surface at uniform rate of 1/3 gal/sq yd.

3.4 PLACING ASPHALT PAVEMENT - TWO COURSE INSTALLATION
A. Install asphalt pavement in accordance with
   1. IDOT Section 406.
B. Place asphalt binder course within 24 hours of applying primer or tack coat.
C. Place binder course to thickness shown on Drawings.
D. Place surface course within 24 hours of placing and compacting binder course. When binder course is placed more than 24 hours before placing surface course, clean surface and apply tack coat before placing surface course.
E. Place surface course to thickness shown on Drawings.
F. Install utility grilles and frames in correct position and elevation prior to installation of pavement.
G. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
H. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.5 TOLERANCES
A. Section 31 02 00 – General Requirements for Sitework: Tolerances.
B. Flatness: Maximum variation of 3/8-inch measured with 15-foot straight edge.
C. Scheduled Compacted Thickness: Within 1/4-inch.

D. Variation from Indicated Elevation: Within 1/4-inch.

3.6 FIELD QUALITY CONTROL

A. Section 31 02 00 – General Requirements for Sitework: Field inspecting, testing, adjusting, and balancing.

B. Provide two 4-inch diameter disks, 2-1/2 inches high, each day that asphalt pavement is placed.

3.7 PROTECTION OF FINISHED WORK

A. Section 31 02 00 – General Requirements for Sitework: Protecting finished work.

B. Immediately after placement, protect pavement from mechanical injury for 12 hours or until surface temperature is less than 140 degrees F, whichever occurs first.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Materials and Installation requirements for exterior concrete components as follows;
      a. Curb and combination curb and gutter.
      b. Handicap ramps.
      c. Catch Basin Pads
   2. Exterior Concrete Design Requirements as follows;
      a. Concrete mix design.
      b. Reinforcement.
      c. Concrete curing and sealing.
      d. Jointing.
      e. Quality control and testing.
      f. Concrete placement and finishing.

B. Related Sections:
   1. Section 31 02 00 – General Requirements for Sitework shall govern Work under this Section.
   2. Section 31 22 13 - Rough Grading: Preparation of site for paving and base.
   3. Section 31 23 17 – Site Excavation, Backfill, and Compaction: Compacted subbase for paving.
   4. Section 32 11 23 - Aggregate Base Course: Compacted granular base for paving.

1.2 REFERENCES

A. American Concrete Institute (ACI)
   1. ACI 224.3R, Joints in Concrete Construction, Chapter 6 – Pavements.
   2. ACI 301 – Structural Concrete.
   4. ACI 305 – Hot Weather Concreting.
   5. ACI 306 – Cold Weather Concreting.
   6. ACI 308 – Standard Practice for Curing Concrete.

B. ASTM International (ASTM)
   1. ASTM A82 – Specification for Steel Wire, Plain, for Concrete Reinforcement.
   2. ASTM A184 - Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
   3. ASTM A185 - Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
5. ASTM A615 - Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
6. ASTM A767 – Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
7. ASTM A775 - Specification for Epoxy-Coated Reinforcing Steel Bars.
10. ASTM C31 – Practice for Making and Curing Concrete Test Specimens in the Field.
11. ASTM C33 - Specification for Concrete Aggregates.
16. ASTM C172 - Practice for Sampling Freshly Mixed Concrete.
17. ASTM C231 – Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
20. ASTM C494 - Specification for Chemical Admixtures for Concrete.
22. ASTM C1116 - Specification for Fiber-Reinforced Concrete and Shotcrete.

C. State of Illinois Administrative Code:

D. United States Access Board:
   1. ADA Accessibility Guidelines for Buildings and Facilities.(ADAAG)

1.3 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.

B. Submit proposed mix design of each class of concrete to Engineer not later than 10 days after Notice to Proceed or 15 days prior to the first concrete placement, whichever comes first.

C. Product Data: Submit data on joint filler, reinforcement, admixtures and curing compounds.
1.4 QUALITY ASSURANCE
   A. Perform Work in accordance with applicable specified ACI requirements.
   B. Maintain one copy of each document on site.
   C. Obtain cementitious materials from same source throughout.

1.5 ENVIRONMENTAL REQUIREMENTS
   A. Conform to requirements of Section 31 02 00 – General Requirements for Sitework.
   B. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 - PRODUCTS
2.1 FORM MATERIALS
   A. Wood form material, profiled to suit conditions.

2.2 REINFORCEMENT
   A. Reinforcing Steel: ASTM A615; 60 ksi yield grade; deformed billet steel bars; with ASTM A775 epoxy coated finish.
   B. Epoxy-Coated Joint Dowel Bars: ASTM A775; with ASTM A615, Grade 60, smooth steel bars. Cut bars true to length with ends flush and free of burrs.
   C. Epoxy Repair Coating: Liquid, two-part epoxy repair coating, compatible with epoxy coating on reinforcement.
   D. Tie Bars: ASTM A615, Grade 60, deformed.
   E. Reinforcement Supports:
      1. Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire fabric, and dowels in place.
      2. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete.
         a. Provide wire bar supports with plates or horizontal runners where base material will not support chair legs.
         b. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer coated wire bar supports.

2.3 CONCRETE MATERIALS
   A. Cement: ASTM C150 Normal – Type 1 gray color.
C. Water: ASTM C1602, potable, not detrimental to concrete.


E. Flyash: ASTM C618 Class C.

### 2.4 CHEMICAL ADMIXTURES

A. Chemical admixtures shall be in accordance with ASTM C494.

B. Concrete may contain Type A Water-reducing admixture.

C. Admixtures are to be used in accordance with manufacturer's recommendations.

D. Chemical admixtures containing chlorides, sulfides, or nitrides are not permitted.

E. A single manufacturer shall supply permitted admixtures.

F. Admixture manufacturers are to be approved in writing by Owner’s Representative prior to use.

### 2.5 ACCESSORIES


B. Form Release Agent: Colorless material which will not stain concrete, absorb moisture or impair natural bonding or color characteristics of coating, intended for use on concrete.

### 2.6 CURING AND TREATMENT MATERIALS

A. Water: Potable and clean.

B. Membrane Curing Compound, ASTM C309, Type I, Class A, free of oil, wax, or grease.

### 2.7 CONCRETE MIX - BY PERFORMANCE CRITERIA

A. Comply with IDOT Specifications, Article 1020 for Class SI concrete.

B. Provide concrete to the following criteria:
   1. Compressive strength, when tested in accordance with ASTM C39/C39M at 28 days; 3500 psi.

### 2.8 CONCRETE MIX

A. Mix concrete in accordance with ASTM C94.

B. Schedule of Mixes:

<table>
<thead>
<tr>
<th>Maximum Aggregate Size</th>
<th>Maximum Slump**</th>
<th>Minimum Cement</th>
<th>Minimum Compressive Strength</th>
<th>Maximum Water Cement</th>
</tr>
</thead>
</table>

CONCRETE PAVING 32 13 13 - 4 FEBRUARY 12, 2019
C. Prepare and submit concrete mix designs in accordance with Section 31 02 00 – General Requirements for Sitework, and include as part of cost of this Work.

D. A qualified agency acceptable to Owner’s Representative shall prepare mix designs. Submit six (6) copies of mix designs for Owner’s Representative’s review prior to placing any concrete.

E. Mix design shall indicate brands, types, and quantities of admixtures included, compressive strength, slump, sieve analysis for fine and coarse aggregate, quantities of all ingredients, type and brand of cement, source of aggregate, and whether fine aggregate is natural or manufactured.

F. Use accelerating admixtures in cold weather only when approved by Owner’s Representative in writing. Use of admixtures will not relax cold weather placement requirements.

G. Use calcium chloride only when approved by Owner’s Representative in writing.

H. Use set retarding admixtures during hot weather only when approved by Owner’s Representative in writing.

2.9 SOURCE QUALITY CONTROL AND TESTS

A. Section 31 02 00 – General Requirements for Sitework: Provide mix design for Class 9 concrete.

B. Submit proposed mix design to appointed firm for review prior to commencement of Work.

C. Tests on cement, aggregates, and mixes will be performed to ensure conformance with specified requirements.

D. Test samples in accordance with ACI 301.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 31 02 00 – General Requirements for Sitework: Coordination and project conditions.

B. Verify compacted subgrade and granular base is acceptable and ready to support paving and imposed loads.

C. Verify gradients and elevations of base are correct.
3.2 SUBBASE
A. Section 32 11 23 - Aggregate Base Course, forms base construction for Work of this section.

3.3 PREPARATION
A. Moisten base to minimize absorption of water from fresh concrete.
B. Notify Owner’s Representative minimum 24 hours prior to commencing concrete operations.

3.4 FORMING
A. Place and secure forms to correct location, dimension, profile, and gradient.
B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.5 PLACING REINFORCEMENT
A. Place reinforcement as indicated.
B. Interrupt reinforcement at isolation and expansion joints.
C. Position the reinforcement on approved chairs securely fastened to the subgrade prior to concrete placement.
D. Mechanically screed concrete after the steel has been placed.
E. Regardless of placement procedure, ensure the reinforcing steel is free from coatings which could impair bond between the steel and concrete, and indicate laps in the reinforcement as indicated.
F. In lieu of the above, automatic reinforcement depressing attachments may be used to position the reinforcement provided the entire operation is approved by Engineer.
G. Regardless of the equipment or procedures used for installing reinforcement, ensure that the entire depth of concrete is adequately consolidated by the mechanical screeing process.
H. The method used in installing and holding dowels in position must ensure that the error in alignment of any dowel from its required horizontal and vertical alignment after the pavement has been completed will not be greater than 1/8 in. per ft.
I. Horizontal spacing of dowels must be within a tolerance of plus or minus 5/8 inch.
J. Do not place dowels and tie bars closer than 0.6 times the dowel bar and tie bar length to the planned joint line.
K. If the last regularly spaced dowel and tie bar is closer than that dimension, it must be moved away from the joint to a location 0.6 times the dowel bar and tie bar length.
L. For contraction joints:
   1. Hold dowels and tie bars in longitudinal and transverse contraction joints within the paving area securely in place by means of rigid metal frames or basket assemblies of an approved type.
   2. Hold the basket assemblies securely in the proper location by means of pins or anchors.

M. For construction joints in fixed form paving applications:
   1. Install dowels and tie bars using the bonded-in-place method. Do not install by removing and replacing in preformed holes.
   2. Prepare dowels and tie bars and place across joints where indicated on approved jointing plan, correctly aligned, and securely held in the proper horizontal and vertical position during placing and finishing operations, by means of devices fastened to the forms.

N. For construction joints in fixed hardened concrete applications:
   1. Install dowels in hardened concrete by bonding the dowels into holes drilled into the hardened concrete.
   2. Drill holes approximately 1/8 inch greater in diameter than the dowels into the hardened concrete.
   3. Repair any damage to the concrete face during drilling as directed.
   4. Bond dowels in the drilled holes using epoxy resin.
   5. Inject epoxy resin at the back of the hole before installing the dowel and extruded to the collar during insertion of the dowel so as to completely fill the void around the dowel. Do not apply by buttering the dowel.
   6. Hold the dowels in alignment at the collar of the hole, after insertion and before the grout hardens, by means of a suitable metal or plastic grout retention ring fitted around the dowel.

O. Wipe clean the portion of each dowel intended to move within the concrete or expansion cap and coat with a thin, even film of lubricating oil before the concrete is placed.

3.6 PLACING CONCRETE

A. Place concrete in accordance with specified ACI Requirements.

B. Concrete [may be] [may not be] placed using slip form technique.

C. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.

D. Place concrete continuously over full width of panel and between predetermined construction joints.

3.7 JOINTS

A. Place contraction joints as follows for identified entities:
   1. Curb and Gutter: 10 feet.
   2. Sidewalks: 5 feet.
   3. Area Paving:
      a. Non-reinforced slabs: 10 foot to 12 foot spacing in each direction.]

B. Place expansion joints using joint filler as follows for identified entities:
1. Curb and Gutter: 300 feet.
2. Sidewalks: 100 feet.
3. Area Paving: Areas next to building foundation and fixed components with separate foundations.

C. Align curb, gutter, and sidewalk joints.
D. Recess top of joint filler 1/8-inch for sealant placement
E. Jointing shall be performed by hand tools. Jointing tools and equipment must provide minimum joint depth as specified by ACI requirements.

3.8 FINISHING
A. Sidewalk and Ramp Paving: Broom finish. Edge sidewalk to 1/2-inch radius.
B. Curbs and Gutters: Broom finish.
C. Direction of Texturing: Transverse to pavement direction.
D. Place curing compound on exposed concrete surfaces immediately after finishing.

3.9 JOINT SEALING
A. Separate pavement from vertical surfaces with 1/2-inch thick joint filler.
B. Place joint filler in pavement pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
C. Extend joint filler from bottom of pavement to within 1/8-inch of finished surface.
D. Comply with joint sealant manufacturer's written installation instructions applicable to products and applications indicated, unless requirements that are more stringent apply.
E. Comply with recommendations of ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
F. Install backer materials of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
   1. Do not leave gaps between ends of backer materials.
   2. Do not stretch, twist, puncture, or tear backer materials.
   3. Remove absorbent backer materials that become wet before sealant application and replace them with dry materials.
G. Install sealants by the following techniques at same time backer material is installed:
   1. Place sealants so they directly contact and fully wet joint substrates.
   2. Completely fill recesses provided for each joint configuration.
   3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
H. Tooling of Non-Sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below forming smooth, uniform beads; eliminating air pockets; and ensuring contact and adhesion of sealant with sides of joint.
   1. Remove excess sealants from surfaces adjacent to joint.
   2. Use tooling agents approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

I. Provide joint sealant configuration complying with sealant manufacturer requirements and of depth and at locations indicated.

3.10 TOLERANCES

A. Section 31 02 00 – General Requirements for Sitework: Tolerances.

B. Maximum Variation of Surface Flatness: 1/4-inch in 10 feet.

C. Maximum Variation from True Position: 1/4-inch.

3.11 FIELD QUALITY CONTROL

A. Section 31 02 00 – General Requirements for Sitework: Testing and inspection services.

B. Concrete testing shall be paid for by Contractor.

C. Take one additional test cylinder during cold weather and cure on site under same conditions as concrete it represents.

D. Take one slump test for each set of test cylinders taken.

E. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.12 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Do not permit pedestrian traffic over pavement for 2 days minimum after finishing and vehicular traffic over pavement for 7 days minimum after finishing.

END OF SECTION
SECTION 32 14 43
PERMEABLE PRECAST CONCRETE UNIT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Providing permeable interlocking concrete pavement system.
   2. Installation work includes:
      a. Verifying subgrade is to the lines, grades, infiltration rate, and density shown on the
         Drawings.
      b. Provide the following system components:
         1) Geotextile and/or membrane liner.
         2) Horizontal drainage piping.
         3) Sub-base course.
         4) Base bourse.
         5) Bedding course.
         6) Edge restraint.
         7) Concrete pavers.
         8) Permeable joint material.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern
      Work under this Section.
   2. Section 31 05 13 – Soils for Earthwork.
   3. Section 31 05 16 – Aggregates for Earthwork.
   5. Section 31 23 17 – Site Excavation, Backfill, and Compaction.

1.2 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):

B. American Society of Civil Engineers (ASCE):
   1. ASCE 58 - Structural Design of Interlocking Concrete Pavement for Municipal Streets and
      Roadways.

C. ASTM International (ASTM):
   1. ASTM C29 – Standard Test Method for Bulk Density (Unit Weight) and Voids in
      Aggregate.
   3. ASTM C131 - Standard Test Method for Resistance to Degradation of Small-Sized Course
      Aggregate by Abrasion and Impact in the Los Angeles Machine.

5. ASTM C140 - Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units.

6. ASTM C936 - Standard Specification for Solid Concrete Interlocking Paving Units.


8. ASTM C1645 - Standard Test Method for Freeze-thaw and De-icing Salt Durability of Solid Interlocking Paving Units.


10. ASTM D448 - Standard Classification for Sizes of Aggregates for Road and Bridge Construction.


D. Interlocking Concrete Pavement Institute (ICPI):


1.3 DEFINITIONS

A. **Base Course** – within the context of this specification, a washed open graded free draining aggregate material (#57 Stone) of a designed thickness that provides both structural support over the Sub-base and water storage capacity (within the voids). It also serves as a choking material between the Bedding Course and Sub-base.

B. **Bedding Course** – within the context of this specification, a two-inch thick layer of washed open graded free draining aggregate material (#8 Stone) loosely screeded smooth for bedding of the Concrete Pavers.

C. **Concrete Pavers** – within the context of this specification, solid individual paving units manufacturing from concrete that are either specifically designed for use in permeable applications (include joints and voids) or are laid in a pattern that creates large enough openings to provide infiltration. Concrete Pavers are shipped in clusters called bundles or cubes, which consist of several layers of pavers strapped or wrapped together.
D. **Voids** – larger openings between the individual pavers that provide for infiltration.

E. **Joints** – smaller openings between the individual pavers that provide vertical and horizontal interlock between units.

F. **Edge Restraint** – within this specification, a cast in place concrete curb, building or other stationary object that prevents the lateral movement of the Bedding Course and Concrete Pavers so they do not spread and loose interlock.

G. **Geotextile** – Non-woven fabric made from plastic fibers used primarily for separation between Sub-base and Subgrade.

H. **Horizontal Drainage Piping** – series of horizontal pipes within the sub-base that discharge to a catch basin, ditch or other receiving body beyond the extent of the paved area. Piping is typically elevated in a Partial Exfiltration System, and at the bottom of the Sub-base in a No Exfiltration System.

I. **Laying Face** – the working edge of the pavement where the laying of pavers is occurring.

J. **Mechanical Installation** - The use of specialized machines to lift whole layers of pavers from the bundles and place them on the prepared bedding course. These specialized machines are designed specifically for this application.

K. **Membrane Liner** – impermeable liner placed at the bottom and sides of a No Exfiltration System, used to prevent the exfiltration/discharge of water other than through the Horizontal Drainage Piping. Usually includes a geotextile on top (possibly bottom) for protection.

L. **Permeable Joint Material** – a washed open graded free draining aggregate material (typically #8, #89 or #9 Stone) used to fill the spaces (joints and voids) between Concrete Pavers to create interlock and still maintain infiltration.

M. **Permeable Interlocking Concrete Pavement System** – a system of paving consisting of Concrete Pavers placed in an interlocking pattern with the joints and voids filled with Permeable Joint Material. The Bedding Course, Base Course and Sub-base Courses provide structural support over the Subgrade and stores, exfiltrates (into the Subgrade) and/or drains the infiltrating water.

N. **Sub-base Course** – within the context of this specification, an open graded free draining aggregate material (#2 Stone) of a designed thickness that provides both structural support over the Subgrade and water storage capacity (within the voids).

O. **Subgrade** – the soil upon which the pavement structure and shoulders are constructed.

1.4 **SUBMITTALS**

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.

B. Shop Drawings: Indicate on Shop Drawings, layout of paving units, dimensions of paved areas, control joints, expansion joints, elevations, and affected adjacent construction.

C. Product Data: Submit characteristics of paving, dimensions, and special shapes.
D. Samples: Contractor shall submit to the Owner’s Representative for approval, and retain for the balance of the project, a minimum of four (4) full size samples of each Concrete Paver illustrating Type/Size/Thickness/Color/Finish specified.

E. Prior to delivery of the associated material to the site, the Contractor shall submit the following product-specific documentation to Owner’s Representative for written approval:
1. Aggregates:
   a. Sieve analysis in accordance with ASTM C136.
   c. Percentage of angular and sub-angular particles in accordance with ASTM D2488.
   d. Minimum three (3) lb. sample of each material for independent testing.
   e. Source test results for void ratio and bulk density of the Base and Sub-base aggregates in accordance with ASTM C29.

2. Concrete Pavers:
   a. Test results from an independent testing laboratory for compliance to ASTM C936 or other applicable requirements.
   b. Test results from an independent testing laboratory of the initial infiltration rate of the proposed pavers and jointing material combination in accordance with ASTM C1781.
   c. For machine installation projects, stitching details to be used during product placement as supplied by the manufacturer.
   d. Warranty documentation.
   e. Close out Operations and Maintenance Program.
   f. Material Safety Data Sheets.

3. Geosynthetics:
   a. One 18 inch x 18 inch panel of each geosynthetic (Geotextile or Membrane Liner) for inspection and testing.
   b. Samples shall be externally tagged for easy identification.
   c. External identification shall include:
      1) Name of manufacturer; product type; product grade; lot number; and physical dimensions.
   d. Material Safety Data Sheets.

4. Written Method Statement and Quality Control Plan that describes material staging and flow, paving direction and installation procedures, including representative reporting forms that ensure conformance to the project specifications.

1.5

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum five years documented experience.
   1. Concrete paver manufacturer shall be an Interlocking Concrete Pavement Institute Certified Producer.

B. Installer: Experienced installer who has successfully completed grid pavement installations similar in design, material, and extent indicated for this Project.
   1. Concrete paver installer shall hold current certificate from Interlocking Concrete Pavement Institute Concrete Paver Installer Certification program.
C. Single-Source Responsibility: Obtain each color, type, and variety of grids, joint materials and setting materials from single sources with resources to provide products and materials of consistent quality, appearance and physical properties without delaying progress of the Work.

1.7 MOCKUP

A. Section 31 02 00 – General Requirements for Sitework: Requirements for mockup.

B. For each different paver color, install a 10 foot x 30 foot paver area which includes at a minimum, a full field of pavers between the curb and gutter and adjacent roadway pavement which follows the installation practices described in this specification.

C. This mock-up area will be used to verify:
   1. Surcharge of the bedding course.
   2. Joint sizes and permeable joint material.
   3. Lines and laying patterns.
   4. Stitching details (for mechanical installation).
   5. Colors.
   6. Texture of the Work.

D. This mock-up area shall be the standard from which the work will be judged.

E. Subject to written approval by the Owner’s Representative, the mock-up may be retained as part of the finished work.

F. Any and all work performed without written approval of the mock-up from Owner’s Representative is at Contractor’s risk and may be subject to rejection.

G. If mock-up is not approved or retained, remove and legally dispose of all mock-up materials.

1.8 DELIVERY, STORAGE AND HANDLING

A. Comply with Manufacturer’s ordering instructions and lead time requirements to avoid construction delays.

B. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.

C. Contractor shall check all materials upon delivery to assure that the proper materials have been received and are in good condition before signing off on the manufacturer’s packing slip.

D. Contractor shall protect all materials from damage or contamination due to jobsite conditions and in accordance with manufacturer's recommendations. Damaged or contaminated materials shall not be incorporated into the work.

E. Deliver Concrete Pavers to the site in steel banded, plastic banded, or plastic wrapped cubes capable of transfer by fork lift or clamp lift. Unload and store Concrete Pavers at job site in such a manner that no damage occurs to the product.

F. Handle and transport aggregates to avoid segregation, contamination and degradation.
G. Keep different materials sufficiently separated as to prevent mixing.
H. Do not dump or store one material on top of another unless it is part of the installation process.
I. Cover material with waterproof covering to prevent exposure to rainfall or removal by wind – secure the covering in place.
J. Geosynthetics shall be delivered, stored and handled in accordance with ASTM D4873.

1.9 ENVIRONMENTAL CONDITIONS
A. Base/Bedding course and pavers shall not be installed between November 1 and March 1 without prior written approval by Owner’s Representative. Any work completed during this timeframe without written approval is at Contractor’s risk and may be subject to rejection.
B. Do not install during heavy rain, freezing conditions or snowfall.
C. Do not install on frozen soil Subgrade or frozen aggregate.
D. Do not install frozen aggregates.

1.10 EXTRA MATERIALS
A. Section 31 02 00 – General Requirements for Sitework: Spare parts and maintenance products.
B. Provide minimum 200 square feet additional paver material on pallets and covered with stretch wrap for use by Owner for maintenance and repair as attic stock.
C. Extra pavers to be from the same production run as installed materials.
D. Store extra paver materials at location designated by Owner’s Representative.

PART 2 - PRODUCTS
2.1 CONCRETE PAVING UNITS
A. Manufacturers:
   2. Genest Concrete Works, Inc. – Series: Duragreen.
   4. Unilock
   5. Belgard
   6. Or Approved Equal.
C. Surface: Standard finish.
D. Color: As shown on the Drawings
2.2 CONCRETE PAVERS

A. Manufacturer: Belgard Concrete Unit Pavers; Northfield an Oldcastle Company, 2200 S Main Street, West Bend, WI 53095; 262-338-5700; Contact: Nate Gish; Email: Nate.Gish@oldcastle.com

B. Paver Type:
   1. Product: As specified on the Drawings
   2. Joint/Void: Maximum 8mm non-structural voids.
   3. Appearance: Multi Cobble.
   4. Color Options:
      a. Color A shall be Graphite.
      b. Color B shall be Truffle.

C. Concrete Pavers shall conform to the following requirements set forth in ASTM C936:
   1. Measured length or width of test specimens shall not differ by more than +/- 0.063 in, while measured thickness shall not differ by more than +/- 0.125 in.
   2. Average compressive strength of 8,000 psi with no individual unit under 7,200 psi when tested in accordance with ASTM C140.
   3. Average absorption of five (5) percent with no unit greater than seven (7) percent when tested in accordance with ASTM C140.
   4. For freeze-thaw testing, the average mass loss of all specimens tested shall not be greater than (A) 225 g/m2 when subject to 28 freeze thaw cycles, or (b) 500 g/m2 when subject to 49 freeze thaw cycles. Testing shall be conducted using a three (3) percent saline solution in accordance to ASTM C1645.

D. Efflorescence shall not be a cause for rejection, but shall be cleaned off finished paver surface by Contractor prior to final acceptance.

E. Pigment in Concrete Pavers shall conform to ASTM C979.

2.3 BEDDING COURSE

A. Clean, washed, non-plastic aggregate, free from deleterious or foreign matter, manufactured from crushed rock.

B. Micro Deval Degradation of less than eight (8) percent in accordance with ASTM D6938.

C. Percent of angular and sub-angular particles greater than 90 percent. Do not use rounded river gravel.

D. LA Abrasion less than 40 in accordance with ASTM C131, minimum CBR of 80 percent in accordance with ASTM D1883.

E. Gradation to conform to Table 1 as tested in accordance to ASTM C136. All aggregates shall have equal to or less than two (2) percent passing the No. 200 sieve.
2.4 PERMEABLE JOINT MATERIAL

A. Aggregate size shall be ASTM No. 9, as manufactured by Kafka Granite (800-852-7415)

B. Joint material aggregate shall be crushed granite in the following color:
   1. Starlight Black Granite with “Graphite” colored pavers.

C. Concrete paver and jointing material to have a minimum initial infiltration rate of 150 inches per hour per ASTM C1781, as verified by an independent testing laboratory.

2.5 BASE AND SUB-BASE

A. Clean, non-plastic aggregate, free from deleterious or foreign matter, manufactured from crushed rock.

B. Micro Deval Degradation of less than eight (8) percent in accordance with ASTM D6938.

C. Percent of angular and sub-angular particles greater than 90 percent. Do not use rounded river gravel or stone.

D. LA Abrasion less than 40 in accordance with ASTM C131, minimum CBR of 80 percent in accordance with ASTM D1883.

E. Gradation of Base Course to conform to Table 2 as tested in accordance to ASTM C136. All aggregates shall have equal to or less than two (2) passing the No. 200 sieve. Base course material shall be washed.

### Table 1
Grading Requirements for Bedding Course
(ASTM No. 8 Stone in accordance with ASTM D448)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/2 inch</td>
<td>100</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>85 to 100</td>
</tr>
<tr>
<td>No. 4</td>
<td>10 to 30</td>
</tr>
<tr>
<td>No. 8</td>
<td>0 to 10</td>
</tr>
<tr>
<td>No. 16</td>
<td>0 to 5</td>
</tr>
</tbody>
</table>

### Table 2
Grading Requirements for Base Course
(ASTM No. 57 Stone in accordance with ASTM D448)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1/2 inch</td>
<td>100</td>
</tr>
<tr>
<td>1 inch</td>
<td>95 to 100</td>
</tr>
<tr>
<td>1/2 inch</td>
<td>25 to 60</td>
</tr>
<tr>
<td>3/8 inch</td>
<td>0 to 10</td>
</tr>
<tr>
<td>No. 4</td>
<td>0 to 5</td>
</tr>
</tbody>
</table>
F. Gradation of Sub-base Course to conform to Table 3 as tested in accordance to ASTM C136. All aggregates shall have equal to or less than two (2) percent passing the No. 200 sieve. Sub-base material shall be clear.

Table 3
Grading Requirements for Sub-base Course
(ASTM No. 2 Stone in accordance with ASTM D448)

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 inch</td>
<td>100</td>
</tr>
<tr>
<td>2-1/2 inch</td>
<td>90 to 100</td>
</tr>
<tr>
<td>2 inch</td>
<td>35 to 70</td>
</tr>
<tr>
<td>1-1/2 inch</td>
<td>0 to 15</td>
</tr>
<tr>
<td>3/4- inch</td>
<td>0 to 5</td>
</tr>
</tbody>
</table>

2.6 GEOTEXTILES

A. Soil Separation:
   1. Non-biodegradable, nonwoven fabric made from 100 percent polypropylene staple filaments as manufactured by:
      a. Carthage Mills – Series: FX-80HS.
      b. TenCate Geosynthetics North America Mirafi – Series: 180N.
      c. Propex Inc. – Series: Geotex 801
      d. US Fabrics, Inc. – Series: 205NW
      e. Substitutions: In accordance with Section 31 02 00 – General Requirements for Sitework.

2.7 EDGE RESTRAINTS

A. Edge restraints shall be existing adjacent concrete.

B. Substitutions: In accordance with Section 31 02 00 – General Requirements for Sitework.

2.8 HORIZONTAL DRAINAGE PIPING

A. The Horizontal Drainage Piping shall be perforated or slotted PVC pipe manufactured in accordance with ASTM D3034, or corrugated HDPE pipe manufactured in accordance with ASTM D3350.

2.9 PAVER CLEANING PRODUCTS

A. Contractor shall use the following paver cleaning products as necessary, in order to remove all surface stains, spots, and tire marks.
   1. “Hardscape Cleaner” as manufactured by Techniseal for removal of ground-in dirt.
   2. “Paver Prep” as manufactured by Techniseal for removal of efflorescence and ground-in dirt.
   3. “Professional grade Oil and Grease Remover” as manufactured by Techniseal for removal of oil, grease, and other petroleum-based products.
4. “Paint Tar and Rubber Remover” as manufactured by Techniseal for removal of sealant, paint, tar, bitumen, rubber, and chewing gum.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 31 02 00 – General Requirements for Sitework: Verification of existing conditions before starting work.

B. Prior to commencement of any work, the Contractor shall conduct a pre-construction meeting with the Owner’s Representative, and affected sub-trades.

C. The pre-construction meeting should, at a minimum, verify:
   1. Location of the mock up, and whether it will be part of the final construction or need to be removed.
   2. Site layout conforms to the Drawings. In particular, the location and elevation of discharge points, if any, of the Horizontal Drainage Pipes.
   3. Excavation work conforms to the specified lines and elevations. Subgrade shall be trimmed to within 0 and 1/2-inch of the specified grades.
   4. Surface of the prepared Subgrade shall not deviate by more than 3/8-inch from the bottom edge of a 10-foot straight edge laid in any direction.
   5. Condition of the subgrade, in particular that the surface infiltration, where desired, has not been adversely impacted by the excavation work. Where compaction is desired, that the compaction densities have been met.
   6. Locations of curbs, grade beams, utility structures, light standards, tree wells or any other protrusions as applicable to the project.
   7. Details of the site ‘Erosion and Sediment Control Plan’, as applicable.
   8. Panel Installation Drawings for the Geosynthetics, in particular the location of any protrusions through the Membrane Liner where boots are required.

D. Although the Owner may provide soil testing and quality assurance inspection during earthwork and subgrade preparation, the Owner’s quality assurance program does not relieve the Contractor of responsibility for quality control and system performance.

E. Contractor shall obtain any quality control testing or inspection not provided by the Owner that is necessary to satisfy the Contractor with the condition of the subgrade prior to commencement of the work. This may include:
   1. Proof rolling of the subgrade to determine presence of soft spots or localized pockets of objectionable materials.
   2. Infiltration testing to verify the subgrade has not been adversely impacted.
   3. Compaction testing.

F. Where deficiencies or inconsistencies are identified, the Contractor shall notify the Owner’s Representative in writing.

G. The Contractor will not proceed with the work until the Owner’s Representative has verified that the deficiencies or inconsistencies have been addressed.
H. Beginning of Installation means acceptance of Subgrade.

3.2 INSTALLATION BASE AND SUB-BASE COURSES

A. Keep area where pavement is to be constructed free from sediment during the entire job. Any materials contaminated with sediment shall be removed and replaced with clean material.

B. Install membrane liner in accordance with the manufacturer’s recommendations. The membrane liner is applied to the bottom and sides of the excavation. Allow for enough membrane liner to exceed the final elevation of the surface. After completion of the surface, the excess liner should be cut flush with the finished grade.

C. Install geotextiles as required in accordance with the specifications and drawings. The geotextile is applied to the bottom and sides of the excavation with overlapping joints a minimum of 12 inches. Overlaps to follow down slope. Allow for enough geotextile to exceed the final elevation of the surface. After completion of the surface, the excess geotextile should be cut flush with the finished grade.

D. Install the Sub-base Course and Base Course at the thicknesses, compaction rates, surface tolerances, and elevations outlined in the specifications.
   1. Place and spread the first layer of sub-base without displacing or damaging the geosynthetics (if used). To prevent damage, tracked vehicles must not be used to spread the initial Sub-base layer.
   2. The aggregate should be spread and compacted in uniform layers not exceeding six (6) inch loose thickness.
   3. Compaction shall be performed using either a 10 ton vibratory roller or a minimum 13,500 lbf centrifugal force reversible vibratory plate compactor.
   4. For each lift, make at least two (2) passes in the vibratory mode and at least two (2) passes in the static mode – continue compaction until there is no visible movement in the materials.
   5. At the specified elevations, install the horizontal drain pipes in accordance with the manufacturer’s recommendations.
   6. Ensure the pipes are properly sloped to provide proper drainage to the outlets pipes shall be surrounded by a minimum of four (4) inches of base course material to prevent damage from the sub-base material. Care must be taken not to damage horizontal drain pipes during subsequent aggregate installation.
   7. Final surface tolerance of the base course should be plus or minus one (1) inch over a 10 foot straight edge laid in any direction.
   8. Attention will be paid to providing proper compaction near curbs, grade beams, concrete collars around utility structures, lights standards, tree wells, building edges and other protrusions as applicable to the project. In areas not accessible to large compaction equipment, compact to specified density with mechanical tampers (jumping jacks).
   9. Before commencing the placing of the bedding course, the base shall be inspected by the Construction Manager and Engineer.

3.3 INSTALLATION EDGE RESTRAINTS

A. Adequate edge restraint shall be provided along the perimeter of all paving as specified. The face of the edge restraint, where it abuts pavers, shall be vertical.
B. All concrete edge restraints shall be constructed to dimensions and level specified and shall be supported on a compacted Base not less than six (6) inches thick.

C. Concrete used for the construction of edge restraints shall be air-entrained and have a compressive strength as specified. All concrete shall be in accordance with ASTM C94 requirements.

3.4 INSTALLATION BEDDING COURSE, CONCRETE PAVERS AND PERMEABLE JOINT MATERIAL

A. Spread the bedding course evenly over the base course and screed to a nominal two (2) inch thickness. Do not use the bedding material to fill depressions in the base course surface.

B. Contractor shall screed the bedding course using either an approved mechanical spreader, an asphalt paver, or by the use of screed rails and boards.

C. Moisten, spread and screed bedding course. Surface tolerances shall be 3/8-inch over a 10-foot straight edge.

D. Ensure that concrete pavers are free of foreign material before installation.

E. Concrete pavers shall be inspected for color distribution and all chipped, damaged or discolored concrete pavers shall be replaced.

F. Initiation of concrete paver placement shall be deemed to represent acceptance of the pavers.

G. Lay the concrete pavers in the pattern(s) as shown on the Drawings. Maintain straight pattern lines.

H. For mechanical installations, follow the stitching details submittal as verified during the mock up.

I. Paving units shall be installed from a minimum of three (3) bundles for hand installations, six (6) bundles for mechanical installations, simultaneously to ensure color blending.

J. Joints between the individual concrete pavers shall be maintained according to the spacer bars.

K. Fill gaps at the edges of the paved area with cut pavers or edge units. Do not install cut pavers smaller than one-third of a whole paver along edges subject to vehicular traffic trim two (2) pavers to fit.

L. Cut pavers using a masonry saw. Upon completion of cutting, the area must be swept clean of all debris to facilitate inspection and to ensure the concrete pavers are not damaged during compaction.

M. Using a low amplitude plate compactor capable of at least 5,000 lbs. compaction at a frequency of 75 hz –100 hz, compact and seat the concrete pavers into the bedding course.

N. Pavers shall be compacted to achieve consolidation of the bedding course and brought to level and profile by not less than three (3) passes.
O. Initial compaction should proceed as closely as possible following the installation of the paving units and prior to the acceptance of any traffic or application of permeable joint material.

P. Any units that are structurally damaged during compaction shall be immediately removed and replaced.

Q. Apply a dressing of permeable joint material to the surface and sweep into the joints and voids.

R. Fill joints and voids, then sweep off excess material before vibrating the material down into the joints using a plate compactor. This will require at least two (2) or three (3) passes with the compactor.

S. Do not compact within six (6) feet of the unrestrained edges of the paving units.

T. All work to within six (6) feet of the laying face must be left fully compacted at the end of each day. Cover the laying face with plastic sheets overnight if not closed with cut and compacted pavers.

U. Sweep off excess aggregate when the job is complete and remove from site.

3.5 CLEANING OF FINISHED PERMEABLE CONCRETE PAVER SYSTEM

A. Finished permeable concrete paver surfaces shall be free of dirt, debris, stains and tire marks in order to be deemed as acceptable.

B. Any surface stains, spots, and tire marks left on the pavers must be removed with appropriate paver cleaner. Clean finished permeable concrete paver surfaces in accordance with the cleaner manufacturer’s written requirements.

C. Do not use abrasive cleaning tools that would damage finished joints and paver surfaces.

D. Prior to installation, test paver cleaner in discreet area to verify paver surface or adjacent paving will not be damaged or discolored. Testing area to be approved by Owner’s Representative.

3.6 QUALITY ASSURANCE/QUALITY CONTROL

A. Quality Assurance - The Owner may engage inspection and testing services, including independent laboratories, to provide quality assurance and testing services during construction. This does not relieve the Contractor from securing the necessary construction quality control testing.

B. Quality assurance should include as a minimum verification that the Contractor’s quality control plan and testing are adequate.

C. Quality assurance shall also include observation of construction for general compliance with design drawings and project specifications.

D. Quality Control – Contractor shall engage inspection and testing services to perform the minimum quality control testing described in the design drawings and specifications. Only qualified and experienced technicians and engineers shall perform testing and inspection services.
E. Quality control testing shall include backfill testing to verify soil types and compaction, and verification that the system is being constructed in accordance with the design plans and project specifications.

3.7 AS-BUILT CONSTRUCTION TOLERANCES

A. Final inspection shall be conducted to verify conformance to the drawings after removal of excess aggregate. All pavements shall be finished to lines and levels to ensure positive drainage at all drainage outlets and channels.

B. The final surface elevations shall not deviate more than plus or minus 3/8-inch under a 10 ft long straight edge.

C. Lippage shall be no greater than 1/8-inch difference in height between adjacent pavers.

D. Bond lines for the pavers shall be plus or minus 1/2-inch over a 50 foot string line.

E. Joint width between pavers shall not deviate more than plus or minus 1/8-inch-inch.

3.8 PROTECTION AND MAINTENANCE

A. At the completion of the work, the Manufacturer shall provide the Owner with a “PICP System Maintenance Checklist” and sample “Long Term Performance and Maintenance Agreement”.

B. Once the work is complete, the Owner shall be responsible for protecting the work from sediment deposition and damage due to subsequent construction activity on the site.

C. Contractor shall return to the site after six (6) months from the completion of the work and conduct an inspection of the PICP System with the Owner, in accordance with the “PICP System Maintenance Checklist”.

D. The contractor shall provide the following remedial work, as required, as part of the original bid and with no additional compensation:
   1. Fill paver joints with joint material.
   2. Replace broken or cracked pavers.
   3. Re-level settled pavers to specified elevations.
   4. Re-align pavers to straighten bond lines.
   5. Owner shall be responsible for removal of debris either on the surface or within the joints, as required for the Contractor to properly conduct the necessary remedial work.

END OF SECTION
SECTION 321823.33 – RUNNING TRACK SURFACE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY
   A. This section includes:
      1. New resilient running track surface.
      2. Line markings.

1.3 SUBMITTALS
   A. Material Certificates
      1. Provide 2 copies of material certificates signed by material producer and the Contractor, certifying that each material item complies with, or exceeds, specified requirements.
   B. Product Data: Submit manufacturer’s product data for all components of the running track systems.
   C. Samples: Submit 2” x 4” samples of resilient surfaces.

1.4 DAMAGED MATERIALS
   A. Damaged materials will not be permitted or acceptable for installation.

1.5 QUALITY ASSURANCE
   B. Before starting work, the Manufacturer's Representative, the Contractor, Job Foreman who will supervise the job full time, the Owner's Inspector shall meet at the site to examine all work to be covered, and review methods of application of materials, and verify that all preliminary work is complete to the point where the installation may commence. The manufacturer's representative shall make such additional inspections as required to ensure proper application of materials related to the forthcoming guarantee.
   C. Verify that all materials may be installed in strict accordance with the original design, the manufacturer's current recommendations, and all pertinent codes and regulations.
   D. The Contractor shall be approved by the Manufacturer and have ten (10) years experience.

F. All workers shall be thoroughly experienced in the particular class of work employed on this project; all materials shall be securely stored in a watertight place in neat and workmanlike manner. All work shall be done according to these specifications and shall meet the field approval of the Owner's representative.

G. The Contractor shall plan and conduct all operations of work.

H. Materials:

1. In the event any materials are damaged by rain, traffic, etc., during and prior to final approval, the contractor, at the Owner direction, will repair or replace the damage at no cost to the Owner.

I. Fire Prevention

1. The Contractor shall be responsible for protecting against fires; he shall provide and conveniently locate suitable fire extinguishers, that meet code requirements, on the site.

J. Requirements of Authorities Having Jurisdiction: Provide track surface materials that has been submitted to and has obtained approval of all authorities having jurisdiction.

1.6 PROJECT CONDITIONS

A. Examination of Site: Visit the site before bidding and examine existing track and adjacent areas to determine all conditions under which the work will be performed

1. The drawings represent only general extent of the track surfaces. Measurement of exact dimensions at the site is the responsibility of the Contractor.

B. Protection of Property: Protect all existing buildings or structures on adjoining properties and all public or private thoroughfares so that no damage may be caused by any work or operations for this project. Provide all barricades, lights, signals, protection to all kinds required by federal, state or municipal law or ordinance. Maintain all of these until directed to remove them.

C. Weather Limitations: Comply with recommendations of resilient surfacing or manufacturer or seal coating manufacturer.

1.7 INSTALLER QUALIFICATIONS

A. The track surface contractor shall have completed at least 15 projects of similar magnitude and complexity.

B. Applicator shall be qualified and licensed by the manufacturer for the application of the system.

C. Bidder must have existing installations which have been in use for five years of the exact product being bid available for inspection by OWNER.

D. The bidder must be the installer of the surface. No sub-contracting of the resilient surfacing shall be allowed.
1.8 DELIVERY, STORAGE AND HANDLING
   A. Protect materials from excessive moisture in shipment, storage and handling. Deliver materials in manufacturer’s unopened packages and store in dry place with adequate air circulation.
   B. Material shall not be delivered or installed until all asphaltic concrete work and underlayment work is completed.
   C. Deliver packaged materials and store in original containers with seals unbroken and labels intact until time of use.

1.9 WARRANTY
   A. Upon completion of this portion of the work, and as a condition of its acceptance, deliver to the Owner, a written guarantee signed by the manufacturer guaranteeing that the installed track surface will remain intact and free from defects for at least five years following the date of final acceptance of the work. Guarantee shall provide for replacement of defective material at no cost to Owner.
   B. Wear: Provide Owner a written warranty from manufacturer that shall warrant that no part of the wearing surface shall wear through for a period of five years. The warranty shall include such defects as bubbling, delamination, peeling, loss of integrity and excessive wear. This warranty shall provide for replacement of worn areas with the same type of materials, including installation, at no cost to the Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
   A. Basis-of-Design Product: Subject to compliance with requirements, provide Advanced Polymer Technology; Spurtan BSS or comparable product by one of the following:
      1. Beynon Sports; BSS 1000.

2.2 TRACK SURFACE MATERIALS
   A. System Description: 13 mm, impermeable paved mat with structural spray finish. Base layer consists of a blackmat of SBR rubber granules bond in polyurethane. The middle layer is a seal coat using a two-component polyurethane and EPDM powdered rubber. The surface layer is a mixture of colored polyurethane and EPDM spray rubber that is structurally sprayed onto the base to form a textured finish.
   B. No asbestos-containing material will be approved for use on this project.

2.3 MATERIALS
   A. Primer: Polyurethane-base primer, specifically formulated to be combatable with the base and track surface materials.
   B. Rubber (Black SBR): The basemat rubber shall be specifically graded Styrene Butadiene Rubber (SBR). SBR is to be dried to no less than 2.5% moisture and sealed in bags.
C. Polurethane Binder: The basemat shall be bound by a moisture-cured polyurethane, compatible with the basemat rubber. No asphaltic emulsions or epoxies are allowed in the basemat. Install the basemat with a specially designed track-paving machine to an average depth of 11 mm. No machine sprayed basemat systems will be allowed.

D. EPDM Powder Rubber: The basemat will be sealed off using Melos powdered rubber mixed with two component full pour polyurethane.

E. Two-Component Polyurethane: The seal layer shall be made from a two component full pour polyurethane with no solvents or fillers added.

F. One Component Structural Spray: The sealed basemat shall be coated by a pigmented one component, polyurethane resin based, structural spray mixed with Melos spray rubber

G. Color: As selected by Architect from Manufacturer's full line.

2.4 TRACK MARKING

A. Paint: Polyurethane-based paint specifically manufactured to be compatible with the specified polyurthane track surfaces.

B. Cleaning: Pavement to be striped must be free of loose dust, dirt, stone or other foreign matter. Oil and grease spots must be scrubbed off with detergent and thoroughly flushed with water.

C. Preparation of Surface: All painted marks and strips must be primed with a primer. All surfaces must be thoroughly cured. All soft or damaged spots must be repaired.

D. Locate and establish radius points.

E. Establish and set all necessary control points.

F. Lay out all lines and markings to within ½” plus or minus tolerance.

G. Provide all computations and measurements.

H. Establish all locations on the curves using a transit or Theodilite capable or reading direct to 20 seconds or up to the most current technology.

I. Submit, in advance for approval, drawings and pictures showing in detail the size, shape and color of lines, hurdle marks, big lane number, markings, identification, relay exchange zones. The OWNER must approve prior to starting.

J. Identify all markings by painting the identification directly onto the track surface in 4” letters just below or in front of each and every mark in the right hand portion of the lane.

K. Paint all the large (3’ high) lane numbers (6 to 8 sets) in 2 colors (verify colors with Architect) behind all start lines (100m, 110, hurdle, 200m, 300m hurdle), turn stagger start lines.

L. All lines shall receive two coats of paint.

M. Paints shall be used directly from original containers and absolutely – NO – thinning shall be allowed.
N. Amount of paint used shall be as recommended by the manufacturer.

O. All measurements shall be made by competent, experienced and fully qualified personnel only.

P. Upon completion of the track markings the contractor shall furnish an acceptable letter of, or certificate of accuracy to the owners attesting to the accuracy of the track markings and measurements and shall include copies of the computations, calculations, and drawings that were used to obtain this accuracy.

Q. The accuracy of the track markings must be completely acceptable to the Illinois State High School Association.

2.5 TRACK MARKING GUIDE

A. Layout of track events is to provide for a common finish line for all events, unless otherwise noted. Track lane lines, lane numbers, common finish lines, and curved lines are to painted white.

B. Provide lines for the following events: This is a guide verify with OWNER before starting.

1. 100 meter dash White starting line
2. 100 meter hurdles (girls) White starting line, yellow hurdles marker lines, north going south to common finish line.
3. 110 meter high hurdles White starting line, red hurdles marker lines, going south to common finish line.
4. 100 meter low hurdle Blue hurdle markings to run opposite direction (south to north).
5. 110 meter high hurdle Green hurdle markings to run opposite direction.
6. 200 meter dash-2 required Green one curve, stagger starting lines. 
   NE to SW
   SW to NE
7. 300 meter int. hurdles White starting lines, white hurdle marker lines.
8. 400 meter dash Red two curve, stagger starting lines.
9. 400 meter relay Red exchange zones with 42” wide diamond stripe and red acceleration, 6” pot (triangle); verify with OWNER.
10. 800 meter run Green one curve, stagger starting lines and white breakaway line and flag. Verify with OWNER; wants very visible.
11. 800 meter relay Blue 4 curve stagger starting lines, hand off zone marking. 
    1st Exchange – Yellow
    2nd Exchange – Yellow
    3rd Exchange – Red & Yellow
12. Alley Lanes 1 & 2
    3 & 4 Green + Dash (green) – 1 turn stagger
    5 & 6
13. 1600 meter relay
   Red two curve stagger starting lines – orange exchange zone –
   “Water Fall” (curved) also 3 turn stagger starting in white.

14. White finish line on back stretch for 200 (100) and starting line for 100 on back stretch.

15. Lines around track
   All lines white with shadow outside lines 2, 4, 6 with gold on
turn 1 to designate alleys.

16. Curved Start line 1600 and
   White – verify with OWNER.
   3200 Meters. Use alleys -
   800 meter run Concept.

17. 50 yard dash
   Mark on outside lane 4 locations, one each side – verify with
   OWNER.

18. 1-1/2 mile run
   Start common finish starting line, end mark on inside border line
   – verify with OWNER.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Application and Job Conditions: Comply with manufacturer’s recommendations.

   1. Perform work when ambient temperature and material temperature comply with manufacturer’s
      requirements.

B. Track Preparation

   1. Remove all existing latex rubber synthetic surface from track. Care must be taken to minimize
      damage to existing asphalt. This removed material must be disposed of properly in a state-
      approved site. Blow clean track. Any areas of dust, dirt or mud must be cleaned with a high
      pressure washer.
   2. Patching: Patch all existing rough and cracked areas. Use material and methods acceptable to
      surface manufacturer.
   3. Inspect asphalt and repair any areas not suitable for the new synthetic surface. Repair all “bird
      bath” areas holding water. The surface shall not deviate more than 1/8” per 10 feet from the
      specified grade when checked with a 10-foot straight edge.
   4. Repair cracks by applying Petrotak or equal over all crack areas.
   5. Apply polyurethane primer designed to go over existing asphalt at a rate of .05 - .07 gallons per
      square yard in preparation for the application of the ½” polyurethane all weather running track
      surface.

3.2 APPLICATION:

A. The entire asphalt or concrete track surface shall be clean and free of dirt, oil, grease or any other residue
   upon arrival of the installation team. Any dirt, etc. shall be pressure washed off the base.
B. Prime entire surface area with a compatible Qualipur polyurethane primer. Mask and protect adjacent structures, as required. Primer shall dry to a tack-free condition, but no longer than 24 hours, before application of the base mat. The consumption rate is 0.29 lbs/sy (0.16 kgs/sm).

C. Mix the binder and granules until all rubber is thoroughly coated transport onto the track and apply using a paving machine that is specifically designed for this type of application. For an average 11 mm mat the consumption is 14.94 lbs/sy (8.11 kgs/sm) of SBR rubber and 3.52 lbs/sy (1.91 kgs/sm) Qualipur binder. Apply to the specified thickness.

D. Mix the two component polyurethane resin and EPDM powder into a thixotropic mixture and applied to the basemat by means of spreading the material with a rubber squeegee to seal off the mat.

E. Top Layer: After the seal layer has cured or is tack-free but no longer than 24 hours, Mix the structural spray and spray rubber until thoroughly coated. The mixture should be sprayed in two separate applications. Apply the second coat, in an opposite direction as to the first. The minimum application rate is 1.92 lbs/sy (1.04 kgs/sm) for the structural spray and 1.27 lbs/sy (0.69 kgs/sm) EPDM spray rubber. Apply specified amounts to achieve proper coverage.

3.3 LINE MARKINGS

A. Line paint shall be a compatible product with the type of resilient surface installed. The surface material shall be allowed to cure for at least 48 hours before installation of the lien paint. Mark all areas and measure accurately prior to painting and all lines shall be straight and true.

1. Layouts shall be in accordance with latest requirements of applicable material and Illinois State High School Athletic Association guidelines.

END OF SECTION 321823.33
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Football Goal Posts.
   2. Tennis Court Equipment.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern all Work under this section.
   2. Section 32 19 26 – Tennis Court Construction.

1.2 REFERENCES

A. National Collegiate Athletic Association (NCAA).

B. National Federation of State High School Associations (NFHS)
   1. NFHS Court & Field Diagram Guide

C. Where discrepancies are noted between these various governing bodies, rules of NFHS shall be enforced.

1.3 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Submittal requirements.

B. Product Data: Submit data indicating size, materials, and finish.

C. Manufacturer’s Installation Instructions: Indicate special procedures required to install Products specified.

D. Submit manufacturer’s operating and maintenance information.

PART 2 - PRODUCTS

2.1 TENNIS COURT EQUIPMENT

A. Approved Manufacturers:
   1. Posts:
      c. Or Approved Equal.
   2. Nets:
c. Or Approved Equal.

B. Net Posts: Round galvanized steel, aluminum, or coated iron; minimum 2-7/8 inches outside diameter.
   1. Minimum yield strength 1,100 lbs.
   2. Minimum tensile strength 1,500 lbs.
   3. Equipped with an internal tensioning device.
   4. Mechanical tensioning devices, worm gear, ratchet reel, or screw-type shall be limited in amount of force applied to net post, not to exceed 1/2 post yield strength.
   5. Net lacing rods shall be welded to net posts.

C. Nets: Dense 3 mm minimum braided polyethylene body with heat sealed knots; double/two ply headband with minimum four (4) rows of locked stitching; 13 oz. minimum vinyl side tapes.

D. Bounding Board:
   1. Double-faced tennis practice wall, wind load compliant, in green with white top of net line.
   2. Materials:
      a. High-strength galvanized steel framing.
      b. Durable, resilient plastic face boards.
      c. Corrosion-resistant fasteners.
   3. Bounding boards shall be as manufactured by JW Industries, Inc. or an approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION REQUIREMENTS

A. Contractor is to reinstall football goal posts.

B. Concrete required for installation shall be as specified in Section 32 13 13 – Concrete Paving.

3.2 INSTALLATION - FOOTBALL GOAL POSTS

A. Prior to installing artificial turf at each end of football field, in middle, 8 feet behind field side of end zone Line, dig foundation holes. Size holes to contain a poured concrete foundation 36 inches in diameter square, 7'-4” deep and 8 inches below finished ground level.

B. Cast four 18-inch anchor bolts into concrete foundation, leaving at least 4 inches of thread exposed. Align bolts with steel plate at top of concrete pour.

C. At least 7 days after concrete pour, thread nut on each threaded anchor road to steel plate. Position main upright base plate on anchor bolts and secure with a second set of nuts,

D. Align of goal posts by adjusting nuts until crossbar is level and top uprights are plumb.

3.3 INSTALLATION - TENNIS COURT EQUIPMENT

A. Net Posts:
   1. Place net posts within net post sleeves having an inside dimension to accept net posts.
   2. Concrete footings: 3000 psi.
3. Position net post sleeves in center of concrete footings, constructed as shown on Drawings; exactly 42 feet apart center to center for doubles courts, and 33 feet apart center to center for singles courts. Concrete foundations, as shown on Drawings, shall be 18-inch diameter and minimum 60 inches deep. Net post sleeves shall be imbedded in concrete foundation as necessary to support net top at a height of 42 inches above court surface finish grade.

4. Properly secure net posts inside sleeves and set plumb and true so as to support net top at a height of 42 inches above court surface finish grade.

5. Net posts shall not exceed more than 1 inch above 42-inch net cable.

B. Nets:
   1. Install nets per manufacturer’s recommendations.
   2. Provide and install necessary accessories (i.e. cables, tie-downs, side sticks, etc.).

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Aggregate base.
   3. Tennis court playing surface.
   4. Line painting.

B. Related Sections
   1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern Work under this Section.
   2. Section 32 11 23 – Aggregate Base Course.
   3. Section 32 12 16 – Asphalt Paving.
   4. Section 32 18 24 – Athletic Field Equipment: Tennis court nets and posts.
   5. Section 33 41 00 – Site Storm Sewer System.

1.2 REFERENCES

A. American Sport Builders Association (ASBA).
   1. Tennis Construction Guidelines.

1.3 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.

B. Product Data: Submit filler material specifications and installation requirements.

C. Manufacturer specifications for components, color chart and installation instructions.

D. Authorized Applicator certificate from surface system manufacturer.

1.4 QUALITY ASSURANCE

A. All surface coatings products shall be supplied by a single manufacturer.

B. Installer shall be an authorized applicator of specified system.

C. Apply filler, color finish system and line striping during good weather conditions when air temperature is between 55 degrees F and 90 degrees F and rain is not forecast or imminent.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials in accordance with manufacturer specifications.

B. Deliver product to site in original unopened containers with proper labels attached.
C. All surfacing materials shall be non-flammable.

PART 2 - PRODUCTS

2.1 PAVEMENT

A. Subgrade compaction and aggregate base shall conform to requirements of Section 32 11 23 – Aggregate Base Course.

B. Tennis court pavement shall conform to requirements of Section 32 12 16 – Asphalt Paving.

2.2 SURFACE COAT COMPONENTS

A. Approved Manufacturers:
   2. Or Approved Equal.

B. Acrylic Emulsion Filler:
   1. Cold applied sealer with mineral fillers, suitable for mixing with graded mineral aggregate, meeting the following requirements:
      a. Color: Black
      b. Acrylic Emulsion: 44 percent.
      c. Pigment: 40 percent minimum.
   2. Mineral Aggregate: Uniformly graded, durable, clean, hard material, or manufacturer sand, free of clay lumps and organic matter, meeting the following requirements:

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<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
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<tr>
<td>No. 16</td>
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<tr>
<td>No. 20</td>
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<tr>
<td>No. 30</td>
<td>15-85</td>
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<td>No. 40</td>
<td>2-15</td>
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<td>0-2</td>
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</tbody>
</table>

C. Crack Filler: 100 percent acrylic resin heavily filled with sand.

D. Acrylic Latex Primer: Clear drying, water-based emulsion designed to penetrate surface and promote adhesion of color finish system.

E. Color Finish System and Striping: Background coating and line striping paint shall be non-glaring latex acrylic emulsion meeting the following requirements:
   1. Background Color: Dark Green.
   2. Playing Court Color: Light Green.
   5. Pigment:
      a. Background Color: 40 percent minimum.
      b. Line Striping: 40 percent minimum.
2.3 EQUIPMENT

A. Tennis court posts and nets shall conform to requirements of Section 32 18 24 – Athletic Field Equipment.

PART 3 - EXECUTION

3.1 PREPARATION

A. Pavement surface must be cleaned entirely of dust, dirt, mildew, debris, and loose materials including vegetation. New asphalt must cure for a minimum of 21 days prior to coating applications.

B. Pour concrete foundations with sleeves for tennis net posts. Cap sleeves so they do not collect asphalt material during pacing.

3.2 ASPHALT PAVING

A. Aggregate Base: Conform to requirements of Section 32 11 23 – Aggregate Base Course. Install aggregate to a compacted depth of 12 inches.

B. Pavement: Conform to requirements of Section 32 12 16 – Asphalt Paving.
   1. Place asphalt binder course to a compacted depth of 2-1/4 inches.
   2. Place asphalt surface course to a compacted depth of 1-1/2 inches.

3.3 SURFACE PREPARATION

A. Protect adjacent areas and fences, posts, sidewalks, buildings, etc., which are not to be coated. In the event that coatings are applied to above, remove immediately before drying is complete.

B. Clean pavement surface using a stiff bristle broom and gas powered blower or water based pressure spray unit capable of generating 2500 psi at nozzle tip, to remove dirt and debris.

C. On workday following bituminous placement or in conjunction with power washing existing courts, and prior to filler placement, flood courts with water. Mark depressions holding water over 3/16-inch deep for leveling. Mark water ponding areas after a period of one hour in direct sunlight, or two hours in cloudy conditions.

D. Level water ponding areas with either a fine sand bituminous mix or an acrylic court patch binder.

E. On new asphalt surfaces, allow a minimum cure period of 30 days before application of filler materials.

3.4 SURFACE COAT APPLICATION

A. Provide a minimum of two applications of filler material at consistency and thickness recommended by manufacturer.

B. Primer:
1. Thoroughly clean concrete surface. Etch with a commercial grade of 85 percent phosphoric acid. Mix one gallon of acid to 10 gallons of water. Apply with a nylon or polypropylene bristle broom.
2. Flood surface and squeegee dry. Do not allow rinse water to set.
3. Apply primer to entire surface.

C. Color Finish System And Striping:
   1. Surface Preparation:
      a. Do not apply background color system until depressed areas have been corrected.
      b. Pavement surface must be completely cleaned of dust, dirt, debris, and loose materials by power washing.
   2. Application:
      a. Apply color finish system at a rate of 0.05 gallons per square yard with a squeegee to provide a uniform texture, color, and density, free of holidays or voids.
      b. Apply a minimum of two applications, or more if recommended by manufacturer. Provide additional applications over entire surface if final application is non-uniform. Apply until uniformity is achieved.
      c. Cure color finished tennis court a minimum of 48 hours before applying line striping.

3.5 LINE PAINTING

A. Dimensions: Accurately locate base lines and mark in accordance with ASBA guidelines.

B. Apply lines on tennis court by identifying center of each line with a chalkline and then laying two rolls of tape at same time with a line taping machine.

C. Make tennis court lines 2 inches wide except for baselines which are 3 inches wide. Locate four nail holes inserted in court surface and use them as reference points when working from court layout in Drawings.

D. When masking playing lines, tape right through intersections. After lines are masked, use a utility knife and straight edge to cut and remove tape covering intersections.

E. Apply one coat of sealer to prevent bleed-through under tape. When line tape sealer is dry, apply two coats of line paint using a 2-inch wide paint brush or a 2-inch wide long-handled roller. Apply two even coats of line paint. Verify first coat is dry before applying second coat.

F. Remove tape as soon as lines are dry. Do not leave tape on surface overnight. Use care when removing masking tape.

3.6 PLAYING EQUIPMENT

A. Provide posts and nets in accordance with requirements of Section 32 18 24 – Athletic Field Equipment.

B. Remove caps from post sleeves and erect posts true and plumb.

C. Install tensioning system and net and demonstrate its operation to Owner’s employees.
3.7 CLOSEOUT

A. Cleaning: Upon completion, Contractor shall remove containers, surplus materials, and debris, and leave site in a clean and orderly condition acceptable to Owner.

B. Maintenance:
   1. Installer shall make recommendations to Contractor in writing of procedures to follow in protecting and maintaining tennis courts until Final Completion.
   2. Contractor shall provide Owner with a complete typewritten set of maintenance and repair procedures on 8-1/2 x 11-inch heavy weight plastic coated sheets.
   3. Furnish a minimum of three (3) copies.

END OF SECTION
SECTION 323113 - CHAIN LINK FENCES AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Chain-link fences.
   2. Swing gates.
   3. Horizontal-slide gates.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
      a. Fence and gate posts, rails, and fittings.
      b. Chain-link fabric, reinforcements, and attachments.
      c. Gates and hardware.

B. Shop Drawings: For each type of fence and gate assembly.
   1. Include plans, elevations, sections, details, and attachments to other work.
   2. Include accessories, hardware, gate operation, and operational clearances.

C. Samples for Verification: For each type of component with factory-applied finish, prepared on Samples of size indicated below:
   1. Polymer-Coated Components: In 6-inch lengths for components and on full-sized units for accessories.

1.4 FIELD CONDITIONS

A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

1.5 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
Failures include, but are not limited to, the following:

a. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

2. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:

1. Fabric Height: As indicated on Drawings.
2. Steel Wire for Fabric: Wire diameter of 9 gauge.
   a. Mesh Size: 2 inches.

   1) Color: Black, according to ASTM F 934.

   c. Coat selvage ends of metallic-coated fabric before the weaving process with manufacturer's standard clear protective coating.

3. Selvage: Knuckled at both selvages.

2.2 FENCE FRAMEWORK

A. Posts and Rails: ASTM F 1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 or ASTM F 1083 based on the following:

1. Fence Height: As indicated on Drawings.
2. Heavy-Industrial-Strength Material: Group IA, round steel pipe, Schedule 40.
   a. Line Post: 2.875 inches in diameter.
   b. End, Corner, and Pull Posts: 4.0 inches in diameter.

   a. Top Rail: 1.66 inches in diameter.

4. Metallic Coating for Steel Framework:
   a. Type A: Not less than minimum 2.0-oz./sq. ft. average zinc coating according to ASTM A 123/A 123M or 4.0-oz./sq. ft. zinc coating according to ASTM A 653/A 653M.

5. Polymer coating over metallic coating.
   a. Color: Black, according to ASTM F 934.
2.3 SWING GATES

A. General: ASTM F 900 for gate posts and single double swing gate types.
   1. Gate Leaf Width: As indicated.
   2. Framework Member Sizes and Strength: Based on gate fabric height of more than 72 inches.

B. Pipe and Tubing:
   1. Zinc-Coated Steel: ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framework.
   2. Gate Posts: Round tubular steel.
   3. Gate Frames and Bracing: Round tubular steel.

C. Frame Corner Construction: assembled with corner fittings.

D. Extended Gate Posts and Frame Members: Fabricate gate posts and frame end members to extend 12 inches above top of chain-link fabric at both ends of gate frame to attach barbed assemblies.

E. Hardware:
   1. Hinges: 360-degree inward and outwards swing.
   2. Latch: Permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.

2.4 HORIZONTAL-SLIDE GATES

A. General: ASTM F 1184 for gate posts and single sliding gate types.
   1. Classification: Type II Cantilever Slide, Class 1 with external Class 2 with internal roller assemblies.
      a. Gate Frame Width and Height: As indicated.

B. Pipe and Tubing:
   1. Zinc-Coated Steel: Protective coating and finish to match fence framework.
   3. Gate Frames and Bracing: Round tubular steel.

C. Frame Corner Construction: assembled with corner fittings.

D. Hardware:
   2. Latch: Permitting operation from both sides of gate with provision for padlocking accessible from both sides of gate.

2.5 FITTINGS

A. Provide fittings according to ASTM F 626.

B. Rail Fittings: Provide the following:
1. Top Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches long.
2. Rail Clamps: Line and corner boulevard clamps for connecting bottom rails to posts.

C. Tension and Brace Bands: Pressed steel.

D. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post. Match fence fabric color.

E. Tie Wires, Clips, and Fasteners: According to ASTM F 626.
   1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, according to the following:

F. Finish:
   1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. of zinc.
      a. Polymer coating over metallic coating.

2.6 GROUT AND ANCHORING CEMENT
   A. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout, recommended in writing by manufacturer, for exterior applications.

PART 3 - EXECUTION

3.1 EXAMINATION
   A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
      1. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
   B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION
   A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 CHAIN-LINK FENCE INSTALLATION
   A. Install chain-link fencing according to ASTM F 567 and more stringent requirements specified.
B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.

C. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
   1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
   2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
      a. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.

D. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more. For runs exceeding 500 feet, space pull posts an equal distance between corner or end posts.

E. Line Posts: Space line posts uniformly at 96 inches o.c.

F. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.

G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.

H. Intermediate and Bottom Rails: Secure to posts with fittings.

I. Chain-Link Fabric: Apply fabric to inside of enclosing framework. Leave 1-inch bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than 15 inches o.c.

K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
   1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.

L. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

3.4 GATE INSTALLATION

A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.
3.5 ADJUSTING

A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

B. Lubricate hardware and other moving parts.

END OF SECTION 323113
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Final grading requirements.
   2. Placement of topsoil.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern work under this Section.
   2. Section 31 05 13 – Soils for Earthwork.
   4. Section 31 23 17 – Site Excavation, Backfill, and Compaction: Backfilling at building areas and utility trenches.
   5. Section 32 01 00 - Site Restoration: Seeding and sodding.
   6. Section 32 92 00 – Turf and Grasses.

1.2 REFERENCES

A. ASTM International (ASTM):
   1. ASTM D5268 – Topsoil Used for Landscaping Purposes.

1.3 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil:
   1. Imported or salvaged surface soil in accordance with ASTM D5268, composed of a mixture consisting of organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; rich in nutrients and capable of supporting plant growth. Topsoil shall be free of subsoil, clay lumps, gravel, debris, and rocks larger than 2-inches (50 mm).
   2. Topsoil shall contain not less than five (5) percent or more than 25 percent, by weight, of organic matter.
   3. Topsoil shall be free from perennial weeds and perennial wood seeds, and shall not contain objectionable plant material, toxic amounts of either acid or alkaline elements, residual chemicals or vegetable debris undesirable or harmful to plant life.]
PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 31 02 00 – General Requirements for Sitework: Coordination and project conditions.
B. Verify building and trench backfilling have been inspected.
C. Verify substrate base has been contoured and compacted.

3.2 SUBSTRATE PREPARATION

A. Eliminate uneven areas and low spots.
B. Remove debris, roots, branches, stones, in excess of one (1)-inch in size. Remove contaminated subsoil.
C. Scarify surface to depth of three (3) inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.3 PLACING TOPSOIL

A. Place topsoil in areas where seeding is required. Place topsoil during dry weather and on dry, unfrozen subgrade.
B. Break down all clods and lumps using the appropriate equipment to provide a uniformly textured soil.
C. For all areas of seed or sod ensure that, for the upper two (2) inches, 100 percent of the material passes a one (1) inch sieve and at least 90 percent passes the No. 10 sieve.
D. Fine grade topsoil to eliminate rough or low areas and to ensure positive drainage. Maintain profiles and contour of subgrade.
E. Remove all vegetable matter, roots, weeds, rocks, and foreign material while spreading.
F. Manually spread topsoil close to plant material prevent damage.
G. Lightly compact placed topsoil.
H. Remove surplus subsoil and topsoil from site.
I. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.4 TOLERANCES

A. Section 31 02 00 – General Requirements for Sitework: Tolerances.
B. Top of Topsoil: Plus or minus 1/2-inch.
3.5 PROTECTION OF INSTALLED WORK

A. Section 31 02 00 – General Requirements for Sitework: Protecting installed Work.

B. Protect landscaping and other features remaining as final Work.

C. Protect existing structures, fences, sidewalks, utilities, paving, and curbs.

D. Prohibit construction traffic over topsoil.

3.6 SCHEDULE

A. Compacted topsoil thicknesses:
   1. Seeded Grass: Six (6) inches.
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Preparation of subsoil.
   2. Placing topsoil.
   4. Mulching.
   5. Soil testing.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern
      Work under this Section.
   2. Section 31 05 13 – Soils for Earthwork: Topsoil material.

1.2 REFERENCES

A. Association of Official Seed Analysts, Inc. (AOSA)

B. ASTM International (ASTM)

1.3 DEFINITIONS

A. Weeds: Vegetative species other than specified species to be established in given area.

1.4 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals

B. Product Data: Submit data for seed mix, fertilizer, mulch, and other accessories.

C. Submit minimum 10 oz sample of topsoil proposed. Forward sample to approved testing
   laboratory in sealed containers to prevent contamination

D. Test Reports: Indicate topsoil nutrient and pH levels with recommended soil supplements and
   application rates.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.5 CLOSEOUT SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: 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

B. Perform Work in accordance with State of Illinois Department of Transportation standards.

1.7 QUALIFICATIONS

A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum five years documented experience

B. Installer: Company specializing in performing work of this section with minimum years documented experience.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 31 02 00 – General Requirements for Sitework: Product storage and handling requirements.

B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.9 COORDINATION

A. Section 31 02 00 – General Requirements for Sitework: Requirements for coordination.

1.10 MAINTENANCE SERVICE

A. Section 31 02 00 – General Requirements for Sitework: Requirements for maintenance service.

B. Maintain seeded areas for a minimum of sixty (60) days until grass is well established and exhibits vigorous growing condition.

PART 2 - PRODUCTS

2.1 SEED MIXTURE

A. Grass Seed: Provide fresh, clean, new-crop seed complying with tolerance for priority and germination established by AOSA Rules. Provide seed mixture composed of grass species, at proportions and percentages of purity and germination, and shall be composed of following.
   1. Forty percent Bluegrass (Poa pratensis).
   2. Forty percent Fescue Grasses (Festuca rubra).
   3. Twenty percent Rye Grasses (Lolium perenne).
4. Provide proposed seed mix blend for approval.
5. Coarse blade grasses, crop, clover, weed seed shall not exceed 2 percent of seed blend quantitatively.

2.2 SOIL MATERIALS

A. Topsoil: As specified in Section 32 91 19 – Landscape Grading.

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: Commercial grade; recommended for grass; of proportion necessary to eliminate deficiencies of topsoil to the following minimum proportions: Nitrogen 10 percent, phosphoric acid 10 percent, soluble potash 5 percent.

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: Jute matting, open weave.

F. Stakes: Softwood lumber, chisel pointed, 24 inches long.

G. String: Inorganic fiber.

2.4 SOURCE QUALITY CONTROL

A. Section 31 02 00 – General Requirements for Sitework: Testing, inspection and analysis requirements.

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 seed mix as result of testing.

D. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 31 02 00 – General Requirements for Sitework: 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 6 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 lime at application rate recommended by soil analysis. Work lime into top 6 inches of soil.

B. Apply fertilizer at application rate recommended by soil analysis.

C. Apply after smooth raking of topsoil and prior to roller compaction.

D. Do not apply fertilizer at same time or with same machine used to apply seed.

E. Mix fertilizer thoroughly into upper 2 inches of topsoil.

F. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

3.5 SEEDING

A. Apply seed at rate of 7 lbs per 1000 square feet, evenly in 2 intersecting directions.

B. Immediately following seeding and compacting, apply mulch to thickness of 1/8-inch. Maintain clear of shrubs and trees.

C. Apply water with fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

D. To be acceptable, grass must be firmly rooted in the ground and shall be full, viable, and free of bare spots. Dead or bare spots shall not exceed four (4) square inches in size.
3.6 SEED PROTECTION

A. Identify seeded areas with stakes and string around area periphery. Set string height to 12 inches. Space stakes at 5 foot centers.

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 MAINTENANCE

A. 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.

B. Neatly trim edges and hand clip where necessary.

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. 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.

END OF SECTION
SECTION 32 94 00
SYNTHETIC TURF DRAINAGE SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Synthetic turf aggregate base.
   2. Synthetic turf drainage system.
   4. Aggregate base course installation.
   5. Synthetic turf drainage system installation.
   6. Cleaning.
   7. Completion.

B. Related Sections
   1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall
govern Work under this Section.
   2. Section 31 05 16 – Aggregates for Earthwork: Aggregates for synthetic turf aggregate
base under synthetic turf field.
   3. Section 31 22 13 – Rough Grading: Cutting, grading, filling, rough contouring and
compacting sub-base in preparation of placement of synthetic turf aggregate and
subdrainage system.
   4. Section 31 23 17 – Site Excavation, Backfill, and Compaction: Excavation to establish
finished subgrade elevation.
   5. Section 32 93 00 – Synthetic Turf.
   6. Section 33 46 00 - Subdrainage.

1.2 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.

B. Submit manufacturer’s product data for each type of drainage pipe, fitting and accessories
required.

C. Submit manufacturer’s product data for geotextile filter fabric.

D. Provide three (3) samples of synthetic turf aggregate infill material in pint size bags with re-
sealable closures.

E. Provide two 12-inch by 12-inch samples of drain tile, each consisting of two (2) independent
tile edges joined with male/female tab system.
F. Submit manufacturer’s statement certifying that areas and surfaces designated to receive synthetic field surfacing have been inspected and found acceptable for application of synthetic material and in conformance with guarantee requirements.

G. Prior to beginning of synthetic turf installation, manufacturer/installer of drain tile and synthetic turf system shall inspect synthetic turf aggregate base and shall certify the acceptance of the synthetic turf aggregate base in writing after Contractor provides successful test results for compaction, planarity and permeability that are required by the synthetic turf manufacturer.

H. Submit sieve analysis of soil materials and base aggregates.

1.3 QUALITY ASSURANCE

A. Compacted synthetic turf aggregate base shall be performed only after excavation and other site construction that might damage them have been completed.

B. Contractor shall engage services of an Independent Testing Laboratory, acceptable to Owner, in accordance with Section 31 02 00 - General Requirements for Sitework.

C. Contractor shall provide test results from certified Independent Testing Laboratory prior to construction that synthetic turf aggregate base course will meet permeability and stability requirements.

1.4 WARRANTY

A. Guarantee the subsurface drainage system, including settling of backfilled areas below grade, for a period of one year, as identified in the Supplementary Conditions, following the date of final acceptance of the work.

B. If, within one (1) year of final acceptance, settlement occurs, make all adjustments without extra cost to the Owner including the complete restoration of all damaged planting, paving, or other improvements of any kind.

PART 2 - PRODUCTS

2.1 SYNTHETIC TURF AGGREGATE BASE COURSE

A. Synthetic Turf Aggregate Base: As shown on the drawings and as specified in Section 31 05 16 – Aggregates for Earthwork.

2.2 SYNTHETIC TURF DRAINAGE SYSTEM

A. Install a perforated collector drain as indicated on Drawings and installed in accordance with Section 33 46 00 – Subdrainage.

B. Line perimeter collector drainage trench with geotextile and fill with clean, angular drainage stone as indicated on Drawings.
C. Install under field panel drain system as indicated on the Drawings. Place ends of field panel drains directly into perimeter trench as indicated on Drawings.

2.3 GEOTEXTILE DRAINAGE FILTER FABRIC

A. Non-woven, porous polypropylene fabric.
   1. Manufacturer: Tencate Mirafi 160N Series.
   2. Or Architect approved equal.

PART 3 - EXECUTION

3.1 PREPARATION

A. Installation shall be performed in full compliance with approved shop drawings.

B. Surface to receive synthetic turf shall be inspected and certified by turf manufacturer and ready for the installation of synthetic turf system and must remain clean as installation commences and progresses.

C. Surface shall be maintained in clean condition throughout installation process.

D. Turf contractor shall inspect the installation of the compacted sub-grade, synthetic turf aggregate base, and planarity work to determine its adequacy to receive synthetic field surfacing system prior to installation.

E. Start of work of this Section shall constitute acceptance of prepared sub-grade.

3.2 EXAMINATION

A. Verify that compacted sub-grade, synthetic turf aggregate base, and planarity are approved in writing by the turf manufacturer and complete prior to the installation of the synthetic turf field.

B. Surface to receive synthetic turf shall also be inspected by turf contractor and, prior to beginning installation, turf contractor shall also accept compacted sub-base, synthetic turf aggregate base, and planarity in writing.

C. Prior to installation, an acceptable drainage test should illustrate an infiltration rate greater than or equal to rate specified.

D. Drainage test shall illustrate capacity of entire field drainage system, including flat panel drains, polypropylene drainage tile, and synthetic turf base course.

E. A high capacity low pressure hose will be acceptable for drainage test.

F. Surface must be perfectly clean as installation commences and progresses and shall be maintained in that condition throughout the entire turf installation process.
3.3 SYNTHETIC TURF AGGREGATE BASE COURSE INSTALLATION

A. Reference Section 32 11 23 – Aggregate Base Course.

B. Place materials adjacent to walls and other structures only after they have been set to required grade and level.

C. Rolling shall begin at sides and progress to center of crowned areas, and shall begin at low sides and progress toward high side of sloped areas.

D. Rolling shall continue until material does not creep or wave ahead of roller wheels.

E. Maintain slope established in sub-base construction.

F. Keep completed aggregate course clean and uncontaminated.

G. Portions of aggregate base course that are contaminated, softened, or dislodged by passing of traffic or otherwise damaged shall be cleaned, replaced or otherwise repaired to conform to Contract Documents before proceeding to next operation.

3.4 SYNTHETIC TURF DRAINAGE SYSTEM INSTALLATION

A. Lay drain pipe with perforations down, joints closed, and firmly bedded in drainage fill material.

B. Provide full bearing for each pipe section.

C. Provide continuous slope in the direction of flow.

D. Provide collars and couplings for all in-line joints and elbows, or bend sections for all corners and changes in direction.

E. Provide recesses to receive bell and spigot ends.

F. Provide non-perforated run out pipe. Extend drainage system to out fall indicated and make connection.

G. Obtain required inspections and perform testing before backfilling.

H. Remove obstructions, replace damaged components, and retest system as required.

I. Provide a satisfactory free flowing subdrainage system.

J. Place drainage fill over drain piping after satisfactory testing and acceptance.

K. Compact drainage fill in layers not exceeding three (3) inches in loose-lift depth.

L. Exercise care to avoid damage or displacement of installed piping.
M. Completely cover drain lines as indicated on the Drawings.

N. Provide approved soil separator over granular backfill.

O. Install specified backfill over compacted drainage fill. Compact earth fill in layers not exceeding six (6) inch loose lifts.

P. Extend earth fill to indicated finish grade elevations. Slope earth fill away from any buildings or structures to prevent localized ponding.

3.5 CLEANING

A. Upon completion of subdrainage work, remove tools and equipment. Provide site clear, clean, free of debris, and suitable for site work operations.

3.6 COMPLETION

A. Prior to the back-filling of any supply lines joints or connections, the entire system shall be inspected by the Owner’s Representative.

B. Owner’s Representative shall witness all tests.
TO: General Contractor

PROJECT: ________________________________

______________________________
Synthetic Turf Field

Subgrade Contractor
The undersigned certifies to General Contractor that the subgrade preparation complies with specified compaction and elevation requirements of this project, that they have performed an acceptable proofroll test and have made all required subgrade replacements and/or corrections, and that subgrade elevations have been surveyed. A copy of the survey record drawing must be attached.

DATE ________________________________

SIGNED ________________________________

TITLE ________________________________

COMPANY ________________________________

Turf Contractor
The undersigned certifies to General Contractor that they have witnessed a proofroll test and have reviewed survey record drawing and they have determined that subgrade is suitable for construction of proposed synthetic turf field.

DATE ________________________________

SIGNED ________________________________

TITLE ________________________________

COMPANY ________________________________
AGGREGATE BASE COURSE CERTIFICATION

TO: General Contractor

PROJECT: ____________________________

________________________
Synthetic Turf Field

Aggregate Base Course Contractor
The undersigned certifies to General Contractor that the aggregate base course preparation complies with specified compaction and elevation requirements of this project, that they have performed an acceptable drainage test and have made all required aggregate base course replacements and/or corrections.

DATE _________________________________
SIGNED _________________________________
TITLE _________________________________
COMPANY _________________________________

Turf Contractor
The undersigned certifies to General Contractor that they have witnessed a drainage test and have reviewed aggregate base course and they have determined that aggregate base course is suitable for construction of proposed synthetic turf field.

DATE _________________________________
SIGNED _________________________________
TITLE _________________________________
COMPANY _________________________________

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   2. Pipe Fittings and Accessories.
   3. Catch Basins, including Frames and Grates.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern Work under this Section.
   2. Section 31 23 17 – Site Excavation, Backfill, and Compaction: Excavating for storm sewer system piping.
   3. Section 33 46 00 - Subdrainage: Termination of subdrainage tile system for connection to Work of this Section.

1.2 REFERENCES


B. American Association of State Highway and Transportation Officials: (AASHTO)
   1. AASHTO M36 - Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains.
   2. AASHTO M294 – Corrugated Polyethylene Pipe, 300- to 1200-mm Diameter.
   3. AASHTO Standard Specifications for Highway Bridges.

C. American Concrete Institute: (ACI)
   1. ACI 318 - Building Code Requirements for Structural Concrete and Commentary.

D. ASTM International: (ASTM)
   3. ASTM A615 - Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
   7. ASTM D2321 – Practice for Underground Installation of Flexible Thermoplastic Sewer Pipe.
17. ASTM F2648 - Specification for 2 to 60 inch [50 to 1500 mm] Annular Corrugated Profile Wall Polyethylene (PE) Pipe and Fittings for Land Drainage Applications.

E. Code of Federal Regulations: (CFR)
1. Title 29, Part 1926 Safety and Health Regulations for Construction, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor.

1.3 SUBMITTALS
A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.
B. Product Data: Provide data indicating pipe materials, pipe fittings, and precast structures.
C. Submit Structural Design Calculations and detailed Shop Drawings for flattop and special precast concrete manhole structures prepared and sealed by a Professional Structural Engineer licensed in the State of Illinois.
D. Design of flattop and special precast structures shall be in accordance with ACI 318 and ASTM C478.
E. Submit concrete mix data and test reports from an approved testing laboratory certifying that concrete used in precast structures conforms to specified requirements.
F. Manufacturer's Instructions: Indicate special procedures required to install Products specified.
G. Certificate: Certify that Products meet or exceed specified requirements.

1.4 REGULATORY REQUIREMENTS
A. Contractor shall comply with applicable rules and regulations of
   1. State of Illinois Environmental Protection Agency (IEPA), Department of Public Health (IDPH) and local code if more stringent for materials and installation of the Work of this Section.

1.5 DELIVERY, STORAGE, AND HANDLING
A. Deliver, store, protect and handle products to site under provisions of Section 31 02 00 – General Requirements for Sitework.
B. Deliver and store castings and gaskets in shipping containers with labeling in place.
PART 2 - PRODUCTS

2.1 GENERAL

A. Pipes, fittings, and structures shall be manufactured in the United States of America.

B. Materials supplied are to be in accordance with:

2.2 PIPE MATERIALS

A. Polyvinyl Chloride (PVC) Pipe:
   1. Pipe: ASTM D2665, polyvinyl chloride (PVC) material; inside nominal diameter as shown on Drawings.
   2. Joint Device: Bell and spigot with ASTM D2564 solvent sealed joint.

2.3 PIPE FITTINGS AND ACCESSORIES

A. Fittings and fitting joints shall be in accordance with:

B. Fittings: Same material as pipe, molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.

C. Mortar: ASTM C270, Type S.

D. Filter Fabric: Non-biodegradable, nonwoven:
   1. Carthage Mills, HS series.
   4. US Fabrics, Medium Weight NW series.

2.4 PIPE LOCATION MATERIALS

A. Identification Warning Tape: Heavy plastic underground warning tape, 2-inch width. Color-Bright Green, warning message “Caution Buried STORM SEWER Below” to repeat every 30 inches.

2.5 PRECAST CONCRETE STRUCTURES INCLUDING FRAMES AND COVERS

A. Precast Concrete Risers and Cone Sections for Catch Basins: In accordance with ASTM C478, minimum wall thickness, one twelfth of internal diameter of riser or largest cone diameter plus 1 inch.
B. Precast Concrete Base Section with Integral Floor: In accordance with ASTM C478, minimum floor thickness 6 inches for risers up to 48-inches in diameter, and 8 inches for larger diameters; bench minimum slope 1/2-inch per foot from channel to wall; cast in place pipe sleeves.

C. Concrete Flat Slab Top: In accordance with ASTM C478 and approved Shop Drawings; Minimum thickness 6 inches for 48-inch diameter, 8 inches for larger diameters; equipped with lifting hooks.

D. Minimum access opening in cone or top section: 24-inch diameter.

E. Minimum compressive strength of concrete: 4000 psi.

F. Section shall support own weight and live load equivalent to AASHTO HS-20 Highway Loading unless otherwise indicated on Drawings.

G. Design exterior wall for a minimum equivalent fluid pressure of 90 pounds per square foot and consider additional lateral pressure from approaching truck wheels.

H. Form and cast openings with wall sleeves in base sections as required by Drawings.

I. Horizontal wall joints shall not be located within 18 inches of centerline of wall penetration.

J. Section joints: Reinforced concrete base and riser sections excepting grade rings, designed and formed with tongue and groove ends to produce a continuous, uniform manhole.

K. Identification Markings: Clearly mark on inside of each precast section indicating date of manufacture, name or trademark of manufacturer. Clearly mark on outside of each section vault identification number from Drawings.

L. Precast concrete grade rings shall conform to ASTM C478.

M. Mortar: ASTM C270, Type S.

N. Reinforcement: Formed steel wire, galvanized finish.

2.6 STRUCTURE FRAMES, COVERS, AND GRATES

A. Catch Basin Frame and Grate:
   1. Gray iron castings; ASTM A48, Class 35B, machined horizontal bearing surface, with concealed pickhole, gasketed, solid lid.
      a. Pavement: Neenah R-3210-L or equal, with Type L vane grate.
      b. Curb and Gutter: Neenah R-3220-L or equal, with Type L vane grate.
      c. Lawn: Neenah R-2533 with R-1710 frame.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that trench cut and excavation base are ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.
3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with Type A2 aggregate as specified in Section 31 05 16 – Aggregates for Earthwork.

B. Remove large stones or other hard matter that could damage pipe or impede consistent backfilling or compaction.

C. Cut pipe ends square, ream pipe and tube ends to full pipe diameter, remove burrs.

D. Remove scale and dirt on inside and outside before assembly.

E. Prepare pipe connections to equipment with flanges or unions.

3.3 BEDDING

A. Excavate pipe trench in accordance with Section 31 23 17 – Site Excavation, Backfill, and Compaction for Work of this section. Hand trim excavation for accurate placement of pipe to elevations indicated.

B. Place and shape bedding material to pipe, to a minimum depth of three inches under bell and four inches under spigot and compact to 95 percent modified Proctor density.

C. Backfill around sides and top of pipe with bedding material to a loose lift depth of 15 inches above pipe and compact to 95 percent modified Proctor density.

D. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION - PIPE

A. Install pipe, fittings, and accessories in accordance with manufacturer's instructions and State of Illinois Administrative Code, Department of Public Health, Plumbing Code, 77 Ill. Admin. Code 890 and local code if more stringent for installation of the Work of this Section.

B. Install PVC pipe in accordance with ASTM D2321 and ASTM F1668.

C. Install pipe, fittings, and accessories in accordance with manufacturer's instructions.

D. Lay pipe to slope gradients noted on Drawings; with maximum variation from true slope of 1:1000.

E. Backfill trench in accordance with Section 31 23 17 - Site Excavation, Backfill, and Compaction. Do not displace or damage pipe when compacting.

F. Connect to building storm sewer outlet and municipal sewer system, through installed sleeves.

G. Coordinate the Work with termination of storm sewer connection outside building, connection to municipal sewer utility service, and trenching.
H. Install colored marker tape continuous over top of pipe buried 18 inches below finish grade, above pipe line; coordinate with Section 31 23 17 – Site Excavation, Backfill, and Compaction.

3.5 PREPARATION FOR STRUCTURES
A. Coordinate placement of inlet and outlet pipe sleeves required by other sections.
B. Do not install structures where site conditions induce loads exceeding structural capacity of structures.
C. Inspect precast concrete structures immediately prior to placement in excavation to verify structures are internally clean and free from damage. Remove and replace damaged units.

3.6 INSTALLATION - STRUCTURES
A. Excavation and Backfill:
   1. Excavate for manholes and drainage structures in accordance with Section 31 23 17 – Site Excavation, Backfill, and Compaction in locations and to depth shown. Provide clearance around sidewalls of structure for construction operations.
   2. When groundwater is encountered, prevent accumulation of water in excavations. Place manholes or drainage structures in dry trench.
   3. Where possibility exists of watertight structure becoming buoyant in flooded excavation, anchor structure to avoid flotation.
   4. Backfill excavations for manholes and drainage structures in accordance with Section 31 23 17 - Site Excavation, Backfill, and Compaction.
B. Install drainage structures supported at proper grade and alignment on Type A2 aggregate bedding, as specified in Section 31 05 16 – Aggregates for Earthwork, to a minimum compacted thickness as shown on Drawings.
C. Set base section, align pipe sleeve openings to provide straight alignment of pipe through manhole base, level and plumb sections.
D. Set manhole at a grade to assure that no more than 8 inches of precast concrete rings would be required to bring manhole frame and cover to final grade.
E. Lift precast structures at lifting points designated by manufacturer.
F. When lowering manholes and drainage structures into excavations and joining pipe to units, take precautions to ensure interior of structure remains clean.
G. Place preformed flexible joint sealant on either side of tongue portion of joint in base section to assure filling of entire joint when assembled.
H. Set riser section on base, aligning joint prior to setting, lower riser section level and uniformly on to base to squeeze joint compound throughout tongue and groove joint, visible for inspection both interior and exterior for water tight fit.
I. Trowel excess joint compound material flush at interior and exterior surface after placement.
J. Repeat process for remaining riser sections and top, exercising care to align manhole ladder rungs to form uniform vertical ladder.

K. Section shall be vertical and in true alignment with a maximum 1/4-inch tolerance per section allowed.

L. Allow joints to set for a minimum 24-hour period before backfilling.

M. Plug holes in section required for handling or other purposes with non-shrink grout, finished flush on inside.

N. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe. Fill annular space with mortar.

O. Cut pipe to finish flush with interior of structure.

P. Provide concrete flowline at bottom of lowest structure section to achieve sloped drainage from entering pipe to exiting pipe. Trowel smooth. Perform backfilling carefully, bringing fill up evenly on all sides.

Q. Compact fill around vault with a mechanical hand operated wacker.

3.7 INSTALLATION - FRAME AND COVER

A. Set frames using mortar and precast concrete adjustment rings as required.

B. Place precast concrete rings in full bed of mortar with completely fill joints. Verify maximum height of adjustment rings allowed by code prior to installing.

C. Plaster adjustment rings on both inside and outside of ring cylinder with mortar.

D. Place flexible joint sealant on centerline circumference of slab top or concrete ring with mortar bed placed on interior and exterior of sealant to full width of frame or ring area.

E. In non-pavement areas set frame and cover two inches above finished grade for manholes and other structures with covers to allow area to be graded away from cover beginning 1-inch below top surface of frame.

3.8 TRACER WIRE INSTALLATION

A. Originate and terminate lateral tracer wire in wire access box located at right-of-way line. Install conductor tracer wire in one continuous loop.

B. Tape conductor tracer wire to top of pipe at minimum 10-foot intervals. Wrapping conductor tracer wire around pipe is prohibited.

C. Field test each locating wire after completing installation.

3.9 FIELD QUALITY CONTROL

A. Section 31 02 00 – General Requirements for Sitework: Field inspection and testing.
B. Perform compaction and moisture content testing in accordance with Section 31 23 17 - Site Excavation, Backfill, and Compaction.

C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

D. Frequency of Tests: As determined by Owner’s Representative and Testing Agency.

E. Deflection Test: Deflection tests shall be performed for all polyvinyl chloride (PVC) pipe installations.
   1. Deflection test shall be performed using a rigid ball or mandrel without a mechanical pulling device.
   2. If deflection testing occurs within 30 days of placement of final backfill, deflection shall not exceed 5 percent.
   3. When deflection testing occurs more than 30 days after placement of final backfill, maximum deflection shall not exceed 7.5 percent.

3.10 PROTECTION OF FINISHED WORK

A. Section 31 02 00 – General Requirements for Sitework: Protecting installed work.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is completed.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Polymer Concrete Trench Drains.
   2. Stainless Steel Trench Grates.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern all work under this Section.
   2. Section 31 23 17 – Site Excavation, Backfill, and Compaction.

1.2 REFERENCES

A. ASTM International: (ASTM)

1.3 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.

B. Shop Drawings and product data shall show details of construction, pipe connections, frame, and grate.

1.4 QUALITY ASSURANCE

A. Inspection of materials will be in accordance with Section 01 40 00 – Quality Requirements.

B. Inspection may be made at place of manufacture or at site after delivery.

C. Materials shall be subject to rejection for failure to meet requirements of this Section or may be rejected due to any of following:
1. Fractures or cracks passing through wall, except for a single end crack that does not exceed depth of joint.
2. Defects indicating mixing and molding errors or surface defects indicating honeycombed or open texture.
3. Damaged or cracked ends that prevent making a satisfactory joint.
4. Any continuous crack having a surface width of 0.01-inch or more and extending for a length of 12 inches or more regardless of position in section wall.

D. Repairs to imperfections may be made only after manufacturer has made a written request and received approval from Owner’s Representative of materials and methods proposed to effect repair.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with Section 31 02 00 – General Requirements for Sitework.

B. Do not ship pre-manufactured sections nor subject to loading until compressive strength has attained 3000 psi or 5 days after fabrication, whichever is longer.

C. Deliver pre-manufactured sections and grates to site when required by approved project schedule.

PART 2 - PRODUCTS

2.1 POLYMER CONCRETE TRENCH DRAINS AND GRATES

A. Manufacture trench system bodies from polyester polymer concrete with minimum properties as follows:
   1. Compressive strength: 14,000 psi.
   2. Flexural strength: 4,000 psi.
   3. Water absorption 0.07 percent.
   4. Frost proof.
   5. Salt proof.
   6. Dilute acid and alkali resistant.

B. Nominal clear opening shall be 4.00 inches and minimum depth shall be 9 inches. Manufacture precast units with neutral invert and minimum wall thickness of 1/2-inch. Units shall have a full radius in trench bottom and male to female interconnecting end profile.

C. Units shall have a stainless steel anchoring frame or a stainless steel edge rail.

D. Stainless steel edge rail will be integrally cast in by manufacturer. Edge rail shall be at least 1/2-inch thick.
E. Manufacture grate from 11 gage, grade 304 stainless steel for a load of 70 psi. Grate shall have a locking system and be ADA compliant.

F. Trench drain shall be Kassik Drain KS 1OOS as manufactured by Aco Polymer Products, Polycast 700 as manufactured by Hubbell Power Systems, or an approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION OF TRENCH DRAIN

A. Lay out trench drain channels in order of installation alongside trench excavation prior to installation. Shop Drawings for correct numerical sequence.

B. Excavate to provide for minimum of 4 inches of encapsulation concrete on all sides of channel and slope approximately 0.6 percent downhill toward outlet.

C. Begin installation at outlet or discharge end of each run and work backwards or upstream.

3.2 CLEANING AND FRAME INSTALLATION

A. Remove and clean gratings.

B. Clean debris and any concrete spillage out of trench and receiving storm sewer system.

C. Insert grate bolt through hole provided in each grate and screw toggle bar onto bolt with two full turns.

D. Set grate into channel grate rail. Hand tighten bolt until toggle bar slips into depression in side of channel and snugs grate in place.

E. Tighten lock bolt securely with a wrench.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Pipe Materials.
   2. Aggregate and Bedding.
   3. Flat Panel Drain Installation.

B. Related Sections:
   1. Applicable provisions of Section 31 02 00 – General Requirements for Sitework shall govern
      Work under this Section.
   2. Section 31 05 13 – Soils for Earthwork.
   3. Section 31 05 16 - Aggregates for Earthwork.
   4. Section 31 23 17 – Site Excavation, Backfill, and Compaction: Excavating and backfilling
      for drainage system piping and surrounding filter aggregate.
   5. Section 32 11 23 - Aggregate Base Course.
   6. Section 33 41 00 - Site Storm Sewer System

1.2 REFERENCES

A. ASTM International: (ASTM)
   1. ASTM C923 - Specification for Resilient Connectors Between Reinforced Concrete
      Manhole Structures, Pipes and Laterals.
   2. ASTM D2321 – Practice for Underground Installation of Thermoplastic Pipe for Sewers and
      Other Gravity-Flow Applications
   3. ASTM F667 - Specification for Large Diameter Corrugated Polyethylene Pipe and Fittings.

B. Illinois Department of Transportation:
   1. Standard Specifications for Road and Bridge Construction, Current Edition with latest
      supplements.  (IDOT)

1.3 SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.

B. Shop Drawings: Indicate dimensions, layout of piping, high and low points of pipe inverts, and
   gradient of slope between corners and intersections.

C. Product Data: Submit data on pipe drainage products and pipe accessories.

D. Manufacturer’s Certificate: Certify Products meet or exceed specified requirements.

1.4 CLOSEOUT SUBMITTALS

A. Section 31 02 00 – General Requirements for Sitework: Requirements for submittals.
B. Section 31 02 00 – General Requirements for Sitework: Closeout procedures.

C. Section 31 02 00 – General Requirements for Sitework: Submit Record Drawings showing location of pipe runs, connections, cleanouts, and principal invert elevations.

**PART 2 - PRODUCTS**

**2.1 PIPE MATERIALS**

A. ADS AdvanEDGE 12-inch oblong corrugated Flat Panel Drain, with required fittings.

B. Substitutions: In accordance with Section 31 02 00 – General Requirements for Sitework: Requirements – Product Requirements.

**2.2 ACCESSORIES**

A. Joints: Gasketed, Soil tight.

B. Geotextile Fabric:
   1. Non-biodegradable, nonwoven fabric made from 100 percent polypropylene staple filaments.
   2. Manufacturers: Carthage Mills FX-30HS, TenCate Geosynthetics North America Mirafi 140NL, Propex Inc. Geotex 311, or US Fabrics, Inc. 80NW.


D. Pipe Sleeve - Field Installed: ASTM C923, "KOR-N-SEAL" or an approved equal.

**PART 3 - EXECUTION**

**3.1 EXAMINATION**

A. Section 31 02 00 – General Requirements for Sitework: Coordination and project conditions.

B. Verify trench cut and excavated base is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.

**3.2 PREPARATION**

A. Hand trim excavations to required elevations. Correct over excavation with aggregate as indicated on Drawings and specified in Section 31 05 16 – Aggregates for Earthwork.

B. Remove large stones or other hard matter that could damage drainage piping or impede consistent backfilling or compaction.
3.3 UNDERDRAIN INSTALLATION

A. Excavate trench as shown on Drawings in accordance with Section 31 23 17 - Site Excavation, Backfill, and Compaction.

B. Line trench with geotextile providing excess to close top of drainage cell.

C. Place perorated pipe at centerline of trench on top of geotextile. Lay pipe at slope shown in Drawings.

D. Fill trench as indicated on Drawings and as specified in Section 31 05 16 – Aggregates for Earthwork.

E. Close geotextile over open graded aggregate with a 12-inch lap.

3.4 FIELD QUALITY CONTROL

A. Section 31 02 00 – General Requirements for Sitework: Testing and inspection services.

B. Request inspection prior to and immediately after placing aggregate cover over pipe.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 31 02 00 – General Requirements for Sitework: Protecting installed construction.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is completed.

END OF SECTION